

Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site

Final Report Rev 02

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List of Acronyms

Acronym	Definition
ABC	Active, Beautiful, Clean
ACMV	Air Conditioning and Mechanical Ventilation
AECOM	AECOM Singapore Pte. Ltd.
AHU	Air Handling Unit
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZGFMW	Australian and New Zealand Guidelines for Fresh and Marine Water
ASR	Air Sensitive Receptor
BCA	Building Construction Authority
BIA	Biodiversity Impact Assessment
BP	British Petroleum (company)
BTNR	Bukit Timah Nature Reserve
BTO	Build-To-Order
CBD	Central Business District
CCNR	Central Catchment Nature Reserve
CCS	Central Control System
CCTV	Closed-Circuit Television
CFU	Colony Forming Unit
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
COD	Chemical Oxygen Demand
COPC	Chemicals of Potential Concern
COPPC	SS 593: Code of Practice for Pollution Control, 2013
CR	Critically Endangered
CS	Conservation Significance
dB	Decibel
DGPS	Differential Global Positioning System
DIV	Dutch Intervention Value
DO	Dissolved Oxygen
DOE	Department of Environment (Malaysia)
EBS	Environmental Baseline Survey
EC	Electrical Conductivity
ECM	Earth Control Measures
ECO	Erosion Control Officer
ECP	Erosion Control Plan
EHS	Environmental Health and Safety
EIS	Environmental Impact Study
EMMP	Environmental Management and Monitoring Programme
EN	Endangered
ERP	Emergency Response Plan
ERSS	Earth Retaining and Stabilising Structures
ERT	Emergency Response Team
EU	European Union
GLS	Government Land Sales
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
ha	Hectare
HDB	Housing & Development Board, Singapore
HDV	Heavy Duty Vehicles
HK EIAO TM	Hong Kong Environmental Impact Assessment Ordinance – Technical Memorandum
IAQM	UK Institute of Air Quality Management
IUCN	International Union for Conservation of Nature
JID	Jurong Innovation District
JRL	Jurong Regional Line
JTC	JTC Corporation (formerly Jurong Town Corporation)

Acronym	Definition
LNAPL	Light Non-Aqueous Phase Liquid
LTA	Land Transport Authority
M&E	Mechanical and Electrical Works
m bgs	Meters Below Ground Surface
mCD	Meters in Chart Datum
MEP	Mechanical/ Electrical/ Plumbing
mm	Millimetre
MLS	Marchwood Laboratory Services Pte Ltd
MND	Ministry of National Development, Singapore
MPA	Maritime and Port Authority, Singapore
mRL	Meters Reduced Level
MRT	Mass Rapid Transit
NAAQS	USEPA National Ambient Air Quality Standards
NAS	National Archives of Singapore
NBSAP	National Biodiversity Strategy and Action Plan
NEA	National Environment Agency, Singapore
NParks	National Parks Board, Singapore
NSR	Noise Sensitive Receptor
NTU	Nephelometric Turbidity Units
NUS	National University of Singapore
NUSLHMSG	NUS Libraries Historical Maps of Singapore
ORP	Oxidation and Redox Potential
PAH	Polycyclic Aromatic Hydrocarbons
PH	Public Holiday
PHILMINAQ	Mitigating Impact from Aquaculture in the Philippines
PID	Photoionization Detector
PIE	Pan Island Expressway
PM	Particulate Matter
PME	Powered Mechanical Equipment
POC	Potential of Contamination
PRO	Public Relations Officer
PSA	The Port of Singapore Authority
PSI	Pollution Standard Index
PSU	Practical Salinity Unit
PUB	Public Utilities Board
PVC	Polyvinyl Chloride
QECP	Qualified Erosion Control Professional
QP	Qualified Professional
RMoS	Radio Modellers Singapore
RMS	Root Mean Square
RTO	Resident Technical Officer
SAC	Singapore Accreditation Council
SDS	Safety Data Sheets
SFA	Singapore Food Agency
SI	Soil Investigation
SIDS	Silty Imagery Detection System
SING	Singapore Botanic Gardens' Herbarium
SINGLAS	Singapore Laboratory Accreditation Scheme
SLA	Singapore Land Authority
SO	Superintending Officer
SOP	Standard Operation Procedure
SRDB	Singapore Red Data Book
STATS	Specialist Testing and Technical Services (STATS) Asia Pacific Pte Ltd
SWL	Stabilised Water Level
TAQMMS	Telemetric Air Quality Monitoring and Management System
TDS	Total Dissolved Solids

Acronym	Definition
TIW	Toxic Industrial Waste
TN	Total Nitrogen
TOC	Total Organic Carbon
TOL	Temporary Occupation Licence
TOR	Terms of Reference
TP	Total Phosphorus
TSS	Total Suspended Solids
UHI	Urban Heat Island
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
uPVC	Unplasticized Polyvinyl Chloride
URA	Urban Redevelopment Authority, Singapore
US	United States of America
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
VU	Vulnerable
WHO	World Health Organisation

1 Executive Summary

AECOM Singapore Pte Ltd was appointed by Urban Redevelopment Authority (URA) to carry out the *Environmental Impact Study (EIS) for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site*. The Study Area has an area of approximately 77.8 hectares (ha) and is located in the southwest of Singapore. The site has been mainly zoned for "Residential (Subject to Detailed Planning)", "Park", "Waterbody", "Reserve Site" and "Road" as shown in Figure 1-1. The site is located in an ecologically sensitive area, which complements the surrounding rich and diverse green assets of the Southern Ridges, which consists of Telok Blangah Hill Park, Mount Faber Park, Kent Ridge Park and Labrador Nature Reserve. Furthermore, Berlayer Creek is a tidally influenced natural waterbody which supports one of the two mangroves located in the southern part of mainland Singapore and it provides a repository and dispersal site for mangrove seeds to other co-dependent mangrove sites within Singapore, thereby highlighting its ecological importance.

With the current proposed developments within the Study Area, there is a need to: (1) understand the baseline ecological and environmental conditions of the Site; (2) assess potential impacts on the local biodiversity and environment associated with and/or caused by the Project during both construction and operational phases; (3) recommend mitigation measures to safeguard the existing ecological and avian connectivity, and incorporate them into the future development; and (4) to develop an Environmental Monitoring and Management Plan (EMMP).

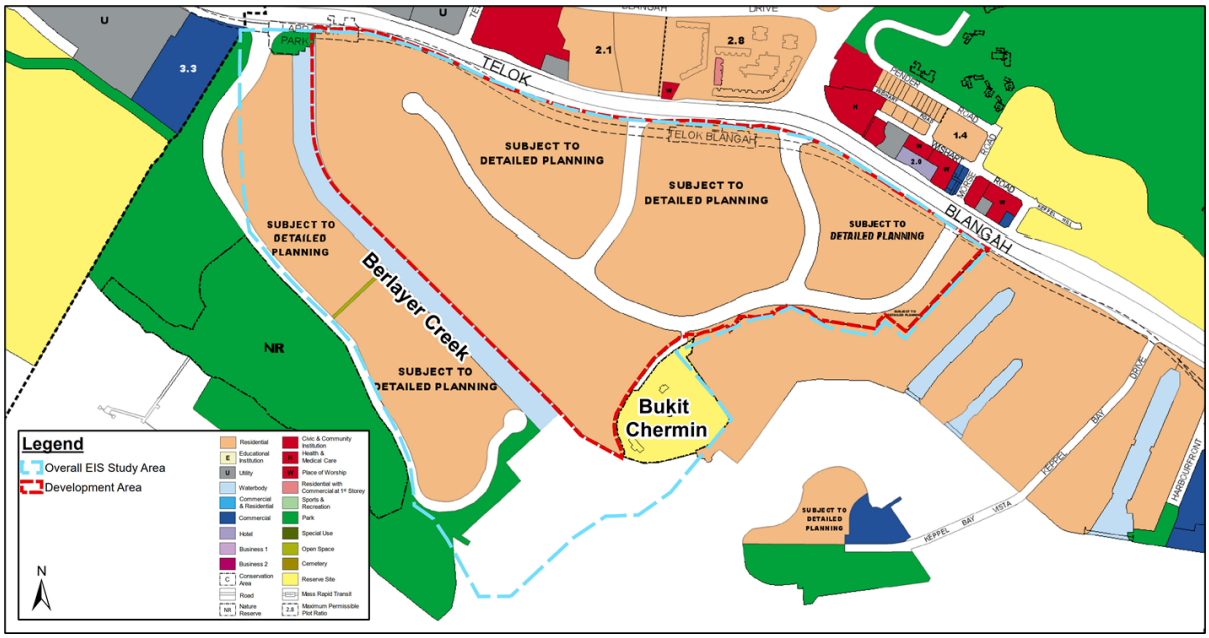


Figure 1-1 Current land use zoning of the Study Area and its surroundings (Source: URA's gazetted Master Plan 2019 [M-2])

Environmental Baseline Findings

Baseline studies on biodiversity, hydrology and water quality, soil and groundwater, air quality and airborne noise were conducted for the Study Area, and a summary of the findings is provided below. More information can be obtained from Sections 7, 8, 9, 10 and 11 of the report, respectively.

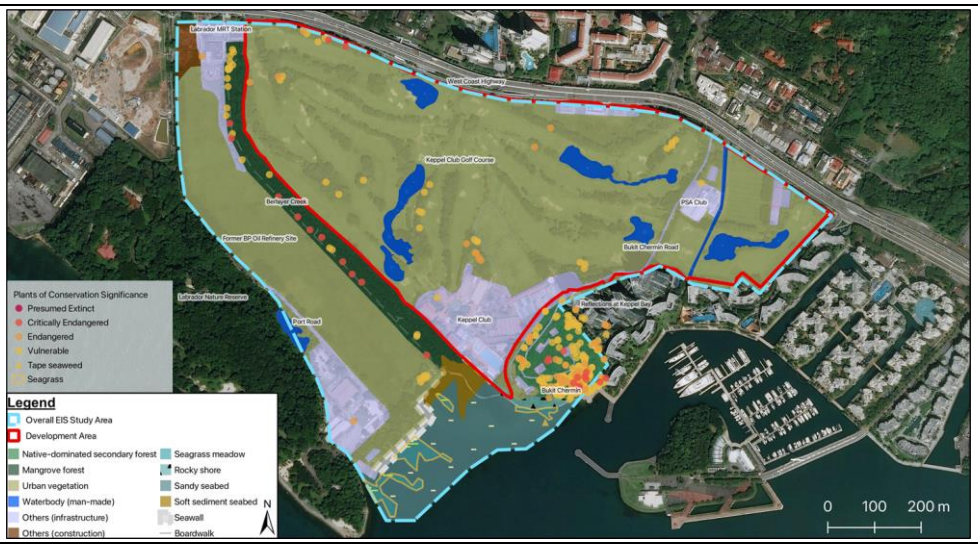


Figure 1-2 Distribution of habitats, vegetation, plant specimens of conservation significance

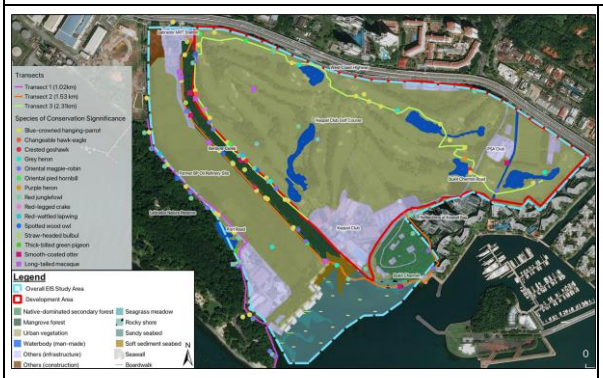


Figure 1-3 Distribution of terrestrial fauna of conservation significance

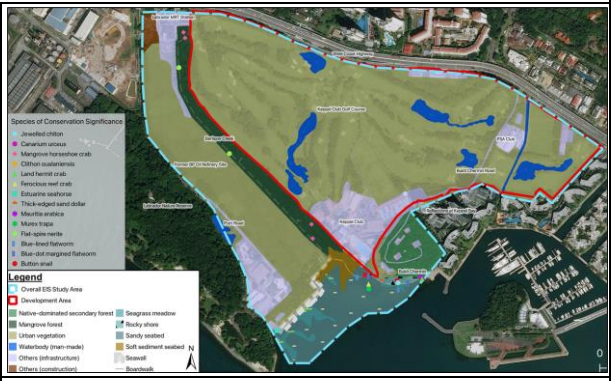
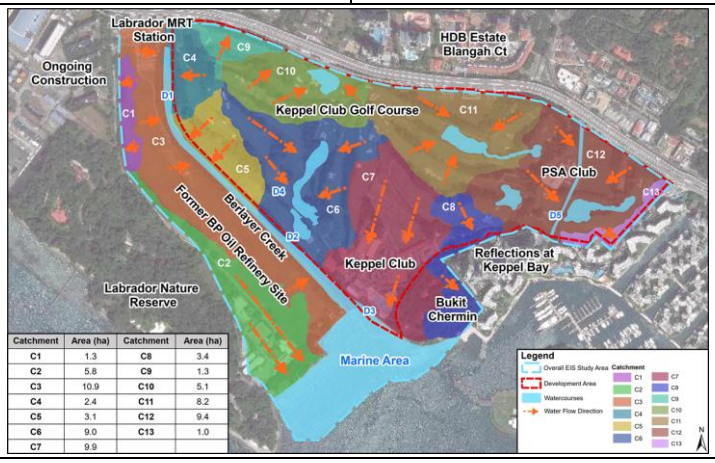


Figure 1-4 Distribution of marine fauna of conservation significance



Catchment	Area (ha)	Catchment	Area (ha)
C1	1.3	C8	3.4
C2	5.8	C9	1.3
C3	10.9	C10	5.1
C4	2.4	C11	8.2
C5	3.1	C12	9.4
C6	9.0	C13	1.0
C7	9.9		

Figure 1-5 Catchment map with watercourses

- **Habitats and Vegetation Distribution** (see Figure 1-2) – Study Area consists of ten (10) different terrestrial and marine habitats and vegetation types. Majority of the site consists of terrestrial habitats, which include urban vegetation (52.1 ha; 66.9%), native-dominated secondary forest (coastal) (2.2 ha; 2.9%) and mangrove forest (4.0 ha; 5.2%). Fresh waterbodies consist of 2.9 ha (3.6%), which are all man-made. Marine habitats

consist of sandy seabed (4.6 ha; 6.0%), seagrass meadows (0.8 ha; 1.0%), rocky shore (0.3 ha; 0.4%) and soft-sediment seabed (0.7 ha; 0.9%). The final marine habitat type within the Study Area is the man-made seawall at only 0.3 ha (0.4%). The remaining areas includes two non-vegetated sites where infrastructure (9.5 ha; 12.2%) and an active construction site are located.

- **Biodiversity, Flora, Large Plant Specimens and Other Specimens of Value** (see Figure 1-2) – More than 390 species of plants were recorded. A total of 36 plant species are of conservation significance, which includes the three threatened seagrass species (i.e. *Halophila ovalis, Halodule* sp. and *Enhalus acoroides*) recorded in the Marine Area. Of the total plant species recorded, 152 large plant specimens (trees with girth >3m) were recorded, with the majority of these specimens (103; 67.8%) recorded within the Keppel Club golf course; such large specimens can provide valuable habitats and food sources to fauna. One heritage tree (*Tamarindus indica*) was recorded at Keppel Club golf course.
- **Biodiversity, Fauna** (see Figure 1-3, Figure 1-4) – A total of 384 species were recorded (194 marine and 190 terrestrial), where birds dominated in the terrestrial environment with 93 species – of which 21 species are migratory – and molluscs in the marine environment (95 species). Of which, 27 species (12 marine and 15 terrestrial) are of conservation significance. No crustaceans were recorded within Keppel Club golf course.
- **Hydrological and Hydrodynamic Conditions** (see Figure 1-5) – Thirteen (13) water catchment areas within the Study Area contribute to the freshwater ponds within the Keppel Club golf course, concrete drain D5 in the east of Study Area, Berlayer Creek, the Marine Area and roadside drains located on the left perimeter of Former BP Oil Refinery. The runoff collected by Berlayer Creek D1, concrete culverts D2 and D3, man-made pond D4 within Keppel Club golf course and concrete drain D5 eventually ends up in the Marine Area near the mouth of Berlayer Creek. The Marine Area is a mixing zone of freshwater, brackish water and sea water. Berlayer Creek has slow perennial flow during dry and wet weather. Its flow pattern (i.e. flow direction, flow rate and water level) is significantly influenced by the tidal flow. Manmade pond D4 was almost stagnant and was equipped with an aeration system. Concrete Drain D5 receives runoff from residential area north of Study Area and has a slow perennial flow during both dry and wet weather. The flow direction and water level in the Marine Area (i.e. near the mouth of the Berlayer Creek and near Labrador Nature Reserve) was largely dependent on the flood and ebb tides during spring and neap tidal periods.
- **Surface Water Quality** – Ten (10) sampling stations were identified for the Study Area. The surface water quality at the Berlayer Creek and concrete drain D5 had high levels of turbidity, total suspended solids (TSS), nutrients (nitrogen and phosphorus compounds) and enterococcus during wet weather. Elevated levels of these abovementioned parameters were likely also due to runoff discharged from the urbanised area outside of the Study Area, as well as due to fertiliser used for the trees and golf course lawns. The ponds within Keppel Club also were found to have high total organic carbon during wet weather, likely due to contributions from runoff from the surrounding turf soils. The water quality in these inland ponds were noted to have exceeded the respective parameters of NEA Trade Effluent Discharge Limits, ASEAN Marine Water Quality Criteria and international criteria for aquatic life for certain parameters, which indicates that the watercourses may have conditions that are less favourable for aquatic life.
- **Soil Quality** – Sixteen (16) soil samples were collected from seven (7) boreholes. The soil profile generally consisted of silty clay, and all detected parameters were noted to be below their respective Dutch Intervention Values (DIV). The source(s) of detected parameters above their respective limits of reporting could not be conclusively ascertained. Presence of metals, PAHs and TPHs is a common occurrence in urban soils that are exposed to anthropogenic activities. Furthermore, certain parameters, such as metals, are also naturally occurring elements in the environment and their presence in soil might be due to soil weathering process. As the detected parameters are below their respective DIVs, it is assessed that they do not pose unacceptable risk to sensitive receptors. In previously carried out study within Former BP Oil Refinery, arsenic and pesticides exceeded their respective DIVs. Such exceedances were not detected in this EIS.
- **Hydrogeological conditions** – The average stabilized groundwater level (SWL) ranged from 0.50 m reduced level (mRL) (i.e. 2.196 m bgs) to 5.39 mRL (i.e. 1.94 m bgs), with majority of the groundwater level in the seven wells show limited oscillations and variations over time. No significant difference between groundwater levels during low and high tide conditions was observed. Groundwater flow within Study Area follows the topography of the site and can be inferred to be flowing towards major waterbodies (i.e. Berlayer Creek and Marine Area).
- **Groundwater Quality** – Seven (7) groundwater samples were collected weekly. Metals were detected from these samples, whose concentrations were noted to be below their respective DIVs and Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZGFMWQ) for freshwater (95% level of protection), except for the exceedance of concentrations of cadmium, chromium, copper and zinc in various

wells across the site. Although these values have exceeded ANZGFMWQ, none of the ecological receptors are currently known or reported to be affected by the detected concentrations. Previously carried our study within Former BP Oil Refinery showed exceedances of barium, pesticides, zinc and mineral oil above their respective DIVs. No such exceedances were detected in this EIS.

- **Air Quality** – Primary baseline air quality monitoring was conducted at one (1) representative location. All measured pollutant concentrations at A1 were well below the Singapore Ambient Air Quality Long Term Targets for both PM_{10} and $PM_{2.5}$.

- **Airborne Noise** – Baseline monitoring was carried out at four (4) locations within the Study Area. Baseline noise levels of most monitoring locations near the proposed construction worksites/ Study Area (i.e. locations N1, N2 and N4) were well within the maximum permissible noise limits established by NEA. This was due to low environmental noise contributed from human visitors to the sites such as Berlayer Creek as well as low road traffic along Bukit Chermin Road. While for N3, noise levels were considerably higher than other monitoring locations and had exceeded the most stringent noise limit established by NEA for noise sensitive buildings due to the existing noisy conditions dominated by road traffic from West Coast Highway and Telok Blangah Road.

Impact Assessment Methodology

Sections 7, 8, 9, 10 and 11 of the EIS report discuss the methodologies used for impact identification, prediction and assessment on environmental parameters including biodiversity, hydrology, water quality, soil and groundwater, air quality and airborne noise during the construction and operational phases of the development.

Key Mitigation Measures

Table 1-1 summarises the key mitigation measures that have been developed to minimise the adverse impacts throughout the course of the Project. More details can be found in Sections 7, 8, 9, 10 and 11 of the report.

Table 1-1 Summary of key mitigation measures and best management practices

Environmental Parameter	Recommended Key Mitigation Measures and Best Management Practices	
	During Pre-construction & Construction Phase	During Operational Phase
Biodiversity	• The future development should, preferably, avoid areas with high value habitats. • The proposed 30 m buffer to Berlayer Creek and areas of high conservation value should be observed at all times. • Enhance ecological connectivity through the provision of ecological corridors as outlined in Figure 1-6. • Minimise felling trees and clearing vegetation during the peak bird breeding season (March to July). • Wildlife shepherding via directional clearing should be adopted. • Pre-felling fauna inspection should be conducted before felling any trees or removing any vegetation.	• Forest species composition in planting scheme should be as similar to adjacent forest patches and include as many native species as possible. • Regular site inspections in the initial phase (first 12 months) to ensure proposed mitigating measures are effective.
Hydrology, Hydrodynamic and Water Quality	• For any construction activities that may alter the alignment of or block drains, appropriate measures such as watercourse diversion should be carried out to avoid localised flooding. The design should follow PUB Code of Practice on Surface Water Drainage, and the diverted flow shall be treated to meet NEA Trade Effluent Discharge Limits prior to discharge. • Provide silt curtains at each of the main outlets which discharges flow from the proposed construction sites into the surrounding watercourses.	• Provide ABC Waters Design features within the development (wetland, bioretention swales, rain garden, etc.) or more softscape areas and pervious areas within the development to increase seepage of surface water into the soil to reduce peak flow and flooding risks within the development. • To create green areas around watercourses to buffer against the edge effect of future development. • To design protection structures at proposed stormwater outlets discharging from the development to Berlayer Creek to minimise local scouring at mangrove area along Berlayer Creek.

Environmental Parameter	Recommended Key Mitigation Measures and Best Management Practices	
	During Pre-construction & Construction Phase	During Operational Phase
Soil and Groundwater	• Install piezometers to monitor the changes in groundwater level in compliance with Building Control Regulations 2003 as part of its instrumentation and monitoring plan to be endorsed by the Qualified Professional; and • Conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site.	• Incorporate more pervious surfaces in the development plan; • Installation of recharge wells, if necessary; • Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land; and • Conduct regular inspections on waste storage system within the Project to prevent system's clogging and leachate entering the underlying soil and/or surrounding watercourses, if any.
Air Quality	• Implement dust control measures e.g. dust screens, equipment with dust suppression etc. • Install hard surfaced haul routes. • Impose and signpost maximum speed-limit of 25km/hr on paved roads and 15 km/hr on unpaved roads and work areas. • Closed turfing to the exposed areas where possible and maintain proper storage of soil stockpiles.	No mitigation measures to be proposed as the predicted increase in air quality pollutant levels is likely to be insignificant, due to: • Current large traffic volume along existing roads, and thus, any increase in traffic due to the development will not lead to a significant change in air quality. • Continued implementation of increasingly stringent Euro emission standards on new vehicles.
Airborne Noise	• Use equipment with lower noise levels; • Access routes should avoid facing receptors; • Staggered building heights should be considered to reduce duration of noisy activities near receptors; and • Noise barriers should be erected along boundary of worksites facing noise sensitive receptors (where necessary).	• Utilize noise attenuators and other Best Available Technology (BAT) and Best Environmental Practice (BEP) to mitigate potential noise from air conditioning and mechanical ventilation (ACMV) systems; • Utilize low speed postings, speed humps, speed limit signages at drop-off points and parking areas to mitigate noise from increased road traffic; and • Consider alternative siting of roads away from areas with noise sensitive receptors.



Figure 1-6 Conceptual Connectivity Plan

The Conceptual Connectivity Plan of the Project Site (Figure 1-6) has undergone rounds of revision as per discussion and feedback from the Nature Group representatives and other Technical Agencies during Nature Group Engagements. It has been further adjusted to minimize potential environmental impact. This Plan considers the proposed mitigation measures and proposed ecological connectivity with the surrounding habitats at Labrador Nature Reserve, Bukit Chermin and the Southern Ridges for birds and potentially small mammals.

This includes:

1. An ecological corridor along Berlayer Creek (herein referred to as Berlayer Corridor). Once densely planted, this will also serve as a transition layer that will help to buffer the high value habitat from an expected increase in light and noise from the proposed development.
2. An ecological corridor across the middle of the development (herein referred to as Central Green Corridor). Located at the 'valley' of the site, this provides opportunities for habitat creation, with potential to incorporate waterbodies. For example, this could allow transition of habitats from mangroves (at the intersection with Berlayer Creek) to back mangroves to freshwater habitat further inland.
3. An ecological corridor on the east aligned to the planned Nature Way along Henderson Road (herein referred to as Henderson Road Corridor).
4. A northern green corridor is proposed along West Coast Highway to further enhance connectivity between the three ecological corridors.

Further details and additional functions of these corridors are provided in Section 7.10.1.3.

Summary of Impact Assessment

With the implementation of mitigation measures, the overview of impact evaluation for both construction and operational phases are summarised in Table 1-2.

Table 1-2 Summary of Impact Significance for Construction and Operational Phases (Range if applicable)

Environmental Parameter	Impact Significance (with minimum controls/best practices)	Residual Impact Significance (with mitigation measures)
Biodiversity	Negligible to Major	Negligible to Major[1]
Hydrology and Surface Water Quality	Minor to Moderate	Positive to (Negative) Minor
Hydrodynamic Conditions and Marine Water Quality	No Impact to Minor	No further mitigation measures are required, since unmitigated impacts are deemed to be minor.
Soil and Groundwater	Negligible to Minor	No further mitigation measures are required, since unmitigated impacts are deemed to be minor.
Air Quality	Major	Minor
Airborne Noise • **Ecological Receptors** • **Human Receptors**	 • Minor to Major • Minor to Major	 • Negligible to Moderate • Negligible to Major[2]

Note:

(1) Mitigated impact significance to Biodiversity due to the loss of vegetation remains "Major" even though the Keppel Club golf course is not of the highest conservation value. This is because the vegetation of the golf course is presently being used by a range of fauna species. The removal of the green areas will likely result in permanent loss of habitats and fauna displacement. If there are no deliberate attempts to replace the greenery lost here with establishment of an equal value habitat off site, cumulative impairment will occur. As such, the EIS report has recommended safeguarding four green corridors through the site to maintain and enhance the ecological connectivity between Labrador Nature Reserve and Southern Ridges and facilitate habitat creation within the site.

(2) Due to the height of the human receptors along Bukit Chermin Road, noise barriers of up to 12 m height will not be able to eliminate the direct line-of-sight that the receptors will have of the worksite, particularly for residences staying on higher floors. Nonetheless, mitigation measures can be put in place before works begin, to minimise the noise, dust and air pollution during the construction period. For example, the noise level of various construction works is regulated by NEA and is controlled at stipulated levels during different periods of the day.

A set of Environmental Monitoring and Management Plan (EMMP) has also been developed for each environmental parameter, which will be updated and implemented during construction and operational phases, to ensure the effectiveness of the proposed mitigation measures. The EMMP is described in Section 12 of the EIS report.

2 Introduction

AECOM Singapore Pte Ltd was appointed by Urban Redevelopment Authority (URA), through the Letter of Acceptance dated 29 October 2020, to carry out the *Environmental Impact Study (EIS) for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site* (Contract No: URA/T/20/001). This study shall be carried out to establish the current environmental baseline and to assess the potential environmental impacts arising from, and associated with, the construction and operational phases of proposed residential developments in the Study Area (hereafter referred to as the "Project").

The Study Area occupies approximately 77.8 hectares (ha) and is located southwest of mainland Singapore. The Keppel Club's golf course occupies majority of the site, while the Club's buildings and facilities are mostly located in the southern end of the site (e.g. administration building, pool annex, restaurants, tennis courts, maintenance buildings, etc.). Additionally, the Port of Singapore Authority (PSA) Club's building is located in the east of the site. Besides the beforementioned urbanized areas, Berlayer Creek, Bukit Chermin as well as Marine Area are also located within the Study Area. The Former BP Oil Refinery Site spans across the western edge of the site and is currently mostly covered in low vegetation. Ecologically, the Study Area complements the surrounding areas of high ecological value, namely the Southern Ridges which comprises of Telok Blangah Hill Park, Mount Faber Park, Kent Ridge Park and Labrador Nature Reserve [P-1]. As such, this Study Area has an important role in ecological connectivity as well as in providing habitats for birds, despite the majority of the land use comprises of a golf course which is typically thought to only supports low and common biodiversity. Furthermore, the mangrove forests found along the banks of Berlayer Creek are one of the two remaining mangrove habitats in the south of mainland Singapore, thereby further highlighting the ecological importance of this site.

Findings of the environmental baseline studies as well as the predicted environmental impacts resulting from this Project have been included in this EIS Report. This section will serve as a brief introduction of this EIS Report in terms of the scope of EIS, report structure as well as study limitations, assumptions and constraints.

2.1 Scope of Work

Prior to the commission of EIS, authority consultation was undertaken by URA through the submission of Form A to the relevant agencies (i.e. MPA, SFA, NEA, NParks, URA/ MND) with their replies received in Form B. The scope of EIS was documented in the form of Inception Report Rev 01 [R-40] submitted to URA and HDB on 5 February 2021. This EIS progressed only after acceptance of the Inception Report by URA and HDB.

The services under this EIS shall include, but are not limited to the following:

- Field survey including topography survey, floral survey, faunal survey, hydrological, soil and groundwater, surface water quality survey, air quality monitoring and noise monitoring;
- Formulation of biodiversity inventory and distribution maps;
- Environmental Impact Study;
- Mitigation measures and EMMP; and
- Preparation of the EIS Report.

This EIS has assessed the development plan, design elements, construction methodology, project components, and operational activities available at the time of writing. Understanding of the project construction methods and operational activities has been clearly stated in Section 3.3 and Section 3.4 respectively. Detailed assumptions, if any, are described in individual assessment sections thereafter. Should the detailed design conducted at a later stage require modifications to these assumptions/approaches, a revised impact assessment shall be undertaken by developer/developing agent to address these changes.

2.2 Report Structure

The structure of the Report is as follows:

- **Section 1** – **Executive Summary** of the Project provides summarised baseline findings as well as EIS findings;
- **Section 2** – **Introduction** of the Project provides detailed scope, report structure, study limitations, assumptions and constraints;
- **Section 3** – **Project Overview** provides a general description of the Project components, construction activities, operational activities, schedule, project resources, waste and emissions expected from the Project;
- **Section 4** – **Description of the Environment** provides a general description of the site setting, land use, historical features, topography, geology, water catchment and climate of the Project;
- **Section 5 – Environment Legislation, Policies, Plans, Standards and Criteria** provides the legislative requirements relevant to the Project;
- **Section 6 – EIS Approach and Methodology** provides the overview of the methodology used for the assessment;
- **Section 7 – Biodiversity** presents the methodology, baseline environment, sensitive receptors, and potential sources of impacts, minimum controls and evaluation of impacts to biodiversity within the Study Area, along with recommendations for mitigation measures;
- **Section 8 – Hydrology, Hydrodynamic and Water Quality** presents the methodology, baseline environment, sensitive receptors, potential sources of impacts, minimum controls and evaluation of impacts to hydrology and surface water quality within the Study Area, along with recommendations for mitigation measures;
- **Section 9 – Soil and Groundwater** presents the methodology, sensitive receptors, potential sources of impacts, minimum controls and evaluation of impacts from construction and operational activities to soil and hydrogeological conditions of the Study Area, and also to ascertain the presence of possible pollutants in the underlying soil and groundwater that may impact the local vegetation and downstream waterbodies, along with recommendations for mitigation measures;
- **Section 10 – Air Quality** presents the methodology, baseline environment, sensitive receptors, potential sources of impacts, minimum controls and evaluation of impacts from the Project to air quality on the ecologically sensitive sites within the Study Area, along with recommendations for mitigation measures;
- **Section 11 – Airborne Noise** presents the methodology, baseline environment, sensitive receptors, potential sources of impacts, minimum controls and evaluation of noise impacts on the ecologically sensitive sites within the Study Area, along with recommendations for mitigation measures;
- **Section 12 – Environmental Monitoring and Management Program** (EMMP) details the organisational framework, stakeholder roles and responsibilities, monitoring program requirements and detailed EMMP; and
- **Section 13 – Conclusion** provides a conclusive summary of the EIS's outcomes.

2.3 Study Limitations, Assumptions and Constraints

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3 Project Overview

This section will provide a background overview of the Project in terms of its location, current land uses, conceptual development plan, proposed construction activities and operational activities.

3.1 Project Location

The proposed Study Area for this EIS is estimated to be approximately 77.8 ha and is located in the southwest of mainland Singapore. The site comprises of existing Keppel Club (e.g. buildings, facilities, golf course), PSA Club, Bukit Chermin, Berlayer Creek, Labrador Park MRT station and the Former BP Oil Refinery site, which is bounded by Telok Blangah Road, Port Road, Keppel Bay View and residential complexes of Reflections at Keppel Bay as shown in Figure 3-1. The Study Area is currently located on undulating terrain with ecologically sensitive areas, complementing the surrounding rich and diverse green assets of the Southern Ridges— Telok Blangah Hill Park, Mount Faber Park, Kent Ridge Park and Labrador Nature Reserve. These neighbouring Ridges are listed as Nature Areas, and are covered with forest that are well-known havens for birdlife [P-1]. Unlike the usual impressions of golf course only supporting low and common biodiversity, the Keppel Club situated within the Study Area plays an important role in ecological connectivity and is an important habitat for birds [P-1]. Berlayer Creek, also situated within the Study Area, is a tidally-influenced natural waterbody, and it supports one of the two mangroves in the south of mainland Singapore [W-45]—providing a repository and dispersal site for mangrove seeds to other co-dependent mangrove sites within Singapore. Berlayer Creek provides significant habitat such as mangroves, rocky shore and mudflats that support a diversity of flora and fauna in a large habitat network.

The Development Area considered for this Project comprises of mainly the Keppel Club and PSA Club (refer to Figure 3-1).



Legend

- Overall EIS Study Area
- Development Area

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement: NA :

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Location of the EIS Study Area and Development Area

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn: SAG	Date: APR 2022

Figure No. : **3 - 1** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

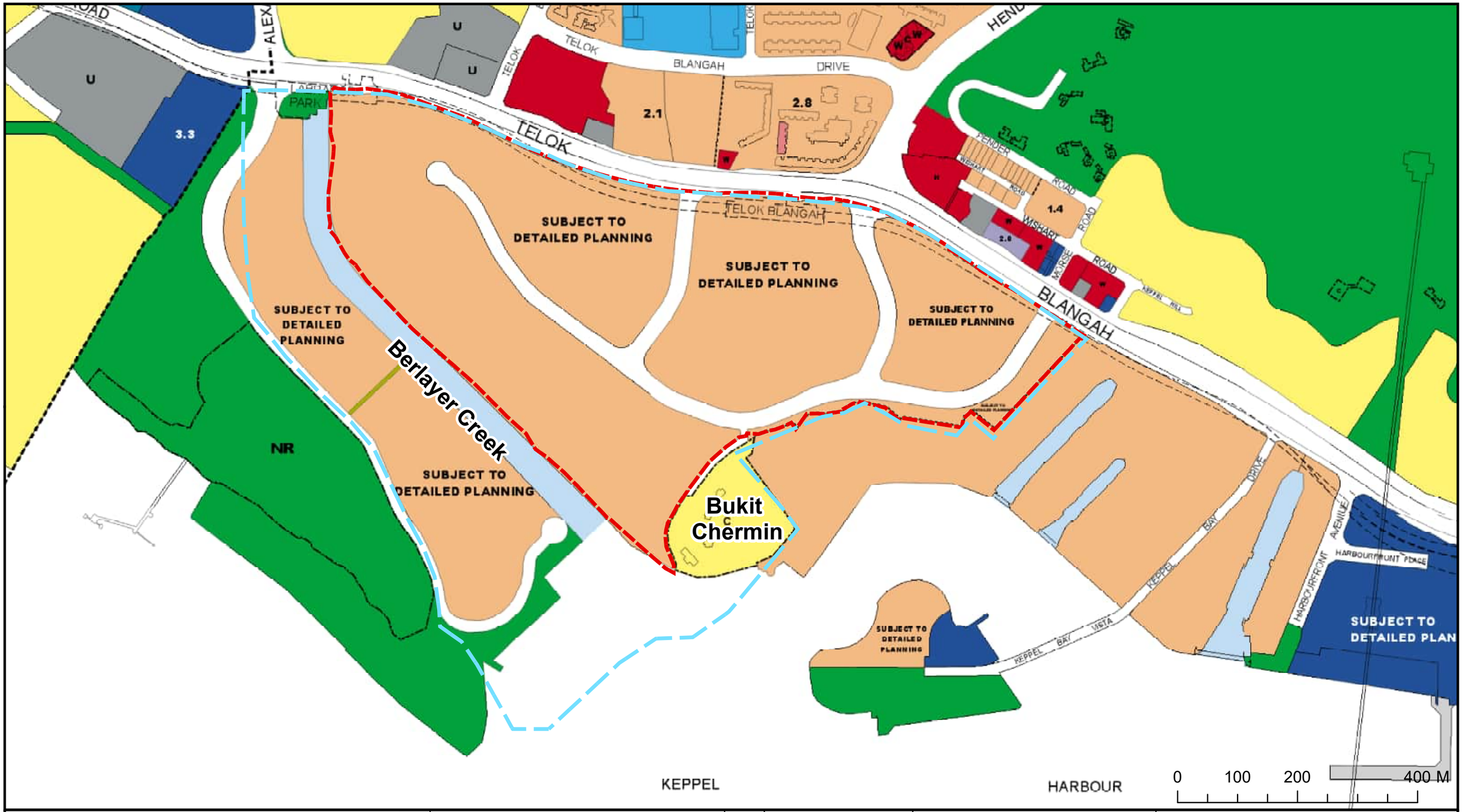
Note: Source of basemap - Google Earth Map

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3.2 Project Description

Under statutory land use plan (Master Plan 2019, [M-2]) of URA, the land parcels of the Study Area are categorised as “Residential (Subject to Detailed Planning)”, “Park”, “Waterbody”, “Reserve Site” and “Road” as shown in Figure 3-2. Existing Keppel Club and its surrounding facilities are planned to be redeveloped into “Residential” areas, while the PSA Club and Former BP Oil Refinery Site are zoned “Residential (Subject to Detailed Planning)” in the gazetted Master Plan 2019. Agencies are still reviewing future plans for the sites and will take into consideration the outcomes of the EIS. Berlayer Creek will be retained as a “Waterbody”, a zone which is defined as area used or intended for drainage purposes and for water areas such as reservoirs, ponds, rivers and other water channels. Other zones, such as “Park” and “Reserve Site” will be located in north-west (i.e. around Labrador Park MRT) and south-east (i.e. Bukit Chermin) parts of the Study Area, respectively.

Based on the preliminary land use plan provided to AECOM by HDB on December 21, 2020 and July 12, 2021, the future housing development will be developed with supporting infrastructures and amenities (i.e. a dual-2 road, parks & open spaces, etc.). The future housing developments will range from high-rise (i.e. up to approx. 50 stories) near the MRT stations, stepping down to low rise (i.e. from 6 stories) towards parks and waterbodies. Low and mid-rise housing will mostly be located on the outskirts of the high-rise developments, as a transition from high rise developments to the proposed parks and other open spaces. These open spaces will most likely include waterbodies in the central part of the site. The future dual-2 road is proposed to pass through the site, connecting western and eastern parts of the site, as well as connecting the site to Telok Blangah/ West Coast Highway. Bukit Chermin Hill is zoned “Reserve Site” in the gazetted Master Plan 2019 and the existing ‘black & white’ bungalows have been gazetted for conservation. Agencies are still reviewing the future plans for this site and will take into consideration the outcomes of this EIS. Berlayer Creek will also remain due to its ecological importance, and will be enhanced with a proposed linear park along its eastern bank. For the purpose of this Study, Former BP Oil Refinery site will be assessed in its current condition, as agreed by URA and HDB, with the assumption that no near-term developments will be carried out.



Legend

- Overall EIS Study Area
- Development Area

Residential	Civic & Community Institution	Conservation Area	Mass Rapid Transit
Educational Institution	Health & Medical Care	Road	Maximum Permissible Plot Ratio
Utility	Place of Worship	Nature Reserve	
Waterbody	Residential with Commercial at 1st Storey		
Commercial & Residential	Sports & Recreation		
Commercial	Park		
Hotel	Special Use		
Business 1	Open Space		
Business 2	Cemetery		
	Reserve Site		

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB& URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Current land use zoning of the EIS Study Area and its surrounding

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn: SAG	Date: APR 2022

Figure No. :	Rev.	Sheet
3 - 2	-	1 of 1

CAD File Name : NA | A3

Note: Source of basemap - URA Master Plan 2019

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3.3 Proposed Activities During Construction Phase

At this stage of Report writing, limited information is available regarding the construction activities planned during the development of the proposed Project. The future activities that are expected to occur during the construction phase of the Project are further categorized into pre-construction activities and construction activities.

Pre-construction activities will take place in the initial stage of the Project. The main objective of these activities is to prepare the construction site so that the main construction activities (e.g. foundation works, superstructure works, etc.) can be carried out. These activities will entail site clearance (i.e. demolition of existing buildings/structures and removal of resulting debris, removal of existing trees and vegetation) and earthworks (e.g. soil excavation and filling within the site to achieve desirable platform levels, utilities diversion, etc.). Furthermore, access roads and other required infrastructure for construction work machinery will be established within the site as part of pre-construction activities. It should be noted that activities such as site surveying, utilities surveying, and other site investigations (e.g. geotechnical investigations) are commonly carried out as a part of pre-construction activities. However, at the time of writing this report no information was available regarding these activities. Based on the AECOM's professional experience on similar projects, such activities are unlikely to have negative impacts on the surrounding environment.

The construction activities will entail civil engineering activities such as foundation works, superstructure works, utilities/services laying, landscaping works and habitat creation. Furthermore, before the site becomes operational, temporary structures and facilities will be removed. Pre-construction and construction activities will not be carried out at Bukit Chermin Hill. Furthermore, the proposed developments at Former BP Oil Refinery site are not expected to start by the time future residential development at the existing Keppel Club becomes fully operational.

A tentative schedule of construction phase is presented in a form of chart in Figure 3-3, and also summarized in the form of table, as shown below.

Table 3-1 Typical Project construction activities and tentative timeline for each of the activities

Pre-Construction and Construction Activity	Related Activities	Construction Machinery and Equipment	Timeline
Pre-Construction Activities			
Site Clearance & Preliminary Works	• Delivery of steel plates, scaffoldings and hoarding boards for safety nets and dust control curtains; • Surveying and Soil Investigation work • Demolition of existing structures and accompanying infrastructure within the Study Area which are not intended to be retained; • Hacking of minor and major structures; • Removal of abandon steel elements, debris (e.g. damaged windows, frames, doors, internal & external building furnitures, etc); • Removal of foundation, spoils and debris; and • Removal of vegetation (e.g. trees, bushes, etc.)	• Soil Investigation Rigs • Lorry cranes; • Hand-held breakers; • Excavators; • Excavators mounted with breaker; and • Dump trucks	3Q 2022 to 2023
Earthworks	• Soil dewatering • Soil excavation, cut and fill;	• Temporary water Pumps;	4Q 2022 to 2026

Pre-Construction and Construction Activity	Related Activities	Construction Machinery and Equipment	Timeline
	• Site levelling to obtain planned platform levels; • Soil excavation for foundations (i.e. excavation of soil to depth at which the foundations of the future structures will be placed); • Utilities diversion; • Construction of access roads and other infrastructure required for construction activities	• Excavators; • Lorries; • Generators; • Concrete vibrators; and • Air compressor	
Construction Activities			
Foundation Works	• Delivery and erection of construction machinery (i.e. crawler crane for lifting operations and boring rig for soil drilling); • Soil dewatering; • Installation of bore casings; • Soil boring work; • Installation of rebar cage and tremie pipe; • Concreting works – construction of piles and pile caps; • Pile head hacking/removal; • Delivery of steel sections; • Hot works – welding of steel beams, brackets, etc.; • Stage excavation; • Hoisting of walers and struts; • Stage excavation with walers and struts; and • Spoil and slurry removal	• Temporary water pump; • Mobile crane; • Crawler cranes; • Bore pilling machine; • Ready-mix concrete truck • Breakers • Welding equipment • Trailers • Excavators (with and without lifting appliance); • Mini Excavators; and • Dump trucks	3Q 2025 to 2026 (10 months)
Superstructure Works (Prefab Installation)	• Soil dewatering (i.e. groundwater extraction and pumping of rainwater); • Establishment of power supply (e.g. for lighting, pumps, temporary ventilation fans); • Excavation below ground surface (e.g. for working platform, for preparing of lean concrete); • Spoil removal; • Formwork construction and cleaning before casting; • Rebar handling and positioning; • Hoisting of falsework; • Casting of concrete; • Scaffolding; and • Finishing works (e.g. plastering, waterproofing, tiling, etc.)	• Temporary water pumps; • Generators; • Excavators; • Mini excavators; • Cranes • Mobile crane; • Air compressor; • Dump trucks • Ready-mix concrete truck; and • Concrete pump	2Q 2026 to 2029 (40 months/ 3 years and 4 months)

Pre-Construction and Construction Activity	Related Activities	Construction Machinery and Equipment	Timeline
Landscape Works	• General landscaping activities • Construction of landscape amenities/ constructions (e.g. gazebos, pathways)	• Generators • Excavators mounted sheet pile vibrator; • Mobile cranes; and • Welding and cutting equipment	1Q 2028 to 2029 (20 months/ 1 year and 8 months)
Removal of Temporary Structures and Reinstatement	• Removal of Earth Retaining and Stabilising Structures (ERSS) • Reinstatement of the area to original (or required) condition	• Generators • Excavators mounted sheet pile vibrator; • Mobile cranes; • Welding and cutting equipment; and • Trucks	4Q 2028 to 2029 (10 months)

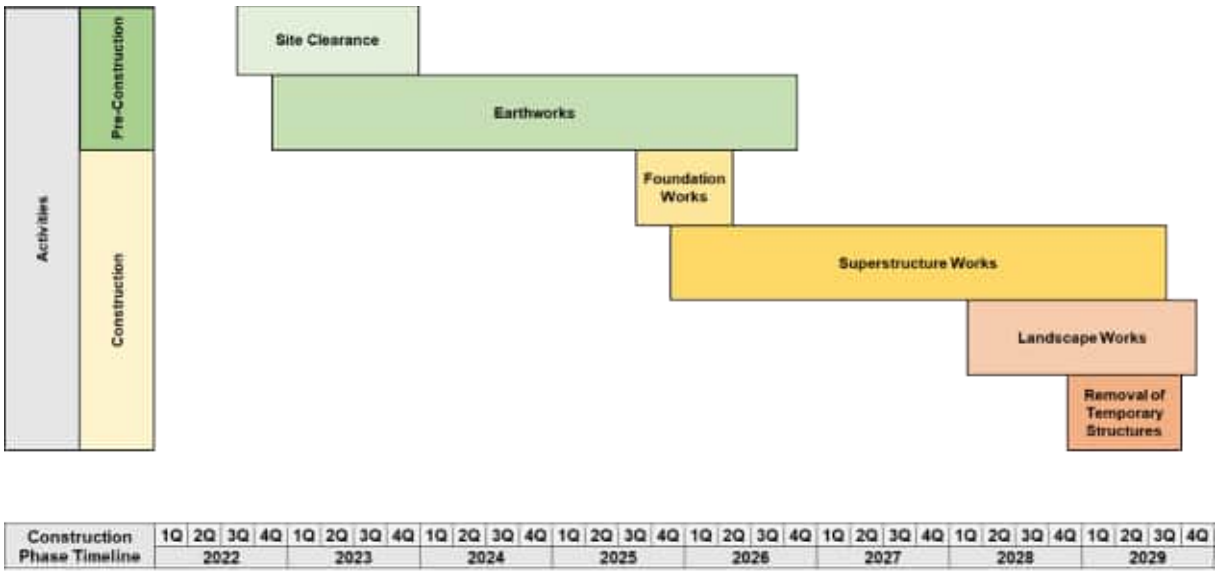


Figure 3-3 Project's construction phase schedule timeline

The detailed description of each of the identified activities during the construction phase of the Project is provided in the following sub-sections.

3.3.1 Pre-Construction Activities

Pre-construction activities will be carried out in the initial stage of the Project and their goal is to prepare the site for the main construction works (e.g. foundation works, superstructure construction, etc.). During the site clearance, buildings, facilities and infrastructure within the Study Area that are not intended to be preserved will be demolished and resulting debris will be removed. Following this, earthworks including soil excavation, utility diversion and ground levelling will be carried out.

3.3.1.1 Site Clearance

Site clearance is the first activity to be carried out as a part of site preparation for construction works. It involves the demolition of buildings, facilities and infrastructure currently present on the site, as well as removal of vegetation and topsoil.

Demolition of larger buildings present on the site such as administration buildings, restaurants, multi-storey carpark and maintenance buildings located in the south, as well as PSA Club building in the east, is done by excavators mounted with breakers. Hacking of smaller structures can be done with hand-held breakers. Explosives will not to be used for demolition purposes. Removal of trees, shrubs and other vegetation from the site is also planned to be carried out due to the proposed land use change at the majority of Keppel Club. Solid waste generated from demolition activities is collected and removed from the site by dump trucks and lorry cranes. Site clearance works generally generate substantial amount of waste, besides dust and noise in their activities. Potential environmental impacts arising from site clearance have been assessed in the relevant sections of this Report.

3.3.1.2 Earthworks

Following the demolition of existing PSA Club & Keppel Club's buildings and facilities and removal of existing vegetation, earthworks will be carried out. This will include activities during which the soil will be excavated, transported, placed at the new location and compacted. The excess soil which is not used for filling will be permanently removed from the site.

Earthworks are planned to be carried out in three (3) phases (subjected to further review & changes):

- **Phase 1** – Earthworks within existing Keppel Club golf course west of the Bukit Chermin Road, with proposed access to the site from Telok Blangah Road/ West Coast Highway (in the north) and Bukit Chermin Road (in the east);
- **Phase 2** – Earthworks at the southern part of the Keppel Club, where Keppel Club's buildings and facilities are currently located. Site entrance during this phase is planned to be from southern reaches of Bukit Chermin Road, northwest of Bukit Chermin; and
- **Phase 3** – Earthworks east of the Bukit Chermin Road with proposed access to the site from Bukit Chermin Road in the proximity of Reflections at Keppel Bay.

3.3.1.2.1 Civil Engineering Earthworks

Civil engineering earthworks will be carried out prior to or concurrently with civil engineering works and they will include utilities diversion, foundation works (refer to Section 3.3.2.1), as well as construction of accompanying infrastructure (e.g. temporary and permanent roads, sewerage, etc.).

Existing utilities which are shallow and likely to cause impedance to excavation works will be diverted first, so that there is no disruption in usage of utilities to nearby receptors. If required, some of the utilities will be reinstated after the whole construction works are completed and the utilities need to be restored at the same place.

Temporary access will be constructed across the existing golf course at Keppel Club, with access points from Bukit Chermin Road and Telok Blangah Road. It will provide controlled and safe access to westmost parts of Keppel Club for vehicles carrying materials and equipment as well as for other machinery. Temporary roads are generally constructed from aggregate/soil which is placed on the required location and compacted.

3.3.1.2.2 Site Levelling

Currently, Keppel Club golf course occupies most of the site. Following the site clearance, demolition of existing structures and utility diversion, hilly golf course will be levelled for construction activities to start. This may involve cutting the areas of golf course where proposed platform levels are lower than existing terrain levels and filling and stabilising of slopes in areas which are currently lower than the proposed future platform levels. In this case geotechnical engineers will develop Earth Retaining Stabilisation Structures (ERSS) schemes to stabilise the exposed slopes in their engineering design. Environmental Control Officer (ECO) considers measures to prevent erosion of soil into the nearest watercourses (i.e. existing drainage canal in east, Berlayer Creek, etc.). This may or may not accompany ground improvement works depending on the nature of the soil in the area. One example of site levelling in a construction site is shown in Figure 3-4. Site levelling would involve large machineries such as excavator, lorry, concrete vibrator, grader, roller, etc.

The earthworks as described above may cause potential biodiversity impact due to reduced habitats and indirect impact from air, noise and water, potential surface water impact due to increased surface runoff and contaminants from construction activities, potential noise impact due to operation of machineries, as well as potential air quality impact due to dust emissions from hacking activities. These potential impacts have been assessed in the relevant sections of this Report.



Figure 3-4 An example of site levelling at construction worksite in Singapore (AECOM©)

3.3.2 Construction Activities

Once the site clearance and earthworks have been completed, construction activities are carried out through the foundation works, superstructure works, general landscaping works as well as reinstatement of the Study Area (including the removal of temporary structures).

3.3.2.1 Foundation Works

Once demolition works and site clearance are completed and temporary worksites are established, foundation works for substructures, including piles and pile caps lasting approximately 10 months will be carried out.

To begin the foundation piling process, erection of crawler crane and boring rig is required, and mobile crane may be used for lifting and transporting actions. After setting up the pile position, a temporary guide casing with an internal diameter same as pile diameter is installed using crawler crane to the pile centre of the marked position to prevent collapse of the surrounding soil. The temporary casing also serves as a guide in forming a uniform basis for the following boring works until the designed depth using a bored piling machine. This can be very intensive and generate noise and vibration. Thereafter, the reinforced bars (rebar) are installed using a crawler crane to enhance the strength of concrete pile, followed by the tremie pipe installation to better support the concreting works. The ready-mix concrete, transported by a concrete truck, is poured into the borehole using crawler crane. During circumstances when there is extra pile head after the completion of bored piling, pile head hacking is conducted using breaker and excavator.

To seal the pile foundation, a pile cap is necessary. For this, steel waler and struts are required to hold the temporary formworks to proceed with pile cap concreting. The steel is delivered with a 40-feet trailer where hot works (e.g. welding of steel beams, brackets, etc.) may be required with the usage of welding equipment. Hoisting of waler and struts is carried out using an excavator with lifting appliance.

3.3.2.2 Superstructure Works

Following the completion of foundation works, superstructures will be constructed for this Project. Firstly, generators provide the power supply on site for lighting, pumps and temporary ventilation fans operation. Before the installation of superstructures, temporary water pumps are positioned to pump the water from ground or collected rain in order to prevent it from affecting the quality of concrete. To form the working platform, excavation below surface is conducted using an excavator, followed by the formation of lean concrete as the first ground layer for waterproofing purposes. Crane is used for the spoil removal as well. To construct building until the designated height, temporary formwork is necessary at each level before casting, where air compressor will be used for cleaning. During this process, mobile crane is used to transport rebar and for the hoisting of falsework, formwork, scaffolding and the construction of temporary working platforms. A concrete truck is used to transport ready mix concrete to the site and concrete pump is used for the superstructure's concreting works.

The completion of superstructure is generally followed by finishing works, such as interior plastering, exterior plastering, waterproofing and tiling, mechanical/ electrical/ plumbing (MEP) rough-in an ceiling installation, painting, lift installation, exterior glass walls, windows and doors installation, as well as setting up building systems (i.e. electrical, plumbing, air-conditioning, etc.).



Figure 3-5 An example of superstructure construction works in Singapore (AECOM ©)

3.3.2.3 General Landscaping Works

Open spaces and parks with water features are proposed as part of future developments within the Study Area. They are envisioned to spread linearly around the future residential developments, bordering Telok Blangah Road / West Coast Highway in the north, future road within the Study Area in the east, and Berlayer Creek and Bukit Chermin in south and southeast, respectively. In order to maintain, enhance and present the proposed landscape and other visual amenities of the site to future users (i.e. future residents, general public) landscaping works will be conducted. Generators provide the power supply for lightning and running of machineries during landscaping

works. If needed, excavator and mobile crane will be used to remove patches of soil and relocate them or transport from the site. Welding and cutting equipment are commonly used to form landscape structures. The potential environmental impacts associated with the general landscaping works will be assessed and incorporated as a whole in the relevant sections of the Report.

3.3.2.4 Removal of Temporary Structures and Reinstatement of the Study Area

As the final step towards completion of construction activities, the developer and/or contractor shall remove all the temporary structures for the reinstatement of working area to its original condition and/or required conditions. A well-reinstated and stabilised land will also enhance the landscape and visual amenity values to create a better living environment for the public and residents of this Project development. Therefore, the potential environmental impacts associated with the removal of temporary structures and reinstatement of the Study Area will be assessed and incorporated as a whole in the relevant sections of the Report.

3.4 Proposed Activities During Operational Phase

Following the reinstatement period, human activity will increase as the development area becomes operational. The Study Area will see an associated increase in human activity such as traffic movement, lighting, and general activities.

During the operational stage, the vehicular traffic volume within the Study Area and its vicinity is predicted to increase when the proposed residential housing and its associated road network starts operating. Consequently, this may have adverse impacts on biodiversity, surface water and groundwater as well as potentially cause air pollution and noise nuisance in the vicinity of the development.

In addition, more impervious surfaces will be expected due to potential change of natural landscape to urbanised area. It might reduce stormwater infiltration into the ground and increase water runoff.

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4 Description of the Environment

This section will describe the historical land use, existing land use and environment, topographical condition, as well as geological and soil characteristics of the Project.

4.1 Historical Land Use

Prior to colonisation by the British in 1819, the primeval vegetation of Singapore comprised largely lowland dipterocarp forest, with freshwater swamp forest occurring inland, as well as mangrove forest fringing much of the coast [P-3]. During this period, the Study Area was covered by both lowland dipterocarp forest and mangrove forest, with the latter occupying a rather sizable area in and around Berlayer Creek [P-4]. The natural shoreline of the Study Area is likely to have been rocky shore, similar to the 300 m stretch of protected rocky shore at the Labrador Nature Reserve.

As far as possible, a chronological account of the changes in land use of the Study Area is provided below, with inferences drawn from historical resources (maps, sea charts and aerial photographs) contained within the NUS Libraries Historical Maps of Singapore (NUSLHMSG), unless otherwise mentioned.

The earliest map available on NUSLHMSG dates back to 1846 and reveals Berlayer Creek to have a meandering course flanked on both sides by mangrove forest that appears to have been left untouched since colonisation (Figure 4-1A). By this time, however, a considerable portion of lowland dipterocarp forest had already been cleared: a “detached House”, constructed at the summit of Bukit Chermin, overlooked a nutmeg plantation on its northern slope, while another considerably larger nutmeg plantation occupied about half of the area east of Berlayer Creek (Figure 4-1A). In the 1900s, four more bungalows were constructed on the slopes of Bukit Chermin [W-1]. In 1904, the then Keppel Golf Club (now the Keppel Club) was founded in the middle of the larger nutmeg plantation, undergoing several expansions over its 116-year history before attaining its present-day size of 44 ha [W-2].

By 1930, the course of Berlayer Creek had been straightened, involving the widespread clearance of primeval mangrove forest on its eastern bank, but likely leaving most of that on the western bank intact (Figure 4-1B). The latter, however, soon gave way to development, with the evidence of buildings by 1945. In 1949, the PSA Club was established [W-5]. While it is unclear whether it was sited at its present-day location from the beginning, the plot of land it occupies currently had been cleared by 1945. Aerial photographs from corroborate these changes, largely showing the absence of tree cover throughout the Study Area, except for what is likely to be managed vegetation (streetscape plantings, lawns and gardens), as well as spontaneous vegetation (a thin strip of trees that may be remnants of the original mangrove forest, more recent recruitment, or both, flanking both sides of Berlayer Creek) (Figure 4-1C).

Following the Japanese Occupation, from 1953, the area east of Berlayer Creek underwent further development. From 1953 to 1998, a school is marked out (originally denoted as a Malay school in the 1953 map) in the vicinity of the present-day Telok Blangah MRT Station, bounded by Telok Blangah Road and the present-day Keppel Club (Figure 4-1D). From 1966 to 1974, Kampong Heap Guan San (marked as “Heap Guan”), a Chinese village, is indicated on maps [W-6]. From 1966 to 1983, two mosques are also observed in the Study Area. From 1966, practice of sundry tree cultivation (i.e. existing patches of abandoned-land forest [P-5]) is indicated in several patches within the Study Area: three east of Berlayer Creek within the current premises of the Keppel Club, as well as the entirety of Bukit Chermin. In contrast, some of the later maps denote the vegetation of the entire area to be grass (e.g. 1987, 1998). However, given that the area east of Berlayer Creek was largely occupied by Keppel Club (that later expanded its premises to the entire site, save for a smaller plot where the PSA Club sits), it is more likely for the trees to have been retained rather than removed as they form an important component of landscaping in golf courses. In 1978 and 1982, the premises of the Keppel Club underwent two expansions [W-2]. From 1987 to date, the presence of several waterbodies within the golf range of Keppel Club is indicated; aside from softening the landscape, these may serve as additional habitats for fauna.

By 1959, the natural shoreline of the Study Area had been reclaimed [P-7]. Seawalls now stand in place of what was likely to have been rocky shore in the past, an ideal substrate for carrying out shore reclamation works as Singapore developed.

In 1962, the area west of Berlayer Creek was established as an oil refinery and was later sold to BP which continued operations till 1995 before returning the land to the government in 1998 (Ho, 2016 [P-19]). Viewed via Street View on Google Maps (updated May 2019), the area is seen to be largely covered by scrub, with a strip of trees parallel to Berlayer Creek. It is the only plot of land in the Study Area that remains undeveloped.

In summary, the land use of the Study Area has undergone significant changes over the years, from 1819 to 2020, with eventual widespread land conversion throughout. While remnants of the original lowland dipterocarp forest and mangrove forest may possibly have persisted till today in the form of individual trees, much of the Study Area comprises of managed vegetation—owing to the large area of land collectively used as a golf course by the Keppel Club, as well as sport courts and a playing field by the adjacent PSA Club. Within the Keppel Club, which has expanded its premises over the years, several instances of upgrading and remodelling works of the golf course and facilities [W-2] have led to the creation of habitats in the form of freshwater ponds, but yet are also likely to have resulted in the loss of tree cover (although some replanting efforts may have occurred). On the other hand, spontaneous vegetation covers the Former BP Oil Refinery site (largely scrubland), Bukit Chermin (secondary forest), and the banks of Berlayer Creek (mangrove forest). Opened in 2012, two segments of the Labrador Nature & Coastal Trail allow public access through the area: the Berlayer Creek mangrove trail that runs parallel to its banks, and the Bukit Chermin Boardwalk that extends outward along the coast [W-4]. At low tide, a sandflat is revealed at the mouth of Berlayer Creek, where additional habitats in the form of seagrass patches and slivers of rocky can be found [W-8].

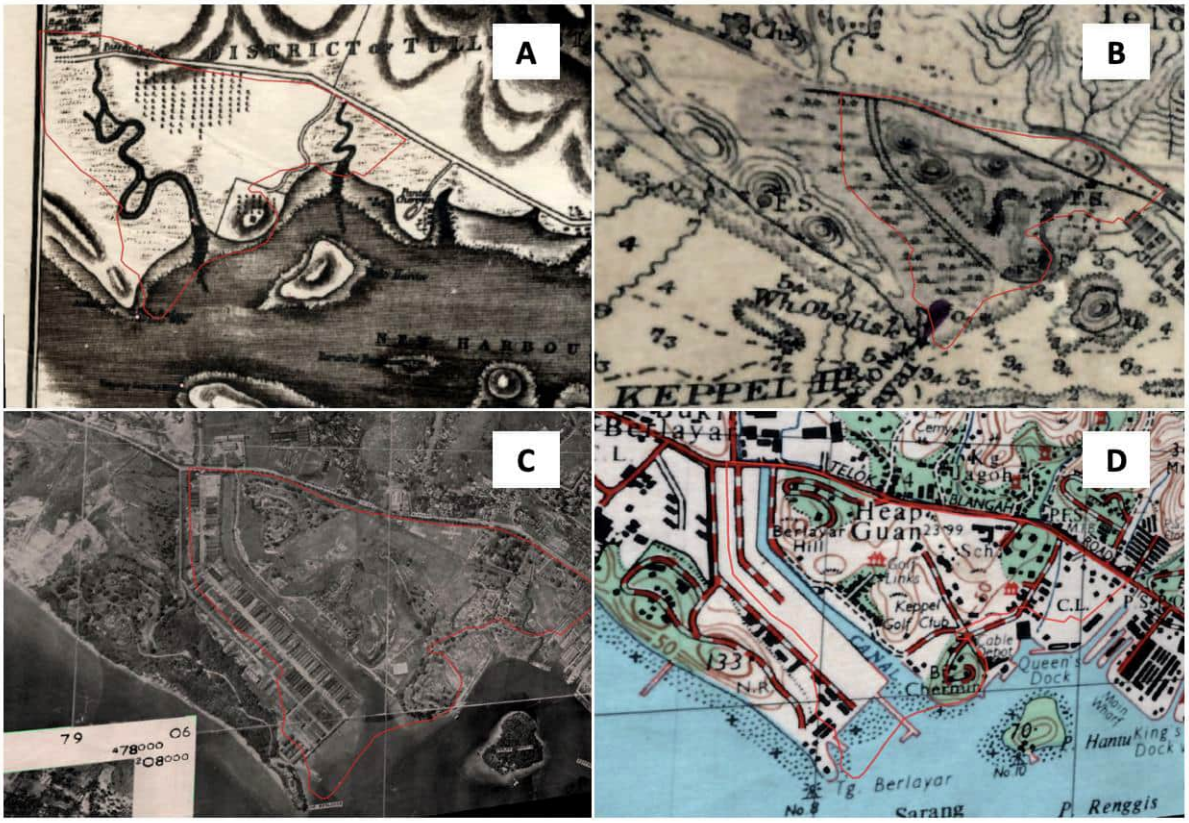


Figure 4-1 General reference map (a), sea chart (b), aerial photographs (c) and topographical map (d) of the Study Area, dated 1864 (a), 1930 (b), 1950 (c) and 1966 (d) [M-3]

4.2 Current Land Use

The Study Area is located in the southwest part of mainland Singapore. It is bounded by West Coast Highway/ Telok Blangah Road in the north, Keppel Bay View in the east, residential developments (i.e. Reflections at Keppel Bay) in the southeast, sea in the south and Labrador Villa Road and Port Road in the east. Majority of the site is currently under Keppel Club and its facilities such as golf courses, swimming pools, tennis courts, etc. The PSA

Club, Berlayer Creek and its boardwalk, Former BP Oil Refinery site, Bukit Chermin as well as Labrador Park MRT station are also located within the Study Area (refer to the Figure 3-1).

Keppel Club was founded in 1904 as Keppel Golf Club, named after Royal Navy officer, Sir Henry Keppel. Since then, Keppel Club has expanded in size and remains a popular destination for golf-enthusiasts. Most of the buildings and facilities, such as restaurants, badminton courts, gymnasium, swimming facilities, tennis courts and car parking are located in the southern portion of the site, next to Bukit Chermin and north of Bukit Chermin boardwalk. The rest of the Keppel Club area mostly comprises of hilly golf course covered in turf and with many water features (e.g. ponds, fountains) and greenery. Although typical golf courses usually support biodiversity of low conservation value, unique regional position of Keppel Club and its golf course makes this area very important in terms of biodiversity. Namely, the club is located in the proximity of important nature regions of Telok Blangah Hill Park, Mount Faber Park and Labrador Nature Reserve, complementing them and providing additional haven to surrounding wildlife.



Figure 4-2 (A) Main entrance to Keppel Club and (B) golf course overlooking Reflections at Keppel Bay

Berlayer Creek is also situated within the Study Area, located between Keppel Club and Former BP Oil Refinery. It runs south of Labrador Park MRT station and it discharges into the sea. It is a tidal-influenced natural waterbody and it is a very important biodiversity hotspot since it supports one of only two remaining mangroves in the south mainland Singapore, providing a repository and dispersal site for the mangrove seeds to other co-dependent mangrove sites in Singapore. Furthermore, it is an important habitat for very diverse local flora and fauna as well as a stepping stone for many species in larger habitat network. A boardwalk with three observation decks has been built along the creek, providing its visitors a unique experience.



Figure 4-3 (A) Boardwalk along Berlayer Creek and (B) Berlayer Creek observed from upstream observation deck

Former BP Oil Refinery site is currently mostly a vacant land, bounded with wire fence and mostly covered with low vegetation density, with trees mainly located along the east boundary of the site and towards the Berlayer Creek. As part of this site is occasionally used by members of Radio Modellers Singapore (RMoS), temporary tents, chairs and tables are located approximately in the middle of the site.



Figure 4-4 Former BP Oil Refinery site

Bukit Chermin is a 32 m high hill (refer to the Section 8.4.2.1), located in the southeast portion of the Study Area, adjacent to Keppel Club. Although small in size, Bukit Chermin is important not just as a habitat that supports surrounding biodiversity but also as a site of historical value. Namely, this hill is home to the buildings from a so-called “Black and White” architectural period, dating back to early 1900s. Hence, it was given conservation status in 2008 [W-46]. Furthermore, a boardwalk (continuation of Berlayer Creek boardwalk) is located south from the Bukit Chermin.

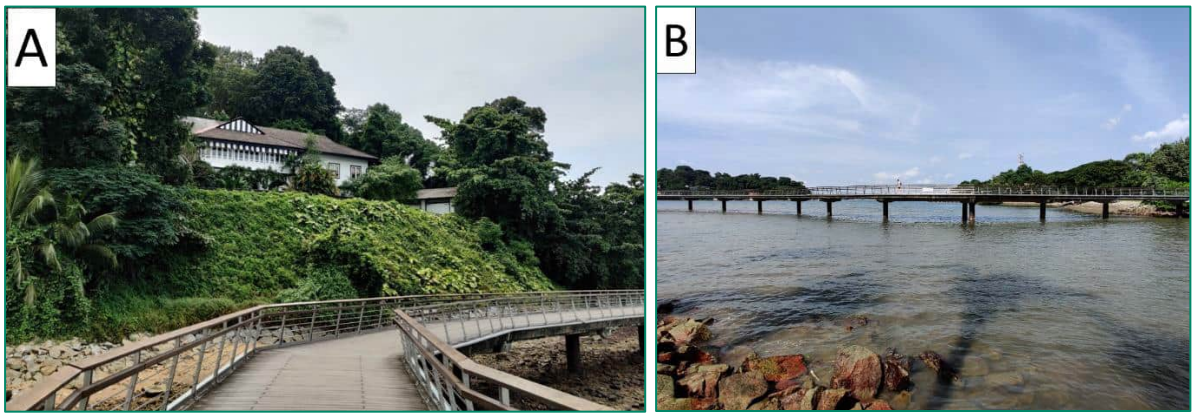
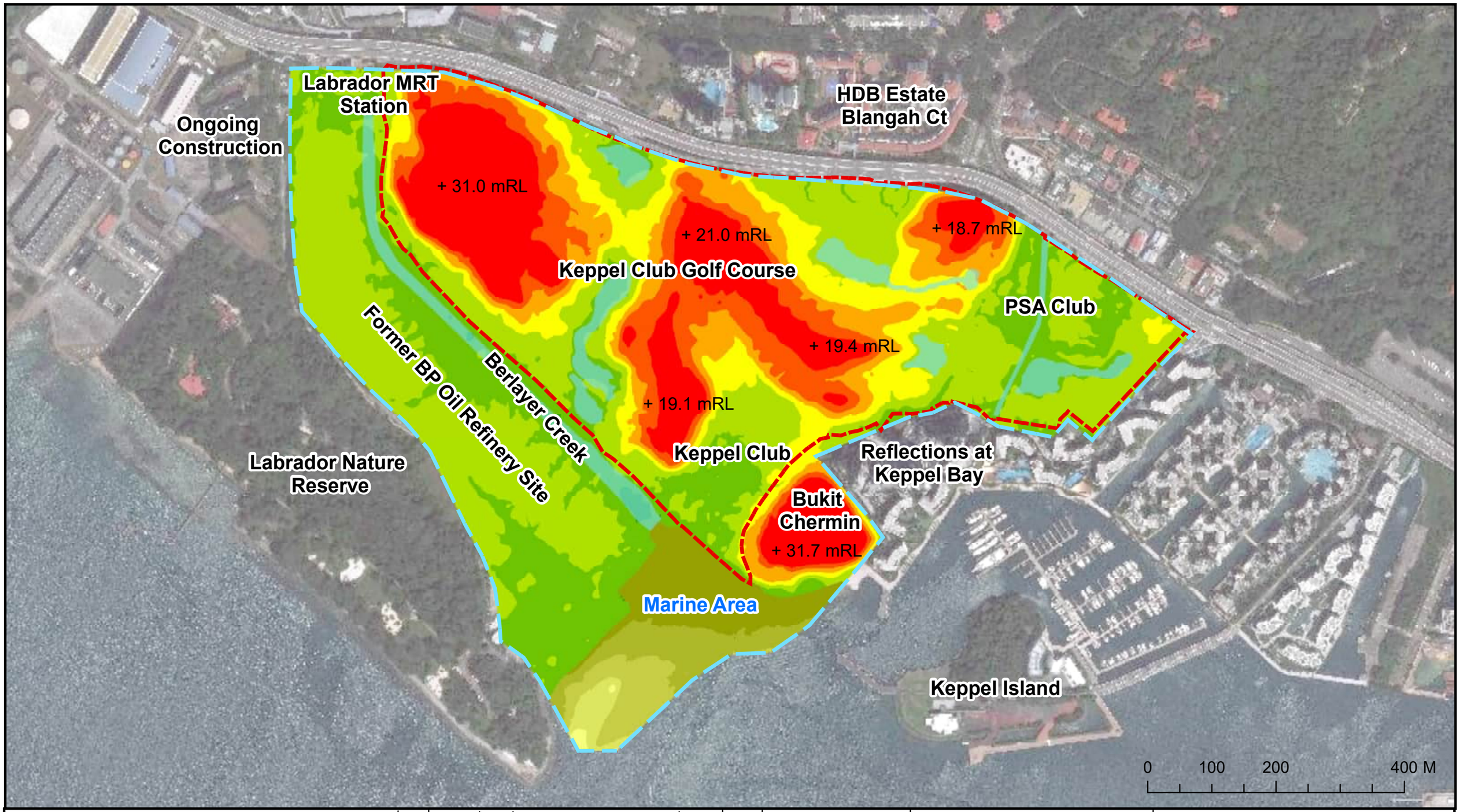


Figure 4-5 (A) Bukit Chermin and (B) Bukit Chermin boardwalk

Topography and bathymetry surveys of the Study Area were conducted on 26th April 2021 and 7th June 2021. As shown in the Figure 4-6, it was noted that the general topography of the site is mostly hilly and undulating with elevations ranging from +1.75 m RL to +31.2 m RL. The area which is currently Keppel Club golf course has the highest elevations within the Study Area, especially in its central and western parts. The low-lying areas within the golf course are mostly located around existing ponds and in the east, around the concrete canal. Elevations at Bukit Chermin are above 15 m RL, and with relatively steep slope are connected to surrounding low-lying terrain. Former BP Oil Refinery site is mostly flat, with elevations not exceeding +6 m RL.

Based on the bathymetric survey in the Marine Area of the Study Area, sea is shallower in the proximity of land (i.e. mouth of Berlayer Creek and south of Bukit Chermin) with maximum depths observed in the southwest corner of the Study Area (i.e. < 6 m CD).



Legend

- Overall EIS Study Area
- Development Area
- Watercourses

Elevation (mRL)	Depth (mCD)
<0	<-6
0-3	-6 - -4
3-6	-4 - -2
6-9	-2 - 0
9-12	>0
12-15	
>15	

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD, URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Topographic and bathymetric survey data of thel EIS Study Area

Designed	Checked	Approved
JAC	NHT	JAG
	Drawn JAC	Date APR 2022

Figure No. : **4-6** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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4.3 Geology

Based on the Geological Map of Singapore [M-4], the Study Area' bedrock is dominated by Fort Siloso Formation (STsf) in the east and Tanjong Rimau Formation (STrf) in the west, both of Sentosa Bedrock Group (STG). Superficial deposits of Jalan Besar Formation (Kjbf) are located along the Berlayer Creek, with small portion of land in the far northwest dominated by deposits of Rochor Clay Formation (Krf).

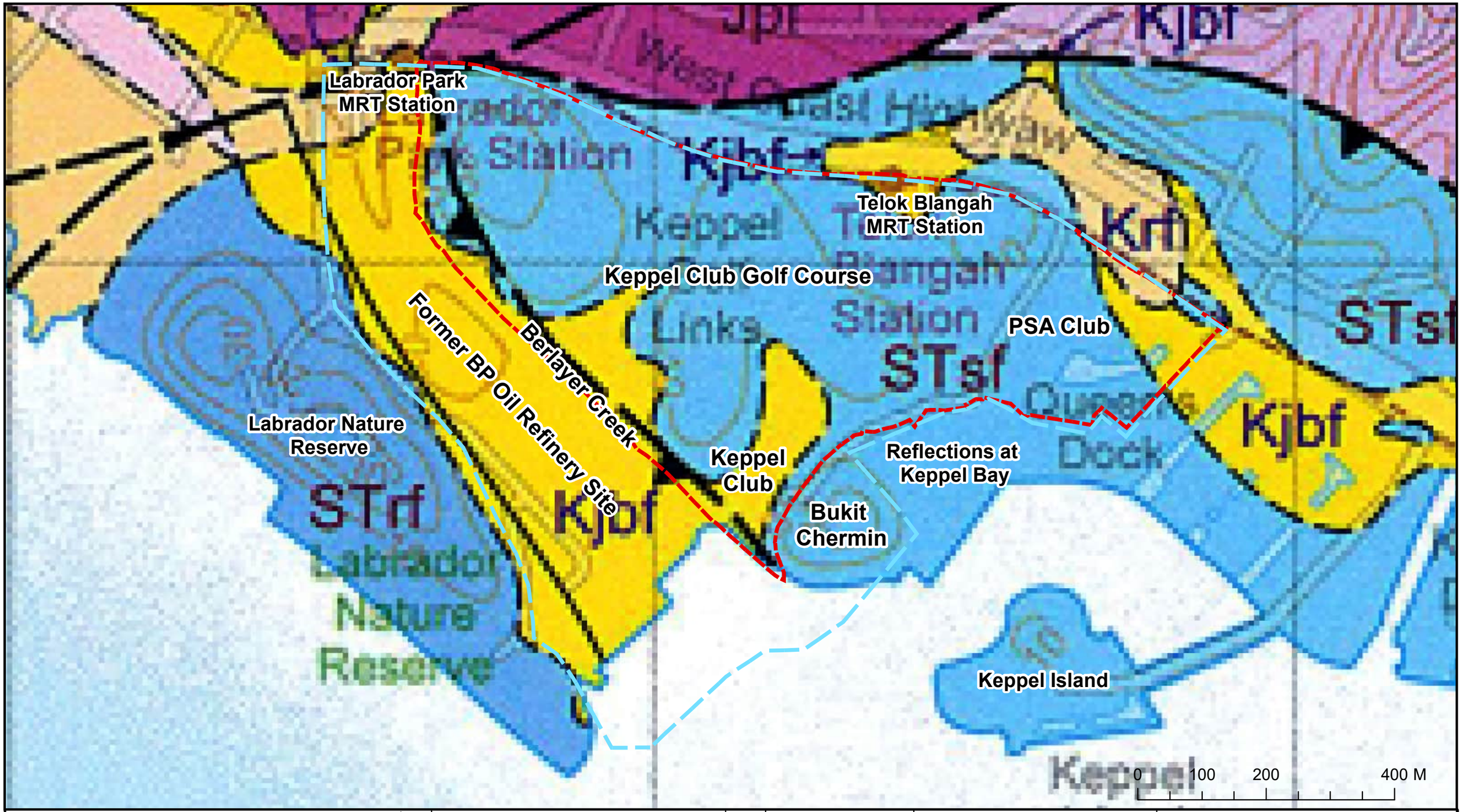
The STG is a sedimentary stratum consisting of two formations- older Tanjong Rimau Formation (STrf) and the younger Fort Siloso Formation (STsf) with estimated thickness of about 3,000 m. It dominates south and south-west Singapore and was formed during the Triassic.

The Tanjong Rimau Formation (STrf), which underlays the Former BP Oil Refinery site, comprises of interbedded layers of sandstone, conglomerate and mudstone. Typically, thick-bedded sandstone is very-fine to very coarse-grained and displays erosive bases. Conglomerate units have a distinctive clast assemblage which includes white vein quartz and various detritus (i.e. volcanic, extraformational and metamorphic). Mudstone units are usually thin-bedded. This formation was deposited under terrestrial and fluvial conditions

The Fort Siloso Formation (STsf) which underlays eastern portion of the site (i.e. Keppel Club golf course) was formed during Late Triassic and is dominantly composed of clay- to silt-grade mudstones, interbedded with fine- to very fine- grained mature sandstones.

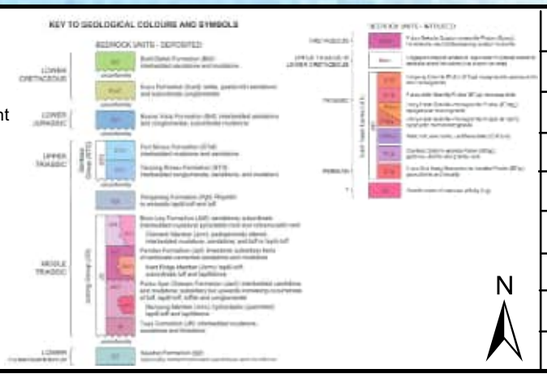
Jalan Besar Formation (Kjbf) is part of the Kallang Group strata which is characteristic to the near-shore areas and river-valleys of Singapore. The formation comprises of peat-rich clay and silt containing decomposed wood and fragments of vegetation. The estimated average thickness of this formation is 3 m, but it is observed that it can be as deep as 24 m in some river valleys.

Rochor Clay Formation (Krf), located in the north-west part of the Study Area, is also part of the Kallang Group and comprises clayey and silty mud with thin beds of sand and peat. Furthermore, fragments of bivalve and gastropod shells are common. On average, the formation is 7 m thick, but locally it can reach more than 20 m of thickness.



Legend

- Overall EIS Study Area
- Development Area



Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Geological map of the EIS Study Area

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SAG	NHT	JAG	**4 - 7**	-	1 of 1
	Drawn SAG	Date APR 2022	CAD File Name : NA		A3

Note: Source of basemap - Geological Map of Singapore 2021

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4.4 Catchment Area

As Singapore does not have extensive natural aquifers or lakes and has limited land to store collected stormwater, it aims to maximize stormwater harvesting. Stormwater is collected through a network of rivers, canals and drains and channelled to seventeen (17) reservoirs, after which it is treated, filtered and disinfected at the water treatment plans. Stormwater is one of Singapore's main sources of drinking and industrial water. However, as shown Figure 4-8, the Study Area is located outside of the existing catchment areas. It is expected that the stormwater from the Study Area will be drained into the Berlayer Creek and eventually end up in sea. The stormwater discharged from the Study Area does not serve as drinking water. The detailed hydrology baseline information will be further discussed in Section 8.

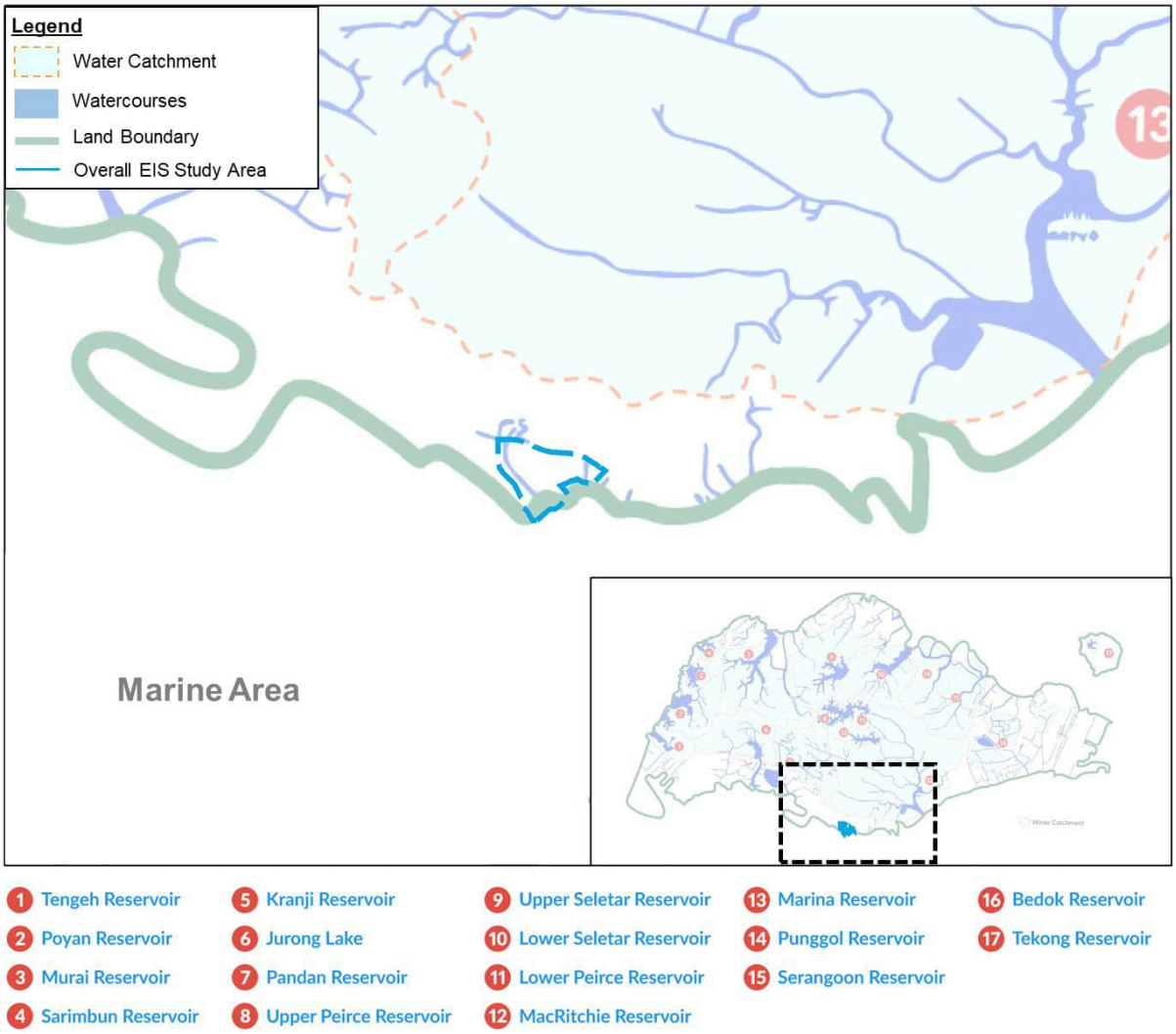


Figure 4-8 Singapore water catchment (sourced from PUB, 2020 [W-7])

4.5 Climate

4.5.1 Rainfall

Singapore is situated near the equator and has typically tropical climate. Singapore's year-to-year rainfall is highly variable. However, on longer-term basis, the annual rainfall total has increased at an average rate of 67 millimetres (mm) per decade since 1980 (see Figure 4-9) [W-38]. Rainfall is plentiful in Singapore and it rains an average of 167 days of the year [W-36]. The long-term mean annual rainfall total is 2534.4 mm when averaged across island-wide stations with long-term records [W-37].

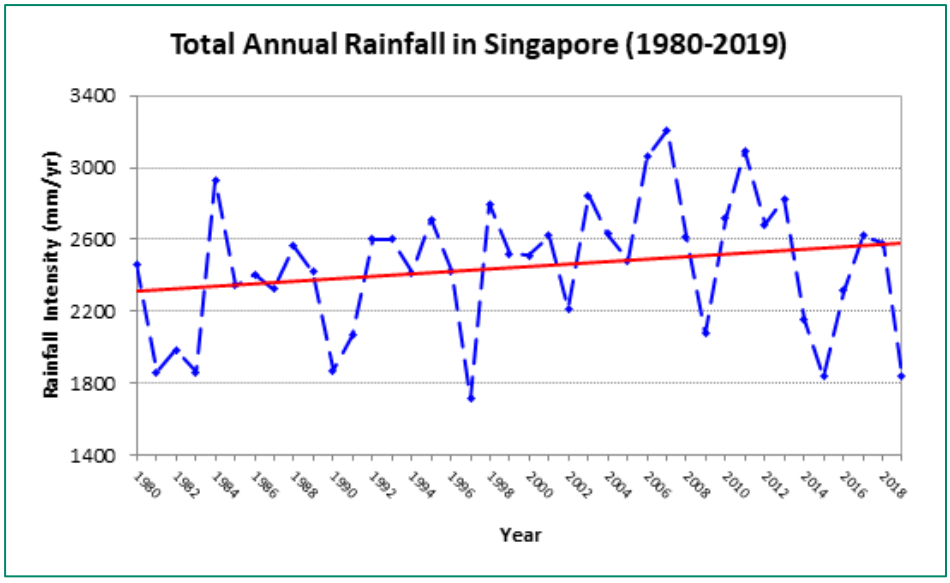


Figure 4-9 Annual rainfall total in Singapore from 1980 to 2019 (sourced from: MSS [W-38])

In terms of spatial distribution, rainfall is higher over the northern and western parts of Singapore and decreases towards the eastern part of the island [W-36]. The figure also shows that the Central Catchment possibly receives the maximum rainfall in Singapore. The annual average rainfall in the Study Area is anticipated to be approximately 2,800 to 3,000 mm.

Singapore has two monsoon seasons separated by inter-monsoonal periods, where the Northeast Monsoon occurs from December to early March and the Southwest Monsoon from June to September. It also has abundant rainfall all the year round with relatively higher mean raindays (more than thirteen [13] days) and mean rainfall amount (more than 230 mm) from November to January every year (refer to Figure 4-10). The average rainfall in Singapore is approximately 230 mm and 180 mm during Northeast and Southwest Monsoon, respectively. Most months in 2021 had rainfall that was above average (refer to Figure 4-10).

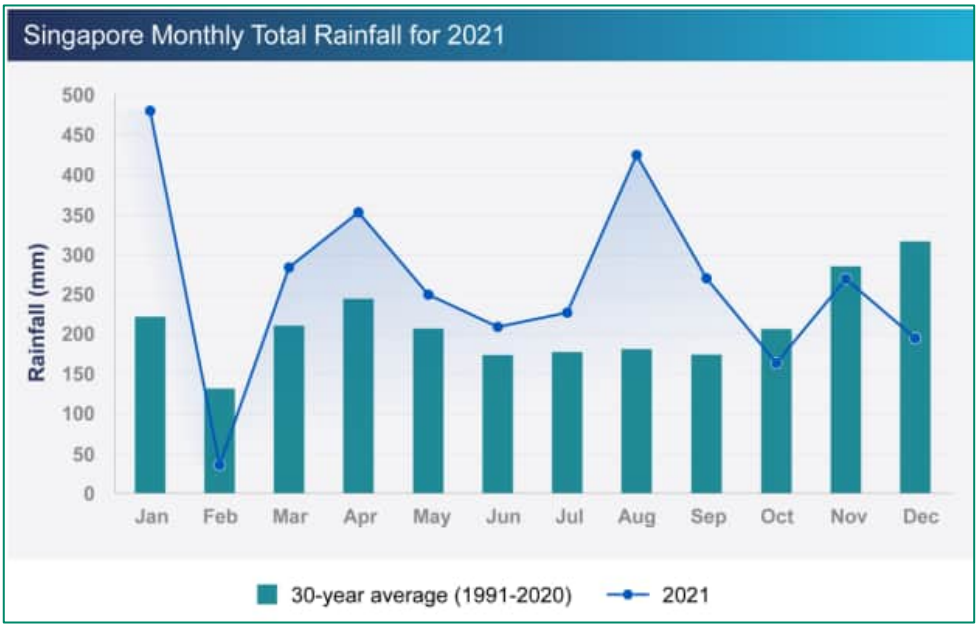


Figure 4-10 Monthly total rainfall in Singapore for 30-year average over island-wide stations with long-term records (bars, 1991 – 2020) compared to 2021 (solid line) (sourced from MSS [W-37])

4.5.2 Temperature

Singapore's continuous temperature records since 1948 show that the island has warmed by an average of 0.25°C per decade, with a visible and sudden rapid increase after the mid-1970s (see Figure 4-11). This may have been due to the rapid economic development and urbanization that took place after Singapore's political reformation, as well as due to the influence of anthropogenic global warming effects. Eight (8) out of the ten (10) warmest years recorded in Singapore have occurred in the 21st century and all ten (10) occurred after 1997. This increasing trend has led to an increase in warm days and warm nights, and a decrease in cool days and cool nights.

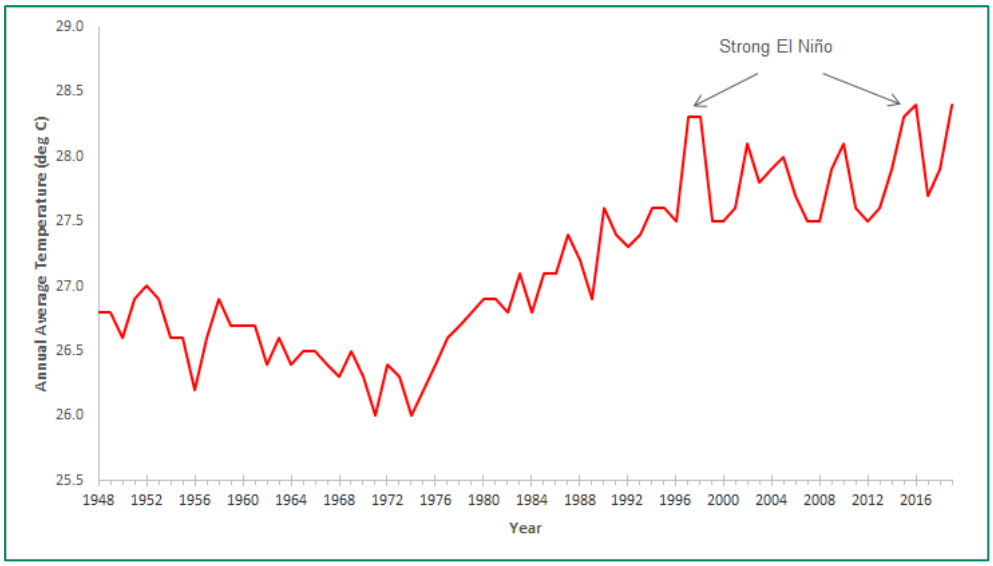


Figure 4-11 Annual mean temperature in Singapore from 1948 to 2019 (sourced from MSS [W-38])

Generally, the temperature variation throughout the year is relatively small as compared to the mid-latitude regions [W-39]. Singapore has high and uniform mean temperatures ranging from 24°C to 32.3°C throughout the year. The mean temperature from 2012 to 2021 was 27.97°C, which is 0.02°C higher than the previous record of 27.95°C for the decade from 2010 to 2019 [W-37]. Extreme minimum and maximum temperatures are ranging from 20°C to 36°C.

Although there is no distinct borderline between "urban" and "rural" areas in Singapore, maximum temperature difference of 4.01°C was observed between well-planted area, such as Lim Chu Kang area, and the Central Business District (CBD) area [P-78]. This shows the presence of an Urban Heat Island (UHI) effect in Singapore. Green areas in cities have been considered as potential measure in mitigating the UHI effect. This finding is also supported by a study conducted by Jusuf et al (2007), which shows different daytime temperature at different type of land use areas in Singapore. As observed in Figure 4-12, the daytime temperature in park areas is considerably lower compared to other type of land use areas [P-77].

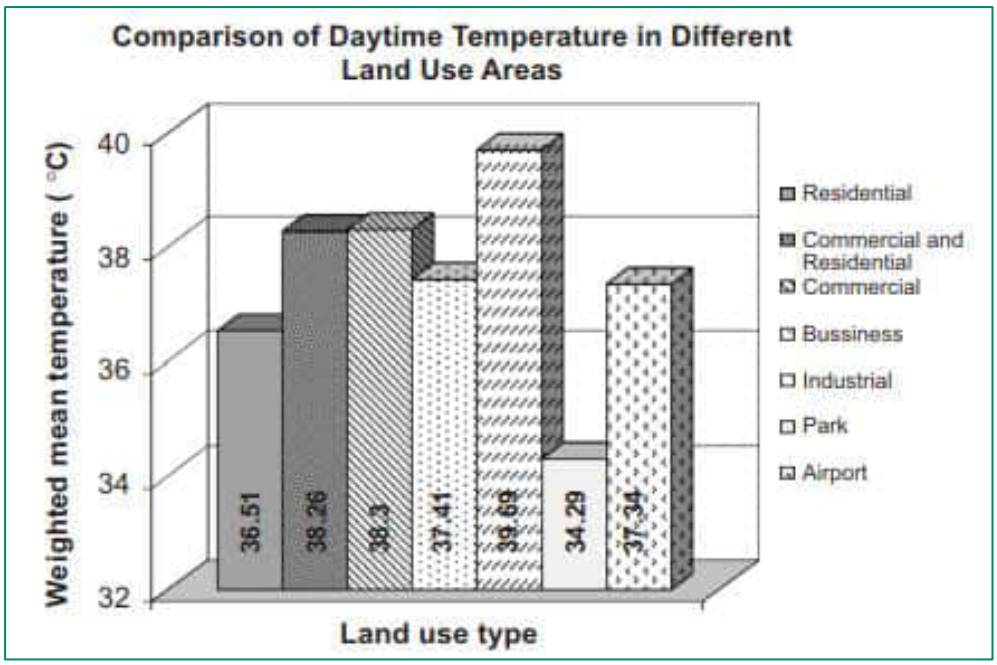


Figure 4-12 Comparison of daytime and nighttime temperature in different land use areas [P-77]

4.5.3 Relative Humidity

Relative humidity shows a fairly uniform pattern throughout the year and does not vary much from month to month (refer to Figure 4-13). Its daily variation is more marked, varying from more than 90% before sunrise to around 60% in the mid-afternoon on days when there is no rain. While the mean annual relative humidity is 83.9%, the relative humidity frequency reaches 100% during prolongated periods of rain.

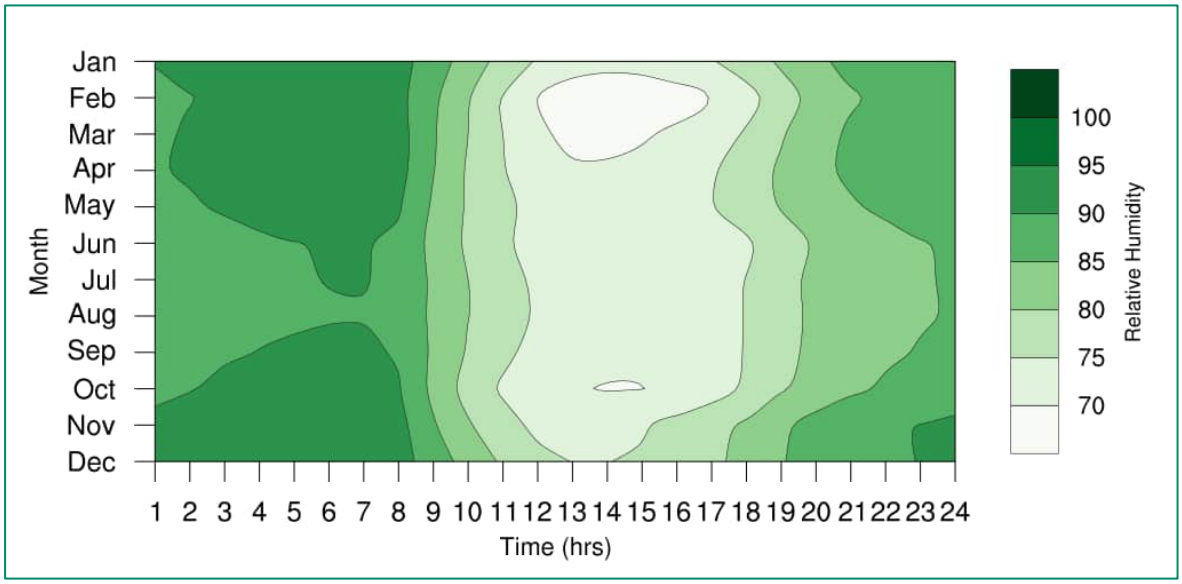


Figure 4-13 Hourly variation of relative humidity for each month from 1981 to 2010 (sourced from MSS [W-36])

4.5.4 Surface Wind

Winds in Singapore are generally light, with the mean surface wind speed normally less than 2.5 m/s. An exception to this is during the presence of a Northeast Monsoon surge, where mean speeds of 10 m/s or more have been observed. Strong winds also occur during thunderstorms. Surface wind gusts are produced from thunderstorm

downdrafts and from the passage of Sumatra Squall Lines. As shown in Figure 4-14, the most prominent winds in Singapore are from northeast and the south, occuring during the Northeast and Southwest Monsoon, respectively. The mean monthly wind speeds ranges from 1.5 m/s to 3 m/s [W-36].

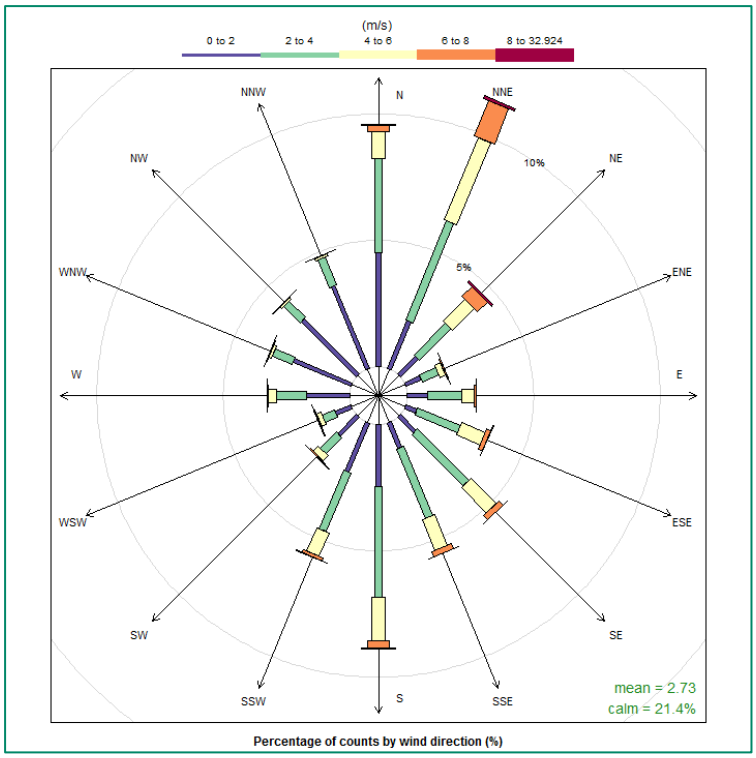


Figure 4-14 Annual wind rose of Singapore (sourced from MSS [W-36])

5 Relevant Regulatory Framework, International Standards and Guidelines

A list of relevant legislative requirements, international benchmarks, and/or guidelines applicable to the Project has been provided in Table 5-1.

Table 5-1 Applicable legislation, international benchmarks, and/or guidelines

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
General	Singapore (NParks) Biodiversity Impact Assessment (BIA) Guidelines, 2020 [R-9]	This document is published by NParks to provide a framework guiding biodiversity impact assessments in Singapore. It recommends methods for conducting baseline survey and impact assessment, and subsequently provide information on developing the biodiversity component of an environmental. Management and monitoring plan (EMMP). Section 2 of this BIA Guidelines detailed the baseline study methods recommended for vegetation mapping, habitat mapping, hydrology (including waterbody mapping, water conditions, water quantity and water quality) Section 4 of the BIA Guidelines detailed the impact study methods recommended for air, noise, soil, water related biodiversity impacts. Section 5 of the BIA Guidelines detailed the mitigation measures developing protocols, i.e. avoid, minimise, remedy/repair/restore, and compensate/offset. Section 6 of the BIA Guidelines outlined the requirements for developing an EMMP.
	Singapore Environmental Protection and Management Act, 2020 [R-10]	An Act to consolidate the laws relating to environmental pollution control, to provide for the protection and management of the environment and resource conservation, and for purposes connected therewith. For surface water, groundwater and soil, it regulates the discharge of trade effluent, oil chemical, sewage or other pollution onto land and drains. For air quality, it provides standards and regulations on air impurities.
Biodiversity	Singapore National Biodiversity Strategy and	This document provides a framework to guide biodiversity conservation efforts in Singapore. It

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
	Action Plan (NBSAP), 2019 [R-1]	intends to establish both policy frameworks and specific measures to ensure better planning and co-ordination in the sustainable use, management and conservation of biodiversity. A holistic approach has been adopted where the input of various public sector agencies and nature groups (NGs) have been taken into consideration in the preparation of the document.
	Singapore Wildlife Act, Chapter 351, 2000 [R-2]	• Any person who kills, takes or keeps any wild animal or bird, other than those specified in the Act, without a licence shall be guilty of an offence and shall be liable on conviction to a fine not exceeding $1,000 and to the forfeiture of the wild animal or bird. • No person should take, destroy or has in possession the eggs if any wild bird during the specified time of the year or during the breeding season of the bird. • As part of development works, the Developer shall be required to carry out any wildlife-related measure that the Director-General considers necessary to safeguard the health, welfare, safety of any wildlife or class of wildlife; public health or safety in relation to wildlife or; health of ecosystem.
	Singapore Parks and Trees Act, 2006 [R-3]	• An Act to provide for the planting, maintenance and conservation of trees and plants within national parks, nature reserves, tree conservation areas, heritage road green buffers and other specified areas, and for matters connected therewith. • No tree with a girth exceeding one meter (when measured 1-m from the ground) should be cut or damaged without the prior approval of the relevant authorities; and • No tree or plant will be cut or damaged if located within the heritage road green buffer.
	Singapore Parks and Trees Act (Parks and Trees Regulations), 2006 [R-4]	Prohibitions and regulations on trees and animals within national park, nature reserve or public park.
	Singapore Parks and Trees (Heritage Road Green Buffers) Order, 2006 [R-5]	Lists the areas designated as heritage road green buffers.
	Singapore Parks and Trees (Preservation of Trees) Order, 1998 [R-6]	Lists the designated tree conservation areas No cutting or damaging of tree having girth of more than one metre.
	The Singapore Red Data Book (SRDB) [P-2]	Lists the endangered plants and animals in Singapore Published by Singapore's Nature Society

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
		Provides the scientific name, common name, status, description, habitat, distribution, threats, scientific interest and potential value, as well as conservation measures for each plant and animal listed.
	The International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threated Species [R-7]	Provides taxonomic, conservation status and distribution information on plants, fungi and animals that have been globally evaluated.
	The Hong Kong Environmental Impact Assessment Ordinance - Technical Memorandum (HK EIAO TM)[1] [R-8]	Sets out the principles, procedures, guidelines, requirements and criteria for deciding whether the Project is environmentally acceptable.
Hydrology and Water Quality (including inland surface water and marine water)	Singapore Sewerage and Drainage Act, 2001 [R-13]	An Act to provide for and regulate the construction, maintenance, improvement, operation and use of sewerage and land drainage systems, and to regulate the discharge of sewage and trade effluent. Regulates the protection, maintenance and provision of stormwater drainage system.
	Singapore Sewerage and Drainage (Surface Water Drainage) Regulations, 2007 [R-15]	Regulates measures to be implemented to protect the stormwater drainage system.
	Singapore Sewerage and Drainage (Trade Effluent) Regulations, 2007 [R-14]	Regulates trade effluent discharge into public sewerage system.
	Singapore Environmental Protection and Management (Trade Effluent) Regulations, 2008 [R-11]	• Regulates the discharge of trade effluent to public watercourse. • Any discharge into a watercourse has to comply with the regulatory standards established in these regulations.
	Singapore Standards 593: 2013 – Code of Practice for Pollution Control (COPPC) [R-12]	• Provides guidelines for the appropriate discharge of any effluent into public sewer or watercourse. • Provides guidelines for the appropriate storage and accidental release of oils & chemicals.
	PUB Code of Practice on Surface Water Drainage, 2013 [R-16]	Provides guidelines for measures to be implemented to protect the stormwater drainage system and manage surface water drainage (e.g. development and implementation of an Earth Control Measures (ECM) plan).

[1] The HK EIAO TM was added as an applicable legislation for biodiversity because: (1) Singapore does not have an established standard for biodiversity assessment yet; (2) Singapore and Hong Kong share similar urban development setting; and (3) HK EIAO TM has previously been used for other environmental impact studies in Singapore.

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
	PUB Circular on Preventing Muddy Water from the Construction Site, October 2015 [0]	All new construction sites with site area of 0.2ha and above, sites with problematic ECM, and sites within sensitive areas are required to implement Closed-Circuit Television (CCTV) including a Silty Imagery Detection System (SIDS) at the public drain to monitor the surface run-off discharges from the sites.
	NEA Allowable Limits for Trade Effluent Discharge to Watercourse or Controlled Watercourse [R-26]	Provides allowable limits for trade effluent discharge to watercourse or controlled watercourse in Singapore
	ASEAN Marine Water Quality Management Guidelines and Monitoring Manual (2008) [R-25]	Provides marine water quality criteria for the protection of the coastal and marine environment and human health within ASEAN
	Standard Statistical Classification of Surface Freshwater Quality for the Maintenance of Aquatic Life, New York and Geneva UNECE (1994) [R-18]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
	Water Quality Requirements WHO (n.d.) [R-19]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
	Australian & New Zealand Guidelines for Freshwater and Marine Water Quality (2000) [R-21]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
	Canadian Water Quality Guidelines for the Protection of Aquatic Life (2007) [R-22]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
	Water Quality Standards Handbook USEPA (2017) [R-20]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
	Mitigating Impact from Aquaculture in the Philippines (PHILMINAQ) [R-23]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies
	National Water Quality Standards for Malaysia (DOE) [R-24]	Provides standards for water quality assessment relating to aquatic life for surface waterbodies
Soil and Groundwater	Singapore Standards 593:2013 Code of Practice for Pollution Control (COPPC) [R-12]	• Provides guidelines for the control of land pollution and remediation of contaminated sites. • Provides guidelines for the appropriate storage and accidental release of oils & chemicals.

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
		• Provides the necessary guidance for conducting Environmental Baseline Study (EBS) for assessing contamination of a site and the respective standards to be followed.
	Singapore Environmental Protection and Management (Trade Effluent) Regulations, 2008 [R-11]	• Regulates the discharge of trade effluent into any watercourse or onto land.
	Singapore Sewerage and Drainage Act, 2001 [R-13]	• Regulates the construction, maintenance, improvement, operation and use of sewerage and land drainage systems.
	Singapore Sewerage and Drainage (Surface Water Drainage) Regulations, 2007 [R-15]	• Regulates measures to be implemented to protect the storm water drainage system and avoid flooding. • Regulates the provision and maintenance of ECM in accordance with the Code of Practice on Surface Water Drainage.
	JTC Guideline on Environmental Baseline Study, 2015 [R-27]	• Provide the responsible parties necessary guidance for conducting EBS for assessing contamination of a site
	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer. Target Values, Soil Remediation Intervention Values and Indicative Levels for Serious Contamination, 2020 [R-28]	• The soil remediation Dutch Intervention Values (DIV) indicate when the functional properties of the soil for • humans, plant and animal life, is seriously impaired or threatened. They are representative of • the level of contamination above which there is a serious case of soil contamination.
	Australian & New Zealand Guidelines for Freshwater and Marine Water Quality (2000) [R-21]	• Provides standards for water quality assessment relating to aquatic life for surface waterbodies.
Air Quality	Environmental Protection and Management (Air Impurities) Regulations 2015 [R-29]	Regulates air emissions and impurities in Singapore.
	Singapore Ambient Air Quality Targets (Long Term Targets) [R-30]	Stipulates the recommended limit values for ambient concentrations of NO_2, SO_2, PM_{10}, $PM_{2.5}$, CO and O_3 to be applied from the year 2020. Target values are based on World Health Organisation (WHO) Limit Values (mixture of Interim and Final values).
	Environmental Protection and Management (Off-Road Diesel Engine Emissions) Regulations 2012 [R-31]	Stipulates that all off-road diesel engines (including construction equipment with diesel engines) imported for use in Singapore from July 2012 must comply with the EU Stage II, US Tier II or Japan Tier I off-road diesel engine emission standards.

Environmental Parameter	Applicable Legislation, International Benchmarks and/or Guidelines	Key Points
	UK Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction [R-32]	The document provides guidance for developers, their consultants and environmental health practitioners on how to undertake a construction impact assessment (including demolition and earthworks).
Airborne Noise	Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008 [R-34]	• Stipulates a set of maximum allowable noise limits for construction sites for different time periods of the day and for different types of premises affected by construction noise. • Stipulates the correction factor that needs to be applied to the applicable noise criteria based on background noise levels.
	NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018 [R-39]	• Stipulates a set of maximum allowable noise limits for ACMV systems of non-industrial buildings for different time periods of the day and for different types of premises affected by operational noise. • Stipulates the correction factor that needs to be applied to the applicable noise criteria based on background noise levels.
	NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016 [R-38]	• Stipulates a set of maximum allowable noise limits for premises affected by traffic noise.
	SS 593: Code of Practice for Pollution Control (COPPC), 2013 [R-12]	Specifies recommended pollution control requirements and good practices for prevention of impacts to noise.
	SS602:2014 Code of Practice for Noise Control on Construction and Demolition Sites [R-33]	Specifies recommendations and good practices for prevention of noise impacts from construction and demolition activities.
	Biodiversity 2020 (UK) [R-35]	"Theme 3: reduce environmental pressures - integrate consideration of biodiversity within the sectors which have the greatest potential for direct influence and reduce direct pressures." The guide does not provide airborne noise criteria for biodiversity impact assessment but only serves as a reference that sets out biodiversity policies and strategies to conserve biodiversity for AECOM to consider and implement in the EIS study.

6 EIS Approach and Methodology

This section outlines the approach and methodology followed for this EIS.

6.1 Approach

The overall EIS workflow is shown in Figure 6-1, and the general approach to the EIS is listed as follows:

- Scoping of EIS (Section 6.2);
- Data Collection and Analysis (Section 6.3);
- Prediction of Impacts (Section 6.4.1);
- Evaluation of Impacts (Section 6.4.2);
- Recommendations of Mitigation Measures (Section 6.5); and
- Environmental Monitoring and Management Plan (Section 6.5).

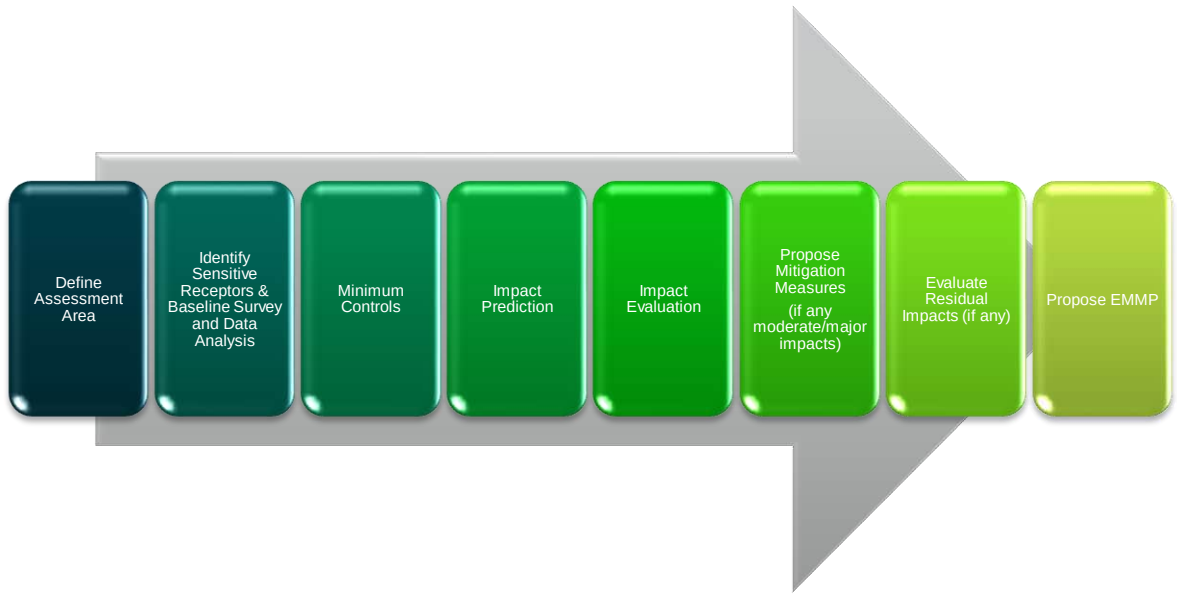


Figure 6-1 Overall EIS workflow

6.2 Scoping of Project

Referring to the Inception Report Rev 01 [R-40], the environmental impacts resulting from the construction and operational activities of this Project are assessed in this EIS report as follows:

- Biodiversity;
- Hydrology, Hydrodynamic and Water Quality;
- Soil and Groundwater;
- Air Quality; and
- Airborne Noise.

6.2.1 Identification of Environmental Impact Assessment Area

The Study Area for this EIS is presented in Figure 3-1 which is an area of total 77.8 ha within the project boundary delineated via legal agreement with the Client that defines the scope of works of this report. The Assessment Area was used to determine any potential environmental impacts to the nearby sensitive receptors due to construction and operational activities from the Study Area. Assessment Area varied depending on the technical discipline and will be described respectively for each impact in the following chapters.

Table 6-1 Assessment Area for different environmental parameters

Environmental Impacts	Assessment Area (Construction Phase)	Assessment Area (Operational Phase)	Justifications
Biodiversity	Ecological sensitive areas within the Study Area. This implies that the Assessment Area is equivalent to the Study Area.		NParks' BIA Guidelines [R-9]
Hydrology, Hydrodynamic and Water Quality	Any watercourses with direct impact from the Project.		During construction and operational phase, the construction activities, increased urbanized area and human activities may cause potential erosion, flooding risk and water quality degradation and other impacts on hydrology, water quality, human and habitat within or surrounding the impacted watercourses such as Berlayer Creek, culvert and drains, etc.
Soil and Groundwater	Human and ecological receptors within and in the vicinity of the Study Area		Construction and operational activities of the Project have a potential to affect humans and ecological receptors directly or indirectly.
Air Quality	50 m (ecological receptors) and 350 m (human receptors) from construction worksite area.	250 m from Study Area.	Construction phase: Based on UK IAQM Guidance [R-32] Operational phase: Based on other project experiences.
Airborne Noise	150 m around the proposed construction worksites.	Immediate boundary of the operational footprint and roads.	Construction phase: Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008 [R-34]

Environmental Impacts	Assessment Area (Construction Phase)	Assessment Area (Operational Phase)	Justifications
			Operational phase: NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018 [R-39] and NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016 [R-38]

6.2.2 Identification and Categorization of Sensitive Receptors

Sensitive receptors are those receptors which may potentially be impacted by the Project's construction and operational activities. Environmentally sensitive receptors are categorised into three categories: Priority 1, Priority 2 and Priority 3 (from the most sensitive to the least) as shown in the following table. The identification of sensitive receptors for each environmental parameter will be developed based on the findings of the environmental reconnaissance surveys, baseline surveys and review of the proposed Project Assessment Areas.

Table 6-2 Receptor sensitivity classification

Environmental Parameter	Receptor Sensitivity		
	Priority 1	Priority 2	Priority 3
Biodiversity	Flora, fauna species and habitats of high ecological value	Flora, fauna species and habitats of moderate ecological value	Flora, fauna species and habitats of low ecological value
Hydrology	**Human Receptors**		
	• Residential developments or high-value industrial or agricultural developments in the vicinity of watercourses without any flood mitigation measures • Structures and facilities whose processes require specific, predefined volumes and/or temporal distribution of surface water (e.g. hourly, daily) • Any other development where human activity would be changed long-term, severely altered or completely prevented due to changes in existing hydrology	• Residential developments or high-value industrial or agricultural developments in the vicinity of watercourses with implemented flood mitigation measures • Any other development where human activities would be changed short-term and/or moderately altered due to changes in existing hydrology	• Non high-value industrial or agricultural developments in the vicinity of the watercourses • Any other development in the vicinity of the watercourse where human activity will not be affected by changes in hydrology
	Ecological Receptors		
	• Habitats and/or biocenosis of high ecological value that require certain quantities of surface	Habitats and/or biocenosis of high ecological value that could be flooded due to changes in existing hydrology which would cause moderate and/or	Habitats and/or biocenosis that are not of high ecological value and that will not be flooded or disturbed due to changes in existing hydrology

Environmental Parameter	Receptor Sensitivity		
	Priority 1	**Priority 2**	**Priority 3**
	water for normal functioning • Habitats and/or biocenosis of high ecological value that could be flooded due to changes in existing hydrology which would cause severe and/or long-term disturbances in their functioning	short-term disturbances in their functioning	
	Water-dependent Socio-Economic Receptors		
	• Areas of historical or any other conservation significance • Areas of national interest (e.g. government buildings, facilities, etc) • Areas of major anchorage, frequently used or important for safety • Conflicts with major passenger ferry route • Recognised international shipping lane • Exclusion areas	• Areas used for recreational purposes • Conflicts with or restricts access to important anchorage • Recognised shipping lanes or military practices/exercise area	Areas of low intensity commercial shipping
Water Quality	**Human Receptors**		
	• Humans or entities (e.g. companies, facilities) that use surface water for beneficial purposes (i.e. drinking purposes or irrigation) • Industrial or agricultural developments that require surface water of high-quality or surface water with particular physico-chemical characteristics for their processes and activities • Humans that may come in contact with contaminated surface water (i.e. surface water with one or more parameters that exceed adopted screening criteria[s] with respect to human health)	• Entities (e.g. companies, facilities) that use surface water for industrial purposes and do not have special requirements regarding the surface water quality • Humans that may come in contact with surface water that is not contaminated (i.e. surface water with all the parameters below adopted screening criteria[s] with respect to human health)	• Humans or entities (e.g. companies, facilities) within or in the vicinity of the Study Area that do not use surface water for any beneficial purpose (i.e. drinking or industrial purposes, irrigation) • Humans within or in the vicinity of the Study Area that will not come in contact with surface water
	Ecological Receptors		
	Habitats and/or biocenosis of high ecological value with	Habitats and/or biocenosis of high ecological value with medium to high tolerance[2]	Habitats and/or biocenosis within or in the vicinity of

Environmental Parameter	Receptor Sensitivity		
	Priority 1	**Priority 2**	**Priority 3**
	low tolerance[2] to changes in surface water quality	to changes in surface water quality	the Study Area that are not of high ecological value
	Water-dependent Socio-Economic Receptors		
	• Areas of major anchorage, frequently used or important for safety • Conflicts with major passenger ferry route • Recognised international shipping lane • Exclusion areas	• Conflicts with or restricts access to important anchorage • Recognised shipping lanes or military practices/exercise area	Areas of low intensity commercial shipping
Soil and Groundwater	**Human Receptors**		
	• Humans or entities (e.g. companies, facilities) that use groundwater for drinking purposes or irrigation • Humans that may come in contact with contaminated soil or groundwater (i.e. soil or groundwater with one or more parameters that exceed adopted screening criteria(s) with respect to human health)	• Entities (e.g. companies, facilities) that use groundwater for industrial purposes, but do not use it for drinking purposes or irrigation and/or • Humans that may come in contact with soil and groundwater that are not contaminated	• Humans or entities (e.g. companies, facilities) within or in the vicinity of the Study Area that do not use groundwater for any beneficial purpose (i.e. drinking or industrial purposes, irrigation) and/or • Humans within or in the vicinity of the Study Area that will not come in contact with soil or groundwater
	Ecological Receptors		
	Habitats and/or biocenosis of high ecological value that are dependent of groundwater (either groundwater quality or quantity, or both)	Habitats and/or biocenosis of high ecological value that are partly dependent of groundwater (either groundwater quantity or quality)	• Habitats and/or biocenosis of high ecological value that are within or in the vicinity of the Study Area and that are not dependent of groundwater or • Habitats and/or biocenosis within or in the vicinity of the Study Area that are not of high ecological value
Air Quality **(Construction)**	<u>For human receptors:</u> • Sensitive receptors[3] (more than 100 receptors) within 50 m of the construction area. • Sensitive receptors (1-100 receptors) within	<u>For human receptors:</u> • Sensitive receptors (more than 100 receptors) between 50 m to 100 m of the construction area. • Sensitive receptors (1-100 receptor) between	<u>For human receptors:</u> • Public footpath, playing fields and parks within 20 m from the construction area. • All other buildings within the 350 m study boundary.

[2] Tolerance to changes in surface water quality for identified ecological receptors will be determined with biodiversity specialists
[3] Sensitive receptors for air impact assessment include residential blocks, hospitals, medical centre, schools and education and residential care home. This is according to classification made in the IAQM's guidance. Hawker centres shall also be checked.

Environmental Parameter	Receptor Sensitivity		
	Priority 1	Priority 2	Priority 3
	20 m of the construction area. • Office, industrial facilities, or shops (more than 10 receptors) within 20 m of the construction area.	20 m to 50 m of the construction area. • Office, industrial facilities, or shops (more than 10 receptors) within 20 m to 50 m of the construction area. • Office, industrial facilities, or shops (1-10 receptors) within 20 m of the construction area.	
	<u>For ecological receptors:</u> Flora, Fauna Species and Habitats of High Ecological Value within 20 m of construction worksite area	<u>For ecological receptors:</u> Flora, Fauna Species and Habitats of High Ecological Value within 20 m to 50 m of construction worksite area. Ecological sites having known sensitive communities within 20 m of construction worksite area.	<u>For ecological receptors:</u> Ecological sites having known sensitive communities within 20 m to 50 m of construction worksite area Any other ecological sites within the assessment area of 50 m.
Air Quality **(Operational)**	Schools and education buildings, hospitals and medical centres, nursing homes, residential buildings, ecological sensitive site	Sport and recreation areas (outdoor)	Commercial, religious, infrastructure, industrial
Airborne Noise[4]	<u>For human receptors:</u> Schools and Education Buildings, Hospitals and Medical Centres, Nursing Homes.	<u>For human receptors:</u> Residential buildings	<u>For human receptors:</u> Other Buildings (Industrial, Commercial, Infrastructure, Sport & Recreation Areas, Religious Buildings, etc.).
	<u>For ecological receptors:</u> Animals that vocalise during important life cycle stages such as courtship, territorial claims and/ or mating.	<u>For ecological receptors:</u> Animals that have auditory sensory systems but do not necessarily need to vocalise during important life cycle stages.	<u>For ecological receptors:</u> Animals that are not likely to be affected by noise.

[4] The fact is that different species are likely to react differently to disturbance and that will be influenced by various other factors such as how percussive the noise is (e.g. from blasting and piling), how far away the receptor is generally, behaviour of the fauna, and other factors such as whether the species is feeding or breeding/nesting and in particular from the complication of visual disturbance (particularly humans on foot nearby).

6.3 Data Collection and Analysis

Collection of pre-construction environmental baseline data within the Assessment Area was conducted both from primary sources and secondary sources.

6.3.1 Sample collection and Survey Locations

The sample collection and survey locations were selected for baseline data collection based on their proximity to the project and receptor priority. These locations were confirmed during a site reconnaissance survey. Site visits were undertaken as tabulated in the following Table 6-3.

Table 6-3 Site visits for data collection

Environmental Parameter	Site Visits
Biodiversity	Site reconnaissance survey: • Berlayer Creek and Labrador: 11th January 2021 • Keppel Club golf course: 1st March 2021 Sampling dates: • Berlayer Creek and Labrador: 4th February – 3rd March 2021 (terrestrial and marine surveys); 28th September 2021 – 12th October (bird migratory surveys) • Keppel Club golf course: 22nd March – 29th July 2021 (terrestrial and marine surveys); 4th and 11th October 2021 (bird migratory surveys) Camera Trapping dates: • Berlayer Creek and Labrador: 4th February – 8th April 2021 • Keppel Club golf course: 1st March – 10th May 2021 Light Humidity Temperature monitoring: • 5th – 18th October 2021
Topography and Hydrography	Site reconnaissance survey: 26th, 27th, 28th, 29th and 30th April 2021 Sampling dates: • 26th April 2021 (hydrography survey) • 6th May – 20th June 2021 (topography survey) • 7th June 2021 (hydrography survey)
Hydrology and Water Quality	Site reconnaissance survey: • 5th February 2021 Sampling dates: • 1st March 2021 (dry sampling) • 19th April 2021 (dry sampling) • 31st May 2021 (wet sampling) • 4th June 2021 (wet sampling)
Soil and Groundwater	Site reconnaissance survey: • 1st March 2021 Sampling dates: • 8th April 2021 to 26th April 2021 (soil and groundwater investigation works) • 10th May 2021 (groundwater sampling event) • 31st May 2021 to 7th June 2021 (rising head slug test) • 24th May 2021 to 16th August 2021 (weekly groundwater gauging)
Air Quality	Site reconnaissance survey: • 2 December 2020 Sampling dates: • 22 – 29 March 2021

Environmental Parameter	Site Visits
Airborne Noise	Site reconnaissance survey: • 2 December 2020 Sampling dates: • 17 – 23 February 2021 (for N2 and N4); and • 05 – 11 May 2021 (for N1 and N3).

Further information on sample collection and survey locations and parameters is provided in Section 7 (Biodiversity), Section 8 (Hydrology and Surface Water Quality), Section 9 (Soil and Groundwater), Section 10 (Air Quality), and Section 11 (Airborne Noise).

6.3.2 Secondary Data Collection

Additional secondary data was collected from sources including, but not limited to, the following:

- Proposed Master Plan of the Study Area
- Historical, current and future land uses
- Construction/operational boundary/footprint/phasing (e.g. CAD drawing format)
- Construction/operational schedule
- Commercial and recreational activities
- Aerial photographs
- Geological Map
- Existing biodiversity information at Labrador Nature Reserve areas
- Any planned developments on the waterbodies in Study Area
- Tidal data (water level and current, etc.)
- Weather data (rainfall, wind, humidity, evaporation)
- Existing topographical and bathymetry maps
- Catchment and drainage maps
- Previous environmental site assessment/ soil and groundwater investigation reports (s) prepared for the site [including the ones prepared for the Former BP Oil Refinery plot]
- Geotechnical interpretative report
- Site infrastructure installation methodology and layout
- Expected excavation depths

Further information on secondary data collection is provided in Section 7 (Biodiversity), Section 8 (Hydrology and Surface Water Quality), Section 9 (Soil and Groundwater), Section 10 (Air Quality), and Section 11 (Airborne Noise).

6.4 Assessment Criteria

6.4.1 Prediction of Impacts

Key potential environmental impacts arising from the Project's construction and operational activities were assessed within the project scope. The methodology for the prediction of impacts is as given in Table 6-4

Table 6-4 Methodology for prediction of construction impacts

Environmental Parameter	Predictive Methods	Assessment Criteria	EIS Section
Biodiversity	A mix **quantitative and qualitative** assessment to evaluate the impacts of construction activities on key biodiversity sensitive receptors of floral communities, faunal species and habitats within the Assessment Area and its immediate surrounding (if any).	Assessment criteria broadly takes guidance from Hong Kong Environmental Impact Assessment Ordinance - Technical Memorandum Annex 8, with considerations from literature review and local biodiversity standards.	Section 7
Hydrology, Hydrodynamic and Water Quality	**Qualitative,** analytical methods as well as **quantitative** modelling to assess hydrology and water quality impacts of the development construction phase. Hydrological impact study to assess the impact of construction activities as well as potential land use changes to hydrological conditions of the site, such as the increase in peak flow discharge or changes in stream alignment of the site through qualitative and analytical methods. Water quality impact study to evaluate potential impact of construction activities on the existing watercourses within/surrounding the site using analytical and quantitative modelling methods. The incremental concentration of certain water quality parameters (e.g. sediment) induced from construction activities to be identified. The impact on sensitive receptors to be assessed based on pre-determined tolerance. Hydrodynamic impact study to assess the change of current speed, current direction and flow pattern of the Berlayer Creek and marina area due to construction activities through quantitative modelling approach.	• Singapore Environmental Protection and Management (Trade Effluent) regulations [R-11]; • Singapore NParks Biodiversity Impact Assessment (BIA) Guidelines [R-9]; • Water Quality Criteria for Aquatic Life from other countries including ASEAN [R-25], United Nations Economic Commission for Europe [R-18], World Health Organization [R-19], United States Environmental Protection Agency [R-20], Philippines [R-23], Australian and New Zealand Environment and Conservation Council (ANZECC) [R-21], Canadian Council of Ministers of the Environment [R-22], and Department of Environment in Malaysia (DOE) [R-24].	Section 8
Soil and Groundwater	**Qualitative** assessment to evaluate the soil and groundwater impacts from activities during construction and operational phases of the Project.	Laboratory analytical results from the soil and groundwater samples will be compared to international standards such as the Soil Remediation Circular (Dutch Standards) and Australian and New Zealand Guidelines for Fresh and Marine Water to determine potential impacts to downstream waterbodies (if any).	Section 9
Air Quality	**Qualitative** assessment following dust risk assessment methodology focusing on fugitive particulate emissions (dust) from the construction site.	Assessment broadly follows "Guidance on the Assessment of Dust from Demolition and Construction" which was published by the UK Institute of	Section 10

Environmental Parameter	Predictive Methods	Assessment Criteria	EIS Section
		Air Quality Management (IAQM) in 2014.	
Airborne Noise	**Qualitative** assessment will be adopted to assess construction noise impacts to the noise sensitive ecological and human receptors.	Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008	Section 11

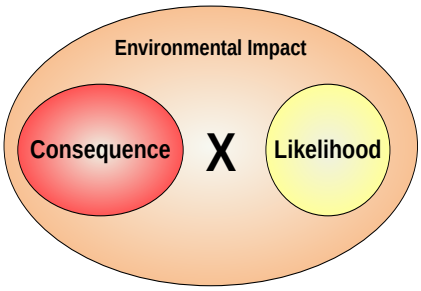
Table 6-5 Methodology for prediction of operational impacts

Environmental Parameter	Predictive Methods	Assessment Criteria	EIS Section
Biodiversity	**Qualitative** assessment to evaluate the impacts of operational activities on key biodiversity sensitive receptors of floral communities, faunal species and habitats within the Study Area and its immediate surrounding (if any).	Assessment criteria broadly takes guidance from Hong Kong Environmental Impact Assessment Ordinance - Technical Memorandum Annex 8, with considerations from literature review and local biodiversity standards.	Section 7
Hydrology, Hydrodynamic and Water Quality	**Qualitative,** analytical methods as well as **quantitative** modelling to assess hydrology and water quality impacts of the development operational phase. Hydrological impact study to assess the impact of operational activities as well as potential land use changes to hydrological conditions of the site, such as the increase in peak flow discharge or changes in stream alignment of the site. Hydrologic model to be used to simulate the hydrological conditions of the catchment within and surrounding the Study Area and potential change in peak flow before and after construction. Hydrodynamic model to simulate the current speed/direction and flow pattern of water from Berlayer Creek to the sea for both existing and operational conditions. Potential impact from changes in flow characteristics (i.e. current speed and direction), and subsequently on erosion or accretion to be assessed. Water quality modelling or analysis will be conducted to assess potential impact of the development to Berlayer Creek and surrounding sensitive receptors during operational phase such as potential change in salinity within the creek. The impact on sensitive receptors will be assessed based on pre-determined tolerance.	• Singapore Environmental Protection and Management (Trade Effluent) regulations [R-11]; • Singapore NParks Biodiversity Impact Assessment (BIA) Guidelines [R-9]; • Water Quality Criteria for Aquatic Life from other countries including ASEAN [R-25], United Nations Economic Commission for Europe [R-18], World Health Organization [R-19], United States Environmental Protection Agency [R-20], Philippines [R-23], Australian and New Zealand Environment and Conservation Council (ANZECC) [R-21], Canadian Council of Ministers of the Environment [R-22], and Department of Environment in Malaysia (DOE) [R-24].	Section 8

Environmental Parameter	Predictive Methods	Assessment Criteria	EIS Section
Soil and Groundwater	**Qualitative** assessment to evaluate the soil and groundwater impacts of construction and operational activities.	Laboratory analytical results from the soil and groundwater samples will be compared to international standards such as the Soil Remediation Circular (Dutch Standards) and Australian and New Zealand Guidelines for Fresh and Marine Water to determine potential impacts to downstream waterbodies (if any).	Section 9
Air Quality	**Qualitative** assessment was conducted to assess air quality impacts of the development operational phase due to increased traffic in the vicinity of the project.	Compare the change in predicted increase in traffic volume to the Project and access routes in the vicinity of the Project.	Section 10
Airborne Noise	**Qualitative** assessment will be adopted to assess operational noise impacts to the noise sensitive ecological and human receptors.	• NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018 • NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016 • Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008 **(for reference purposes only)**	Section 11

6.4.2 Evaluation of Impacts

Impacts were evaluated based on their significance, which is a measure of the weight that should be given to each impact in decision making and if it warrants impact management. It was assessed using the following two factors in the Impact Significance Assessment Matrix (refer to Table 6 6) as detailed below and in the following sections:



- **Impact Consequence:** The consequence of an impact is a function of a range of considerations including impact spread, impact duration, impact intensity and nature, legal and guideline compliance;
- **Likelihood of Occurrence:** The likelihood of the impact occurring in life of the project.

6.4.2.1 Impact Consequence

In evaluating the consequence of environmental impacts, the following aspects were taken into consideration:

- **Receptor Sensitivity**: categorises receptors according to their susceptibility to adverse impacts from the Projects construction and operational phases (refer to Table 6-2);
- **Impact Intensity**: defines the magnitude of the impact and the status of the impact in relation to environmental parameters of interest, based on regulations (e.g. discharge limits), standards (e.g. environmental quality criteria) and guidelines. The criteria presented in Table 6-6 were used to categorise the impact intensity.

Table 6-6 Evaluation of impact intensity for construction and operational phases

Environmental Parameters	Impact Intensity			
	Negligible	Low	Medium	High
Biodiversity	Refer to Section 7.9.1 for impact intensity definitions during construction phase and Section 7.9.2 for impact intensity definitions during operational phase.			
Hydrology	Very minor change to existing hydrology and flow.	Small scale localised changes to existing hydrology or flow.	Medium scale changes to existing hydrology or flow.	Major changes to existing hydrology or flow.
Freshwater and Marine Water Quality	No contamination; or Likely to be well within regulatory limits.	Small scale localised contamination within regulatory limits.	Medium scale contamination or just exceed regulatory limits.	Large scale contamination exceed regulatory limits by hazardous levels.
Soil and Groundwater	• Activity identified will not cause soil and/or groundwater contamination on site; • Activity identified will not cause the reduction in groundwater levels	• Small scale localised soil and/or groundwater contamination which is not likely to extend beyond the Study Area and possible to remediate; • Small scale localised groundwater level decrease which is not likely going to extend beyond the Study Area	• Medium scale soil and/or groundwater contamination which is likely to extend beyond the Study Area but possible to remediate within the construction period time frame; • Medium scale groundwater level decrease that is possibly going to extend beyond the Study Area	• Large scale soil and/or groundwater contamination which is likely to extend beyond the Study Area and may require large scale remediation; • Large scale groundwater level decrease that is likely going to extend far beyond the Study Area
Air Quality (Construction Phase) [1]	-	For Earthworks: • Total site area <2 ,500 m^2 • Soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <4 m in height • Total material moved <20,000t • Earthworks during wetter months	For Earthworks: • Total site area 2,500 m^3 – 10,000 m^3 • Moderately dusty soil type (e.g. silt) • 5-10 heavy earth moving vehicles active at any one time • Formation of bunds 4 m - 8 m in height • Total material moved 20,000-100,000t	For Earthworks: • Total site area >10,000 m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • Formation of bunds >8 m in height • Total material moved >100,000t

Environmental Parameters	Impact Intensity			
	Negligible	Low	Medium	High
	-	For Construction: • Total building volume <25,000 m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)	For Construction: • Total building volume 25,000-100,000 m^3 • Potentially dusty construction material (e.g. concrete) • On-site concrete batching	For Construction: • Total building volume >100, 000 m^3 • On-site concrete batching • Sandblasting
	-	For Trackout: • <10 HDV (>3.5t) outward movements in any one day • Surface material with low potential for dust release • Unpaved road length <50 m	For Trackout: • 10-50 HDV (>3.5t) outward movements in any one day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50-100 m	For Trackout: • >50 HDV (>3.5t) outward movements in any one day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length >100 m
	-	For Demolition: • Total building volume <20,000 m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <10 m above ground • Demolition during wetter months	For Demolition: • Total building 20,000 – 50,000 m^3 • Potentially dusty construction material • Demolition activities 10-20 m above ground level	For Demolition: • Total building >50,000 m^3 • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities >20 m above ground level
Air Quality (Operational Phase)	Insignificant increase in air quality levels in the vicinity of stations due to Project operation	Small scale increase in air quality levels in the vicinity of stations due to Project operation	Medium scale increase in air quality levels in the vicinity of stations due to Project operation	Large scale increase in air quality levels in the vicinity of stations due to Project operation
Airborne Noise (Construction and Operation)	Ecological Receptor: No detectable change to fauna.	Ecological Receptor: Potential impacts last a short duration, are reversible and/or of a small magnitude for	Ecological Receptor: Potential impacts last for a moderate duration, are reversible with significant input	Ecological Receptor: Potential impacts last for a long time, are non-reversible, and/or of a significant magnitude for species with high auditory sensitivity level.

Environmental Parameters	Impact Intensity			
	Negligible	Low	Medium	High
		species with low auditory sensitivity level.	and compensatory measures, and/or of a moderate magnitude for species with medium auditory sensitivity level.	
	Human Receptor: Just noticeable, non-intrusive, increase in noise levels: • Noise can be heard but does not result in any change in behaviour or attitude. • Can slightly affect the character of the area but not such that there is a perceived change in quality of life.	Human Receptor: Noticeable, mildly intrusive, increase in noise levels: • Noise can be heard and may cause small changes in behaviour and/ or attitude. Potential for non-awakening sleep disturbance. • Can slightly affect the character of the area but not such that there is a perceived change in quality of life.	Human Receptor: Noticeable, disruptive, increase in noise levels: • Causes an important change in behaviour and/ or attitude during periods of intrusion. • Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening, and difficulty in getting back to sleep. • Quality of life diminished due to change in character of area.	Human Receptor: Noticeable, very intrusive, increase in noise levels: Significant changes in behaviour and/ or an inability to mitigate effect of noise leading to psychological stress or psychological effects.

Notes:

(1). **This impact intensity criterion is equivalent to the Emission Magnitude as defined in IAQM's Guidance [R-32].**

(2). **Heavy duty vehicles (HDV) defined as vehicles with a gross weight greater than 3.5 tonnes.**

(3). **The Flora & Fauna Specialist will be consulted to identify the species sensitivity to the potential change to their habitat, conservation status and foraging regime.**

A consequence category is then derived based on receptor sensitivity and impact intensity, as shown in Table 6-6. The air quality impact assessment uses matrices specific to the Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction [R-32] and these are provided in Section 10.2.

Table 6-7 Impact consequence matrix

Sensitivity / Impact Intensity	Priority 3	Priority 2	Priority 1
Negligible	Imperceptible	Very Low	Very Low
Low	Very Low	Low	Low
Medium	Very Low	Medium	Medium
High	Low	High	High

6.4.2.2 Likelihood

Likelihood is estimated on the basis of experience and/or evidence that such an outcome has previously occurred. Impacts resulting from routine/planned events (normal operations) are classified under High Likelihood.

Table 6-8 Likelihood criteria

Likelihood Criteria	Definition for All Environmental Parameters	Definition for Airborne Noise (Construction)
Unlikely/ Remote	Would be unlikely or not expected to occur during construction and operational activities.	Happening < 5% of the construction timeline at the worksite.
Less Likely/ Rare	Would less likely/ rarely occur during construction and operational activities.	Happening 5 - 15% of the construction timeline at the worksite.
Possible/ Occasional	Would possibly/ occasionally occur during construction and operational activities.	Happening 16 - 25% of the construction timeline at the worksite.
Likely/ Regular	Would likely to occur or would occur on a regular basis during construction and operational activities.	Happening 26 - 50% of the construction timeline at the worksite.
Certain/ Continuous	Would be certain to occur or would occur continuously during construction and operational activities.	Definition for Airborne Noise and Ground-borne Vibration Quantitative Evaluation (Construction)

References:

1. Ecological Impact Assessment (EcIA). EIANZ Guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd Edition. May 2018. [R-36]
2. CIEEM (2018). Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. September 2018. [R-37].

6.4.2.3 Impact Significance

The significance of each impact will be determined by assessing the impact consequence against the likelihood of the impact occurring using the Impact Significance Assessment Matrix. A simple risk-based matrix will be used for summation of consequence and likelihood, a sample of which is shown below.

Table 6-9 Impact significance matrix

Consequence / Likelihood	Imperceptible	Very Low	Low	Medium	High
Unlikely/ Remote	Negligible	Negligible	Negligible	Negligible	Negligible
Less Likely/ Rare	Negligible	Negligible	Minor	Minor	Minor
Possible/ Occasional	Negligible	Minor	Minor	Moderate	Moderate
Likely/ Regular	Negligible	Minor	Moderate	Moderate	Major
Certain/ Continuous	Negligible	Minor	Moderate	Major	Major

Positive impacts are classified under a single category. Impacts assessed as negligible or minor will require no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor was of low sensitivity and/or that adequate controls were already included in the Project design). Negligible and minor impacts are therefore deemed to be "Insignificant". Impacts evaluated as moderate or major require the adoption of management or mitigation measures. Major impacts are therefore deemed to be "Significant" and moderate impact as "Relatively Significant". Major impacts always require further management or mitigation measures to minimize or reduce the impact to an acceptable level.

An "acceptable level" is the reduction of a major impact to a moderate one after mitigation. In seeking to mitigate moderate impacts, the emphasis is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable. It will not always be practical to reduce moderate impacts to minor ones in consideration of the cost-ineffectiveness of such an approach (due to the diminishing return of a reduction of impact versus cost). Residual impact assessment shall be conducted for those parameters where impact from the activity is identified to be significant and additional mitigation measures are recommended. Positive impacts were not assessed for significance. Assessment of residual impact shall follow similar risk approach as outlined above.

6.5 Mitigation of Impacts and Environmental Monitoring and Management Plan (EMMP)

Where the implementation of minimum controls is insufficient to alleviate any significant environmental construction and operational impacts (moderate to major impacts), Project-specific final mitigation measures, in consultation with the URA, HDB and relevant Authorities, will be proposed. Where applicable and practical, engineering control measures will be accompanied by specifications (product brochures), estimated cost and source of supply. In addition, mitigation measures at receptors' end will also be recommended on a case by case basis. For example, if the unmitigated construction noise levels are found exceeding the relevant criteria, practical direct mitigation measures such as the use of noise barriers, enclosures, quieter powered mechanical equipment (PME) and construction methods, etc. will be recommended. Effective dust control measures will be recommended to minimize dust emission from the site, where necessary. Mitigation measures will be proposed in accordance with the following hierarchy in line with Biodiversity Impact Assessment (BIA) Guidelines published by NParks in year 2020 [R-9]:

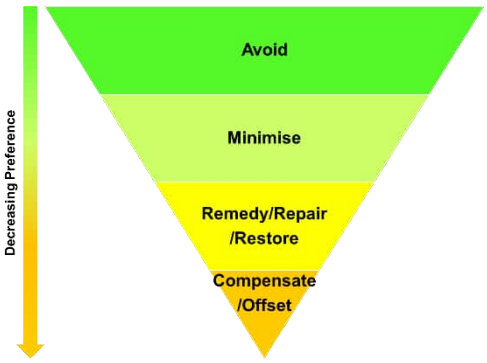


Figure 6-2 Mitigation hierarchy

- **Avoid** – Where changes to the Project design and construction/operational methodology can be made to eliminate or avoid an identified impact (e.g. optimisation or reduction of construction footprint, shift or elimination of construction site in critical areas, etc.). If a full elimination is not possible, the next level of mitigation is to minimize the identified impact;
- **Minimize** – Where changes to the Project design and construction/operational methodology cannot affect impact elimination or avoidance, use of alternative construction methodology or any enhancement measures can be adopted to minimize for identified impacts. For e.g. a wildlife shepherding plan is put in place to allow any animals trapped on the site to escape into the surrounding vegetation;
- **Remedy/Repair/Restore** – Where changes to the Project design and construction/operation cannot affect impact avoidance and impact minimization, restoration methodology can be applied after construction is completed to remedy/repair/restore the ecological habitat as much as possible. For e.g. after construction, appropriate trees and shrubs are replanted in appropriate locations on the impacted site to restore part of the habitat;
- **Compensation/Offset –** Where measures taken to compensate or offset the residual impacts after implementing the first three steps of the mitigation hierarchy, wherever technically and financially feasible, e.g. transplanting of rare shrubs or trees to elsewhere in consultation with government authorities, etc.

Subsequently, a Construction Stage EMMP and Operational stage EMMP will be formulated specifying mitigation measures, monitoring scope, methodology and location, and triggers to report and escalate the irregularities in the baseline conditions at construction/operational stage. The basis of EMMP is provided in Section 13 which also summarises information about identified sensitive receptors, potential impacts evaluated, residual impacts (if any) and frequency of monitoring (if required), as well as close up actions.

6.6 Baseline Approach and Methodology

The baseline study aims to establish the extent and conditions of the existing environment that may be potentially affected by the execution of the proposed Projects. The baseline study provides the basis for the prediction of potential impacts of the Projects across each environmental parameter.

The collection of pre-construction baseline environmental status at the assessment area will be conducted both from primary sources and secondary sources and will help to identify sensitive receptors.

The primary data will be collected via:

- Review of the development layer and construction footprint provided by relevant agencies;
- Site reconnaissance to confirm existing conditions of baseline environment, including accessibility;
- Site surveys, sampling and monitoring to assess the existing environmental conditions; and
- Consideration of receptor sensitivity priority (refer to Table 6-2).

Additional secondary data will be collected for the following aspects:

- Review of available environmental surveys previously carried out within or in the vicinity of the assessment areas (e.g. tree surveys, ecological surveys, topography surveys, geotechnical interpretative report, environmental site investigation/environmental site assessment/environmental baseline study [especially for reports prepared for the Former BP Oil Refinery site], etc.);
- Proposed site infrastructure installation methodology and layout, including the expected excavation depth and project schedule;
- Publicly available data, existing literature, books (e.g. Singapore Red Data Book (SRDB) and online sources);
- Historical, current and planned land uses;
- Online databases;

- Aerial photographs;
- Existing topography and bathymetry;
- Existing biodiversity information at Berlayer Creek, Labrador Nature Reserve and sensitive intertidal areas;
- Planned development on the waterbodies;
- Regional and local drainage maps of the catchment area;
- Weather Data (Rainfall, Wind, Evaporation);
- Landscape maps;
- Commercial and recreational activities; and
- Geological maps.

6.6.1 Safety Contingency Plan

All on-site personnel shall be in general compliance with the requirements of the Health and Safety Plan (HASP) and Job Safety Risk Assessment developed for this site and which are respectively presented in Appendix A and Appendix B. All field surveys shall be conducted in accordance with AECOM safety procedures and requirements as documented in the HASP and Job Safety Risk Assessment.

All personnel completing the onsite baseline surveys shall be formally inducted with the HASP and Job Safety Risk Assessment. Subcontractors may follow the HASP and Job Safety Risk Assessment prepared by AECOM but it is expected that they have their internal policies and procedures in terms of health and safety. The subcontractors may adopt the HASP and Job Safety Risk Assessment prepared by AECOM at their own risk. To note that Camphora has developed its own safety plan which is presented in Appendix C for the biodiversity surveys.

Potential hazards that may be encountered during the field surveys are enumerated in the HASP and Job Safety Risk Assessment. Appropriate mitigation measures are included to lower the identified risk as low as reasonably practicable (ALARP). The AECOM Project Manager shall coordinate activities and meetings with AECOM subcontractors in order to ensure that tasks associated with the Projects are completed smoothly.

6.7 Identification of Potential Environmental Impacts

This section discusses possible environmental impacts arising from the construction and operational phases of the Project, based on the proposed construction and operational activities, as well as studied environmental parameters.

6.7.1 Construction Phase

The list of potential environmental impacts during construction phase is summarized in Table 6-10.

Table 6-10 Potential environmental impacts from construction phase

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
Biodiversity	Pre-construction activities mainly includes site investigation works, clearing of vegetation, excavation and demolition of existing building structures. In particular, excavation works to prepare site for construction phase might alter the hydrology and bring about changes in ecologically sensitive habitats such streams nearby.	Habitats • Loss of vegetation • Habitat degradation • Change in species composition Plant Species • Mortality • Impediment to seedling recruitment • Competition from exotic plants species
	Construction activities include piling, construction of footings and retaining walls; construction of buildings and facilities, and in	

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
	the process, there is potential of improper handling of solid, liquid or toxic waste. Post construction activities include demolition and removal of construction materials and vehicles, withdrawal of personnel and daily operations.	• Decline in plant health and survival Faunal Species • Loss of/reduction in habitats and food sources • Injury or mortality • Loss/reduction of ecological connectivity for faunal movement • Light disturbances • Human disturbances
Hydrology and Surface Water Quality	Land clearing, earthworks and excavation, building construction (e.g. road widening, holding areas and site office) activities: • Run-off from exposed soil surface, earth work areas, soil stockpiles; • Stormwater/groundwater pumped out from excavated areas; • Release of grouting and cement materials; and • Run-off from dust suppression sprays. • Elevated suspended solids (e.g. silt and sediment) in site run-off due to heavy rain; • Spoil generation, handling and transport; • Heavy rain during construction; • Altering existing drainage system within the Study Area; and • Change in land use due to proposed development (increase impervious surface and reduce seepage to soil).	Hydrology: • Increased stormwater peak flow contributions to the channel can lead to increased water level and subsequent flooding of surrounding areas adjacent to the watercourses due to the land use change from land clearing; • Altered dry weather flow which can lead to impact on downstream aquatic habitats and communities; • Stormwater run-off from exposed and unstable slopes may cause soil erosion and accretion. • Increased water flow velocity and water level of watercourses due to changed land use, leading to erosion along the watercourses; and • Flooding risk due to alteration of existing drainage system Surface Water Quality: • Elevated levels of suspended solids leading to increased turbidity and sedimentation rates, solid waste, toxic material, etc; and • Increase in the levels of oil, grease, and other chemical substances. • Potential change in salinity in Berlayer Creek if there is increased surface run-off or significant change in dry weather flow contributing to the creek from upstream catchment and tributaries.

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
	Storage and disposal of liquid and solid wastes: • Improper handling, transfer, storage, and disposal of spoil and solid waste (e.g. excavated earth, construction debris). • Improper management of sewage effluents from on-site; and • Inappropriate discharge of domestic sewage and poor maintenance of the portable chemical toilet, storage tanks and septic tanks (e.g. overflow or overload).	Surface Water Quality: • Stormwater contamination; • Elevated levels of suspended solids entering watercourses. The waste can also block the temporary drains leading to contamination of receiving watercourses; • Toxic waste generated at temporary work areas can lead to surface water quality contamination of nearby watercourses; and • Run-off increase in nearby watercourses and potentially contaminate the watercourses located adjacent to the construction sites.
	Use and storage of chemical substances, and refuelling activities: • Improper handling, transfer, and storage of chemical substances; • Accidental spill and leaks; and • Fuel and lubricants spillage from maintenance of construction vehicles and mechanical equipment.	Surface Water Quality: • Stormwater contamination; • Elevated levels of oil, grease and other chemical substances in the nearby watercourses; and • Fuel and lubricants spillage from maintenance of construction vehicles and mechanical equipment can also lead to elevation in levels of oil in the nearby watercourses.
Soil and Groundwater	Groundwater extraction/ soil dewatering during pre-construction and construction activities such as earthworks, site levelling, land grading, foundation works and construction of the buildings and associated roads and infrastructure.	• Decreased groundwater baseflow feeding into the streams which may cause disturbances in surrounding habitats
	Decreased infiltration into the ground due to temporary or permanent increase of impervious surfaces within the site.	
	Improper management and disposal of excavated soils and/or groundwater during excavations activities. Contaminated excavated soils (if encountered), if not stored, handled, transported and disposed properly, can lead to direct or indirect contamination to soil and/or groundwater.	• Potentially adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater • Groundwater contamination can lead to soil contamination, degradation of land quality and it can be transported to surface water bodies, leading to their deterioration • Some contaminants such as metals can accumulate in the root zone, affecting vegetation growth and long-term viability • Contaminated soil and groundwater can directly or indirectly affect fauna, possibly
	Improper handling, transfer and storage of toxic chemical waste. This could potentially lead to discharge of toxic chemical waste due to spillage or leakage during storage, handling and transfer	
	Improper handling, transfer, refuelling and storage of chemicals (e.g. diesel, bentonite, lubricants, oils, grease, paints, solvents, waste treatment chemicals, etc.) generated during construction activities. These activities could lead to incidental discharge of chemical	

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
	due to spillage or leakage during storage, handling, transfer and refuelling (oil, grease or other chemical substance release).	leading to reduction in size of species' population and long-term viability
Air Quality	Dust emissions generated by earthworks processes, including land clearance, soil-stripping, ground levelling, excavation, stockpiling of spoil and landscaping.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.
	Dust emissions generated by the construction of new structures, including holding areas and site offices.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.
	Dust emissions generated from potential demolition works, if any.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.
	Dust emissions from transport of dust and dirt by dumper trucks for transporting spoil within the site and from the site onto public road network, where it may be deposited and resuspended by vehicles using the network.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors nearby haulage routes.
	Gaseous emissions from vehicle exhaust due to movement of construction vehicles and equipment, including spoil disposal	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of construction worksites.
	Gaseous emissions from off-road diesel engines on-site such as generators, if any	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of construction worksites.
Airborne Noise	Noise from trucks transporting spoil / equipment.	Potential for terrestrial and aquatic transects to alter their natural behaviours or relocate to avoid unfamiliar noises caused by construction works in their habitats. Noise could potentially generate nuisance at the sensitive receptors in the vicinity of construction
	Noise from traffic congestion caused due to inadequate lane compensation and traffic diversion during construction.	
	Noise generated by the use of Powered Mechanical Equipment (PME), (such as excavators, generators, pumps, cranes, etc.,) for various construction activities within the site, including construction of holding areas, site offices and road widening works.	

6.7.2 Operational Phase

The list of potential environmental impacts during operational phase is summarized in Table 6-11.

Table 6-11 Potential environmental impacts from operational phase

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
Biodiversity	Predominantly disturbance impacts from increased anthropogenic noise, human activity and presence of built structures.	Habitats • Habitat degradation • Change in species composition Plant Species • Mortality • Competition from exotic plants species Faunal Species • Injury or mortality • Loss of ecological connectivity for faunal movement • Light disturbances • Human disturbances
Hydrology and Surface Water Quality	Stormwater runoff generation: • Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to the streams; • Increase of runoff peak flow draining to the stream or drain during storm events due to the increase in urbanized area; • Reduce the baseflow (sub-surface water discharge) due to the change in land use of the new development	Hydrology: • Increased stormwater peak flow contributions to the channel can lead to increased water level and subsequent flooding of surrounding areas adjacent to the stream/drain; • Alter dry weather flow in natural stream that can lead to impact on downstream aquatic habitats; • Stormwater run-off from exposed and unstable slopes may cause soil erosion; and • Increased flow velocity due to the changed land use leading to erosion along the waterway. Surface Water Quality: • Elevated suspended solids (e.g. silt and sediment), pollutants (e.g. heavy metals and nutrients) and solid wastes (e.g. improper littering from human activities) in site run-off • Potential change in salinity in Berlayer Creek if there is significant change in dry weather flow contributing to the creek from upstream catchment and tributaries.
	Improper management of liquid and solid wastes: • Accidental spill and leaks (e.g. during storm event); Improper handling, transfer, and storage of solid and liquid wastes (e.g. rubbish collection and sewage disposal);	Surface Water Quality: • Solid wastes generated from human activities can lead to elevated levels of suspended solids entering watercourses. The wastes can also block the watercourse and leading to contamination of receiving watercourses; and Inappropriate discharge of liquid wastes to the watercourse results in contamination of nearby or downstream watercourses.
Soil and Groundwater	Reduced infiltration of surface water into the soil due to replacement of	Potential change in the baseflow discharging into the creek may lead to disturbances in surrounding habitats

Environmental Parameter	Potential Source of Impacts	Potential Associated Impacts
	existing landscape features by impervious surfaces	
	Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater	• Potentially adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater • Groundwater contamination can lead to soil contamination, degradation of land quality and it can be transported to surface water bodies, leading to their deterioration • Some contaminants such as metals can accumulate in the root zone, affecting vegetation growth and long-term viability • Contaminated soil and groundwater can directly or indirectly affect fauna, possibly leading to reduction in size of species' population and long-term viability
	Discharge or leakage of waste and chemicals into the soil	
Air Quality	Gaseous and particulate emissions from vehicle exhaust due to the increased traffic due to Project operation	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of the Project.
Airborne Noise	Traffic noise due to increase in vehicular volume	Potential impacts due to the increase in noise level includes noise disturbance to humans (residential and other receptors). In addition, potential noise impacts to Fauna might also include affecting ecological foraging behaviour, Intra-species and inter-species communication.
	Air-conditioning and mechanical ventilation noise from services at the developments due to mechanical and electrical services.	

6.8 Stakeholder and Public Engagement

It is known that effective communication and cooperation between various expert groups as well as the Client or stakeholders will minimise any risks throughout project delivery. During this Study, stakeholder and public engagement has been planned throughout the project period to better understand their requirement, concerns, etc.

The first Nature Group engagement session was conducted virtually over Zoom on 9th September 2021 with representatives from Nature Groups who have an interest in the terrestrial and marine natural environments. The objective of this session was to present the baseline findings and preliminary impact assessment to these representatives and to provide a platform to better understand their concerns on this Study, as well as to receive inputs on proposed mitigation measures. Any issues raised during the engagement session were reviewed and the EIS report was revised accordingly. After taking into consideration their key concerns on this Study, further environmental impact studies were conducted.

Another Nature Group Workshop was carried out on 22nd October 2021, with a smaller group of Nature Group representatives consisting of bird enthusiasts, to seek their inputs on proposed avian connectivity measures. Based on the outcomes of the discussion, the design of the Development Area was revised in consideration of the Nature Group representatives' feedback.

A subsequent session was conducted virtually over Zoom on 10th February 2022 with Nature Group representatives (including attendees from the previous rounds of engagement). The objective of this session was to share the proposed mitigated development design plans which were developed based on the feedback and suggestions from Nature Group representatives, as well as to receive their final feedback on this proposed plan.

7 Biodiversity

7.1 Introduction

The Biodiversity Impact Study aims to establish baseline biodiversity information of the Study Area (as defined in Section 6.2.1 to be the Assessment Area) and evaluate the impacts of the proposed project on existing biodiversity resources. Baseline information was first gathered through reviews of past and present biodiversity records, published literature, and in consultation with taxonomic experts. Field surveys were then carried out to verify and supplement the data. Through desktop and field assessments, important habitats, along with floral and faunal species of conservation significance were identified. The information was then used to evaluate the nature and scale of potential impacts associated with the project. Mitigation measures were recommended to avoid, reduce and/or minimise identified impacts.

7.2 Methodology

The biodiversity assessment included the areas defined in Section 3, Figure 3-1. The floristic and faunistic field assessments covered a total area of 77.8 ha, comprising one worksite and adjacent areas of known or potential ecological sensitivity.

7.2.1 Biodiversity Desktop Assessment

7.2.1.1 Land Use History

Historical and present-day land use of the Study Area were reviewed. Information on land use history was primarily gathered from old maps in the online collection of the National Archives of Singapore (NAS) [M-4] as well as historical maps on the OneMap and the National University of Singapore (NUS) Libraries [M-3] portals. This is presented in Section 4.1.

7.2.1.2 Taxonomy and Nomenclature

Past and present floristic as well as faunistic species composition were examined using relevant key references that include books, scientific publications, unpublished literature, and online databases. Sources of databases include Biodiversity of Singapore by the Lee Kong Chian Natural History Museum (LKCNHM) [W-28], Flora and Fauna Web by the National Parks Board (NParks) (2010) [W-10] and iNaturalist. Other key references include the Singapore Red Data Book [P-2], Biodiversity Records under Nature in Singapore, an online journal of LKCNHM [W-26], Singapore Biodiversity Records Archives by LKCNHM [W-30], an encyclopaedia on Singapore's biodiversity by Ng at al. [P-15], and the database of flora and fauna records compiled by our biodiversity specialist (unpublished).

Local and/or regional references for the various taxonomic groups are listed in the table below.

Table 7-1 Key references for the nomenclature and taxonomy for each taxonomic group

Taxon	Key References
Plants	Chong et al. (2009) [P-9]; World Checklist of Selected Plant Families [W-28]; Plants of the World Online [W-29]
Butterflies	Khew (2015) [P-14]; Jain et al. (2018) [P-13]; Theng et al. (2020) [P-60]
Odonates	Soh et al. (2019) [P-12]; Tang et al. (2010) [P-61]; Ngiam & Cheong (2016) [P-62]
Herpetofauna	Baker and Lim (2012) [P-10]
Birds	Gill and Donsker (2020) [W-12]; Nature Society (Singapore) Bird Group Records Committee (2020) [W-30]; Singapore Birds (2021) [W-31]; Singapore Bird Group (2021) [W-32]; Singapore Birds Project (2021) [W-33]
Mammals (including bats)	Baker and Lim (2012) [P-10]; Corlett (1992) [P-63]; Teo & Rajathurai (1997) [P-64]; Chua & Lim (2011) [P-8]; Brook et al. (2003) [P-65]; Lane et al. (2006) [P-66]

Taxon	Key References
Freshwater fish	Kottelat (2013) [P-17]; Suzuki et al. (2015) [P-18]; Ho et al. (2016) [P-19]; Ng & Lim (1997) [P-67]; Tan et al. (2020) [P-6]; Giam et al. (2011) [P-68]
Freshwater molluscs	World Register of Marine Species [W-11]
Freshwater decapod crustaceans	Ng (1997) [P-15]; Cai et al. (2007) [P-16]

7.2.1.3 Species List

A list of faunal species that are likely to occur at the Study Area (termed thereafter as "species of probable occurrence") was compiled using information on existing habitat types as well as past records of fauna up to 2 km from the Study Area.

7.2.1.4 Species of Conservation Significance

The assessment of whether certain species are of conservation significance is important for highlighting the need and priorities for conservation.

Threatened species of flora—i.e., listed in Chong et al.[P-9] as nationally Vulnerable, Endangered, Critically Endangered, or Presumed Extinct (which indicates a rediscovery)—were assessed to determine whether they are of conservation significance. While the national conservation status of threatened species is true of wild populations that originate in an area without direct or indirect human intervention, some populations may be relics that persist from past cultivation or escapees from present-day cultivation that do not belong to native genetic stock. The assessment of whether a threatened species is of conservation significance was based on, but not limited to, information on the following: (1) land use history, (2) presence of large parent tree(s), (3) commercial availability, (4) data from previous environmental impact assessments, (5) reforestation efforts, (6) natural range, and (7) importance for associated fauna. Where the origin of a threatened species population is disputable or difficult to determine, the more conservative approach was adopted, i.e., they were considered of conservation significance with or without corroborating findings from field surveys of fauna. In carrying out such assessments, conservation needs can then be prioritised, and resources gathered in conserving them.

Faunal species of conservation significance include both non-threatened species regarded as notable records as well as threatened species. Notable non-threatened species are species deemed to be of conservation interest due to a restricted distribution nationally. On the other hand, threatened species of fauna are those listed as nationally or globally Vulnerable, Endangered, Critically Endangered, or Extinct. The national conservation statuses reference the Singapore Red Data Book (SRDB) [P-2] and other more updated local checklists, where available, such as Soh et al. [P-12] for odonates and Jain et al. [P-13] for butterflies. The global conservation status follows that listed in the Red List of Threatened Species by the International Union for Conservation of Nature [P-11].

7.2.2 Biodiversity Field Assessment

7.2.2.1 Site Reconnaissance

Site reconnaissance was conducted in January 2021 to obtain an initial understanding of the existing habitats and biodiversity. Field observations were then used for the planning and execution of actual surveys. The objectives of the site reconnaissance survey are as follows:

- Determine site accessibility and terrain;
- Conduct a preliminary assessment to determine the dominant vegetation types;
- Identify locations of existing natural permanent water bodies, such as streams, ponds, and swampy areas (if any); and
- Mark out survey sampling routes and potential locations for camera traps.

7.2.2.2 Floristic Field Assessment

The field assessment for flora consists of (1) habitat and vegetation mapping, (2) general walking floristic surveys and (3) tree mapping. Surveys were conducted between 2nd February 2021 and 17th May 2021.

7.2.2.2.1 Habitat and Vegetation Mapping

A preliminary habitat distribution map for both terrestrial area and Marine Area was first prepared based on visual interpretations of satellite images from Google Earth Pro 7.3.3.7786 [O-3]. For terrestrial areas, preliminary classification of the vegetation types—for example, scrubland, forest and mangroves vegetation—was determined using visual features, such as textures and colours, observed in the satellite images. Adjustments were then made to the preliminary maps according to actual observations during ground truthing.

Ground truthing was conducted throughout the terrestrial areas with the aid of a Global Positioning System (GPS) receiver (Garmin GPSMap® 64s). Photographs of the vegetated areas were also taken. The boundaries of each vegetation type were tracked on the GPS receiver and mapped out on Google Earth Pro 7.3.3.7786 [O-3].

A remotely operated vehicle (ROV) (Gladius Mini underwater drone) was used to map the marine habitats. This method was adapted from Davis et al. [P-58], where the authors used a towed camera system instead of an underwater drone. The ROV was operated from land with a 100-m tether. Underwater footage were taken by the ROV along twenty 100-m transects perpendicular to the shore spaced 10 m apart. The ROV was operated to move at a steady speed of 1–2 km/h while recording footage. This was carried out on days with high tide and fair weather (i.e., with low wind speeds of less than 10 knots to minimise vigorous movements of the ROV under water). All recorded footage was then reviewed to identify and map out the sub-tidal habitats.

The classification of the habitat and vegetation types reference NParks [R-9].

7.2.2.2.2 General Walking Surveys

All plants observed in the study area during floristic surveys were identified to species whenever possible. A checklist of all the plant species recorded from the present floristic surveys was compiled. The nomenclature and national conservation status follow that of Chong et al. [P-9], and/or other published papers with information on the updated assessment of the species nomenclature and/or conservation status. The latter is usually for one or a few individual species. Other information on the plant species was also crosschecked with online databases, namely, the National Parks Board Flora and Fauna Web and Singapore Biodiversity Online.

For plants that could not be immediately identified with certainty in the field, photographs and/or voucher specimens were taken. They were then identified using identification keys, taxonomic descriptions, online plant photo databases, with the help of taxonomic experts, and/or by matching the pressed and dried collected specimens with existing specimens in the Singapore Botanic Gardens' Herbarium (SING).

For very tall unidentifiable trees with leaves that are too high in the canopy to photograph, dried leaves matching these trees were collected from the forest floor and used to aid in species identification.

Species of Conservation Significance

The geographic coordinates of plants of conservation significance were marked using a GPS receiver (Garmin GPSMap® 64s), during floristic surveys. Where there are clusters of plants of conservation significance—i.e., more than one individual occurring within 5 m or less of another individual—the approximate centre of the area was marked using the GPS receiver.

Large Plant Specimens

Similarly, the GPS receiver was used to record locations of all trees of ≥ 3 m girth, as well as bamboo clusters, palm clusters, and strangling *Ficus* species of ≥ 3 m spread. Specimens were identified to species and whenever possible. The girth (for trees) and spread (for bamboo clusters, palm clusters, and strangling Ficus species) were also measured and/or estimated. The estimated height of the specimens was also recorded.

Other Plant Specimens of Value

Locations of other plants that are of value but do not meet the minimum size requirement, as detailed in the above sub-section, were also recorded using the GPS receiver. Examples of such include bamboo clusters of < 3 m spread that may be important refugia for bamboo bats, exotic trees of < 3 m girth with active raptor nests, amongst others.

7.2.2.2.3 Tree Mapping

All trees, single-stemmed palms, and strangling *Ficus* species of ≥ 1.0 m girth or spread, mangrove trees of ≥ 0.3 m girth, as well as species of conservation significance of ≥ 0.3 m girth or spread were mapped and tagged with a unique serial number. Single-stemmed palms are defined in this study as having one obvious and erect stem (Figure 7-1). The geographic locations, girth/spread and height were also recorded.



Figure 7-1 Examples of single-stemmed palms defined in this Study as having one obvious and erect stem

A Differential Global Positioning System (DGPS) receiver (Hi-Target Qmini A5 handheld data controller with the V-90 GNSS receiver and Leica DISTO™ D510 touch rangefinder or CHC® Navigation HCE320 GNSS data controller with the CHC® Navigation i90 Pro GNSS receiver and Leica DISTO™ D810 touch rangefinder) was used to record the geographic locations of the specimens using the SVY21 plane coordinate system. Where there are clusters of specimens of the same species occurring within 1–2 m of each other, only one specimen was tagged and its location marked using the DGPS.



Figure 7-2 (A) cHC® Navigation HCE320 GNSS data controller (source: geo-matching.Com); (B) how it is used in the field

7.2.2.3 Faunistic Field Assessment

Surveys of fauna were carried out for the following taxa: (1) butterflies, (2) odonates (damselflies and dragonflies), (3) herpetofauna (amphibians and reptiles), (4) birds, (5) mammals (including bats), (6) freshwater fish, molluscs and crustaceans, and (7) marine fauna (fish, molluscs, crustaceans and horseshoe crabs). Surveys were conducted between 4th February and 29th July 2021 at the Study Area. Additional surveys for migratory birds were conducted between 15th September and 14th October 2021 to account for the (peak) bird migratory season. Subsequently, light temperature humidity surveys were also conducted during this period.

The locations and number of sampling units were finalised upon completion of site reconnaissance surveys (Figure 7-3). Table 7-2 summarises all the surveys that were carried out for fauna. Each survey was performed by at least two surveyors. All fauna encountered will be identified to species, or to the next lowest taxonomic level possible, and the location of each individual was recorded using a handheld GPS receiver (Garmin GPSMAP 64s). The number of individuals observed was also documented.

All observations of notable species from the aforementioned taxa were also recorded if seen outside the stated survey times. A checklist of all species of fauna observed from the surveys was compiled and presented in Appendix J.

Table 7-2 Summary of faunal surveys

Survey Type	Taxon	Timing (h)	Duration	Sampling Unit	Technique
Diurnal Transect Surveys	Butterflies	0900–1500	20–30 minutes per transect	200-m continuous transects along a sampling route	Visual only; up to 25 m left, right, and front of surveyor
	Odonates (damselflies and dragonflies)	0900–1900	20–30 minutes per transect	200-m continuous transects along a sampling route	Visual only; up to 25 m left, right, and front of surveyor
Diurnal and Nocturnal Transect Surveys	Herpetofauna (amphibians and reptiles)	0700–1000; 2000–2300	20–30 minutes per transect	200-m continuous transects along a sampling route	Visual and auditory; up to 50 m left, right, and front of surveyor
	Birds	0700–1000; 2000–2300	20–30 minutes per transect	200-m continuous transects along a sampling route	Visual and auditory; up to 50 m left, right, and front of surveyor
	Mammals (non-volant)	0700–1000; 2000–2300	20–30 minutes per transect	200-m continuous transects along a sampling route	Visual and auditory; up to 50 m left, right, and front of surveyor
Camera Trapping	Mammals (non-volant)	24 hours a day	60 days	Traps spaced at least 200 m apart	Infrared motion sensing
Bioacoustics Surveys	Mammals (bats)	2000–2300	20–30 minutes per transect	200-m continuous transects along a sampling route	Auditory only
Roost Emergence Surveys	Mammals (bamboo bats only)	1830–2100	–	Bamboo clusters	Visual and auditory
Cast and Seine Netting	Freshwater and marine fish	Daytime (between 0900-1900)	–	Cast netting: Sampling points inside water bodies Seine netting: Sampling points spaced 50 m apart	–
Minnow trapping	Freshwater aquatic fauna (fish and decapod crustaceans)	Overnight	One day one night	Traps (intervals vary with length of stream)	Baited

Survey Type	Taxon	Timing (h)	Duration	Sampling Unit	Technique
Quadrat Sampling	Marine molluscs, crustaceans and horseshoe crabs	Daytime	–	5-m intervals along 25-m sampling route	–
Nocturnal Transect Surveys	Marine fish, molluscs, crustaceans and horseshoe crabs	Predawn to dawn and/or evening-twilight hours	–	200-m continuous transects along a sampling route	Visual; up to 25 m left, right, and front of surveyor



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
- Waterbody (man-made)
- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SS	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement: NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Locations of terrestrial and marine survey units

Designed	Checked	Approved	Figure No. :	Rev.	Sheet
SS	NHT	JAG	7-3	-	1 of 1
	Drawn: SS	Date: APR 2022	CAD File Name : NA		A3

Note: Source of basemap - Google Earth Map

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7.2.2.3.1 Butterflies

Diurnal transect surveys were carried out for adult butterflies along 200-m continuous transects on three sampling routes between 0900h and 1500h. Butterfly caterpillars, pupae, eggs, and host plants were also recorded when observed. Adult butterflies were identified visually (with binoculars where necessary), photographed, or caught using insect nets, if required. Captured individuals were released immediately after identification.

7.2.2.3.2 Odonates (Dragonflies and Damselflies)

Diurnal transect surveys were carried out for adult damselflies and dragonflies along 200-m continuous transects on three sampling routes between 0900h and 1900h. Owing to difficulties in sampling and identification, aquatic larvae and exuviae were not surveyed. Adult odonates were identified visually (with binoculars where necessary), photographed or caught using insect nets, if required. Captured individuals were released immediately after identification.

7.2.2.3.3 Herpetofauna (Amphibians and Reptiles)

Diurnal (0700h–1000h) and nocturnal (2000h–2300h) surveys were carried out for amphibians and reptiles along 200-m continuous transects on three sampling routes. As herpetofauna occupy a wide range of habitat types, both the diurnal and nocturnal surveys also involved active searches for individuals on the ground, below rocks, logs, leaf litter and debris, in the water, and/or on vegetation. Torches and/or headlamps were used to elicit eye shine during nocturnal surveys. Vocalising fauna were also located or identified by call recognition, whenever possible. For species that are capable of quick retreats and escapes, the individuals were captured by hand, or using hooks, tongs, or dip nets for identification. Captured individuals were released immediately after identification.

7.2.2.3.4 Birds

Diurnal (0700h–1000h) and nocturnal (2000h–2300h) surveys were carried out for birds along 200-m continuous transects on three sampling routes. Birds were identified visually (with binoculars where necessary) and photographed. Torches and/or headlamps were used to elicit eye shine during nocturnal surveys. Vocalising birds were also located or identified by call recognition, whenever possible. Additional surveys were conducted between 15th September 2021 and 15th October 2021 to account for migratory birds.

7.2.2.3.5 Mammals (Non-Volant)

Diurnal (0700h–1000h) and nocturnal (2000h–2300h) surveys were carried out for non-volant mammals along 200-m continuous transects on three sampling routes. Both the diurnal and nocturnal surveys also involved searches in burrows and tree holes. Tracks, scats and holts were also recorded. Mammals were identified visually (with binoculars where necessary) and photographed. Torches and/or headlamps were used to elicit eye shine during nocturnal surveys. Vocalising mammals, such as the squirrels, were also located or identified by call recognition, whenever possible.

In addition to transect surveys, mammals were also surveyed via camera trapping. Ten camera traps were deployed in total – six at Keppel Club golf course, three along port road and one at Bukit Chermin (Figure 7-3). The camera traps were deployed at least 250 m apart within the Study Area and kept at least 20 m away from the transects, whenever possible. Locations of the camera traps were finalised upon completion of site reconnaissance surveys.

Each camera trap was set up at approximately 20–30 cm above ground (Figure 7-4). They were programmed to operate 24 hours a day and record 10-second footage per motion trigger with a 10-second quiet period following each trigger. Each camera trap will be deployed for 80 days. The two camera trap models that were used are (1) Browning Recon Force Advantage BTC-7A and (2) Browning Dark Ops HD Pro X BTC-6HDPX.



Figure 7-4 Example of a camera trap setup

7.2.2.3.6 Mammals (Bats Only)

Acoustics surveys were carried out for bats along 200-m continuous transects on a sampling route between 2000h and 2300h. The Echo Meter Touch 2 Pro (Wildlife Acoustics, Inc.) was used to record, stream, and attenuate ultrasonic calls between 18 and 192 kHz at a sampling frequency of 384 kHz to low frequency signals below 20 kHz, a range that is audible to the human ear.

Roost emergence surveys were carried out between 1830h and 2100h for bamboo bats, specifically, at bamboo clusters identified during floristic surveys. Bamboo bats were identified visually and photographed, and calls were recorded using the Echo Meter Touch 2 Pro detector. Bamboo slits that are at least 1 cm wide and long and actively used for entry and exit, as well as the number of bats residing within each internode were recorded.

7.2.2.3.7 Fish (Marine and Freshwater)

Surveys of freshwater fish were carried out at suitable freshwater water bodies present in the Study Area between 0900h and 1500h. Cast netting was performed at freshwater bodies within Keppel Club golf course for freshwater fish (Figure 7-3; Figure 7-5A) , and at six sampling points spaced 50-m apart within the marine intertidal zone during high tide (0.9–1.5 m) in the day for marine fish. Seine netting was also performed for marine fish in subtidal and intertidal zone within the Marine Area (Figure 7-3; Figure 7-5B)

For both fishing methods, the nets were deployed three times at each sampling point (Figure 7-5). All fish caught were counted and identified, then placed in a bucket of water until the survey was completed to prevent double counting. The fish specimens were released back into the water body immediately upon completion of the fish-sampling session.

Where netting was deemed unsafe owing to deep water levels, netting was not conducted (i.e., Pond A5).

In addition, minnow traps were baited with halal meat (e.g., sausage or liver) and deployed at locations with deeper water. Traps were left overnight, then checked and removed the following morning.



Figure 7-5 (A) Cast netting; (B) Seine netting

7.2.2.3.8 Molluscs, Crustaceans, and Horseshoe Crabs

Surveys of marine molluscs, crustaceans and horseshoe crabs were carried out during low tide when seawater levels were 0.3 m or less. Quadrat sampling and visual surveys were conducted in intertidal habitats (soft sediment seabed and sandy seabed) to sample for benthic species. Three 15-m transects perpendicular to the creek were set up along Berlayer Creek (mudflat) and were positioned such that they overlap with most sub-zones in the mudflats—i.e., high tide, mid tide, and low tide zones—as much as possible. Quadrats measuring 50 × 50 cm were then set up at three randomly-generated points along the 15-m transects. They were placed at least 1 m apart in an alternate left-right arrangement (Figure 7-6A). Upon setting up a quadrat, all visible fauna on the mud surface were first identified and counted (Figure 7-6C). Thereafter, mud up to a maximum depth of 15 cm was dug out from the quadrat and surveyed for all benthic fauna. These were repeated for all three quadrats along the transect.

Using the same 15-m transect as the reference diameter, a circular survey zone was sampled for other more mobile fauna not recorded during quadrat sampling, such as decapod crustaceans (Figure 7-6B). The visual surveys were carried out by at least one surveyor over a period of at least 10 minutes per circular survey zone.

Quadrat sampling at intertidal habitats was also carried out in a similar fashion, except that 25-m instead of 15-m transects were set up. Five quadrats measuring 50 × 50 cm were set up at 50-m intervals along the 25-m transects and were placed in an alternate left-right arrangement. Only fauna visible on the surface were identified and counted.

Visual nocturnal surveys (2000h–0600h) were also conducted for marine fauna along 200-m continuous transects on one sampling route. As marine fauna occupy a wide range of habitat types, nocturnal surveys involved active searches for individuals on the ground, below rocks and/or on vegetation. Torches and/or headlamps were used to during nocturnal surveys. For species that are capable of quick retreats and escapes, the individuals were captured by hand, or using hooks, tongs, or nets for identification. Captured individuals were released immediately after identification.

In addition, minnow traps were baited with halal meat (e.g., sausage or liver) and deployed at ponds within Keppel Club golf course from September to October 2021 to survey for crustaceans. Surveys were conducted in response to queries from the Nature Groups. Traps were left overnight, then checked and removed the following morning.

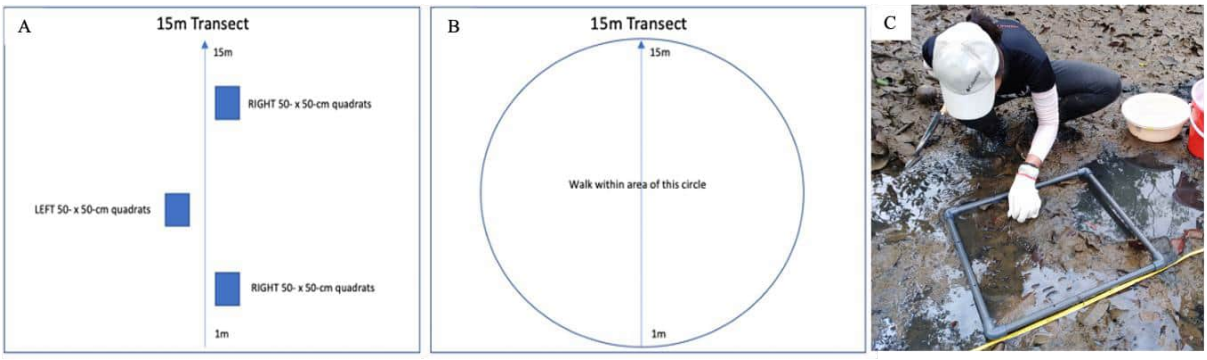


Figure 7-6 (A) Quadrat sampling along a 15-m transect; (B) Visual survey of the survey circle of 15 m diameter; (C) An example of quadrat sampling on a mudflat

7.2.2.4 Data Analyses

7.2.2.4.1 Camera Trapping

Camera trap location, species identity, and the number of individuals were recorded for each footage with a positive capture of fauna. An independent detection constitutes footage of one or a group of individuals of the same faunal species occurring within 60 minutes at each camera trap.

7.2.2.4.2 Bat Sound File Analyses

Bat recordings were processed using Kaleidoscope v.4.5.4 (Wildlife Acoustics, Inc.). The signal parameters in recognising bat calls are: frequency range of 20– 200 kHz, duration of 2–500 millisecond (ms), maximum inter-syllable gap of 500 ms and a minimum of two pulses. The files were also examined visually on spectrograms to identify bat species based on call structures, peak frequency, minimum frequency, and call duration. They were identified using Pottie et al. [P-46] which provides echolocation signatures for bats in Singapore, as well as other relevant references, such as Collen [P-36].

7.2.2.4.3 Species of Conservation Significance Distribution Maps

The locations of fauna of conservation significance recorded during targeted surveys as well as incidental records outside the taxon-targeted surveys were presented as distribution maps to show areas where most fauna were seen. All maps were prepared and generated using the mapping software QGIS 3.40 [O-1].

7.2.2.4.4 Taxon Sampling Curves

Taxon sampling curves were plotted for the surveys conducted for seven taxa: butterflies, odonates, amphibians, reptiles, birds, and mammals (excluding bats), and molluscs. Only these six taxa were selected because large sample sizes are required for the estimation of sample coverage to be robust [P-35]. As such, only the curves for the aforementioned taxa could be meaningfully plotted and not the rest.

The observed sample of incidence data was used to estimate sample coverage and species richness. Species richness was plotted against sample coverage, as opposed to survey effort, to estimate sample completeness/ survey adequacy, i.e., how extensively we have sampled the species in the community.

Sample coverage refers to “the proportion of the total number of individuals in a community that belong to the species represented in the sample” [P-35]. The curve was extrapolated to provide an estimation of species richness and sample coverage if sample size was doubled. The associated standard error and 95% confidence interval were also computed. Standard error represents the range of uncertainty of the estimate, while 95% confidence interval is the interval in which there is a 0.95 probability of containing the estimated true species richness.

As some species will always remain undetected, total species richness had to be estimated via extrapolation. This was done using the Chao estimator. All statistical analyses were carried out in the statistical programming environment R version 3.4.3 [O-2] using the “iNEXT” package 2.0.20 [W-18].

7.2.2.5 Light, Temperature and Humidity Sampling

Light, temperature and humidity were measured at locations within the Study Area; three along Berlayer Creek and the rest along Port Road adjacent to the Labrador Nature Reserve (Figure 7-7). Both day and night measurements were taken continuously, for one week in between 4th October to 19th October 2021. Light and temperature taken by HOBO by Onset MX2202 while humidity taken by Kestrel 0720HVG DROP D2. Baseline data gathered may be used to inform the necessary mitigation measures during the construction and operational phases.



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
- Waterbody (man-made)
- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SS	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement: NA

Consultant : AECOM

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Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Light, temperature and humidity sampling loctions

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7.3 Baseline Findings

This section presents biodiversity baseline field findings from surveys conducted as detailed in Section 7.2.2.

7.3.1 Ecological Significance

The Study Area consist of (1) Keppel Club, (2) Berlayer Creek and (3) the Marine Area, each of which provides important habitats for fauna utilising the Study Area and beyond.

The Labrador Nature Reserve (LNR), which is adjacent to the Study Area, provides habitat for about 60 species of birds and offers a wide range of habitats such as parkland, rocky shore and thick vegetation. Previous floristic surveys have recorded fruiting trees such as *Ficus grossularioides* and *Ficus microcarpa*, which are potential food sources that can attract frugivores [W-4].

Adjoining LNR, Berlayer Creek (within the Study Area) provides habitat for mangrove specialist species such as the ashy tailorbird (*Orthotomus ruficep*). It is also one of the two remaining mangrove patches located south of mainland Singapore. Additionally, tall trees such as *Falcataria moluccana* offer vantage points for raptors such as the white-bellied sea eagle (*Haliaeetus leucogaster*) and brahminy kite (*Haliastur indus*). Holding the last rocky shore habitat found on mainland Singapore, Berlayer Creek also serves as a key foraging area for the nationally threatened great-billed heron (*Ardea sumatrana*) which has been recorded to roost on Sentosa Island. Additionally, the little tern (*Sternula albifrons*), also nationally threatened, and the migratory little egret (*Egretta garzetta*) have been observed to utilize the coast as feeding grounds.

The Keppel Club golf course, despite being highly manicured and managed, has been cited to provide foraging, nesting and ecological corridor within the Southern Ridges for birds [P-1]. This is partially due the presence of a diverse range of habitats from mangroves to open grasslands and freshwater ponds.

Together, these areas within the Study Area not only provides important habitats for an array of fauna and flora, it also serves as an ecological stepping stone within the Southern Ridges. This is because the Study Area lies contiguous with LNR, which makes up part of the Southern Ridges (Figure 7-8). The Southern Ridges comprises of Mount Faber Park, Telok Blangah Hill Park, Kent Ridge Park and LNR [P-1], of which Mount Faber Park, Telok Blangah Hill Park, Kent Ridge Park are designated as Nature Areas and Parks, while Labrador is a Nature Reserve. This connectivity mentioned applies mainly to the birds as they are less restricted by land barriers such as roads and can use patches of forest more easily.

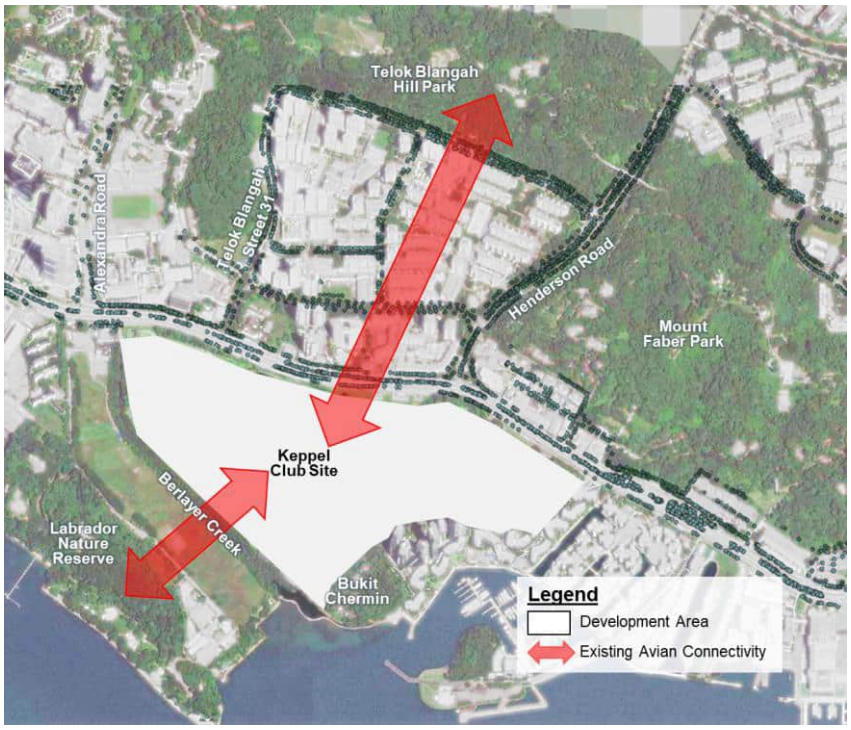


Figure 7-8 Ecological connections between the Southern Ridges and Labrador Nature Reserve through the Study Area

7.3.2 Light, Temperature and Humidity

Light, temperature and humidity parameters were recorded for 24 hours over seven days at six sampling points (Figure 7-7). Sampling points LTH_ 01 to LTH_03 were recorded from 12 October 2021 to 18 October 2021 while LTH_04 to LTH_06 were recorded from 05 October 2021 to 11 October 2021. Results were broken up into major time periods day (AM) and night (PM), 0700-1900 and 1900 to 0700 respectively, for data analysis. The findings are summarised in Table 7-3 and more details can be found in Appendix FF.

Light

The daily average light levels ranged between 841.50 to >19000 lux in the day, with average maximum light levels spiking to as high as 71780.21 lux (LTH_05) and as low as 2.38 lux (LTH_02). Sampling points located along the road with lesser vegetation cover (LTH_04 to LTH_06) higher light levels than sampling points located within the boardwalk (LTH_01 to LT_03). On the contrary, the daily average light levels were more consistent in the night across the sampling points—levels ranged between 0.37 to 11.58 lux.

Temperature

The daily average temperature levels ranged between 29.29 to 32.21°C in the day, with average maximum temperature levels spiking to as high as 38.04°C (LTH_06). Sampling points located along the road (LTH_04 to LTH_06) compared to sampling points located within the boardwalk (LTH_01 to LT_03) generally had no discernible trends, except for where LTH_05 and LTH_06 had slightly higher average maximum temperature of 37.64°C and 38.04°C respectively. While the daily average temperature levels in the night across the sampling points ranged between 26.54 to 27.33°C, with the maximum average temperature of only 28.69°C at LTH_06.

Humidity

The daily average humidity levels ranged between 69.72 to 81.9 rh in the day, with average maximum humidity levels consistently across all sampling locations of about 90 rh. Sampling points located along the road (LTH_04 to LTH_06) compared to sampling points located within the boardwalk (LTH_01 to LT_03) generally had no discernible trends. While the daily average humidity levels in the night across the sampling points ranged between 87.65 to 93.97 rh.

Table 7-3 Average light, temperature, and humidity levels at sampling locations.

		Light (lux)			Temperature (°C)			Humidity (rH)		
Time Period	**Sampling Point**	**Average daily**	**Average Maximum**	**Average Minimum**	**Average daily**	**Average Maximum**	**Average Minimum**	**Average daily**	**Average Maximum**	**Average Minimum**
AM	LTH_01	1165.96	16213.58	4.08	29.60	32.36	26.07	81.91	96.11	68.16
	LTH_02	841.50	9146.88	2.38	29.66	32.53	26.04	81.46	96.94	67.36
	LTH_03	5122.61	55233.10	7.98	30.72	35.16	26.39	77.79	94.43	64.30
	LTH_04	1907.21	16734.08	19.44	29.29	31.74	25.76	75.74	92.94	61.59
	LTH_05	19455.19	71780.21	66.41	31.53	37.64	25.26	70.62	96.61	51.19
	LTH_06	5442.42	17445.30	44.60	32.21	38.04	25.79	69.72	92.27	52.30
PM	LTH_01	0.59	50.41	0.00	26.84	27.93	26.19	92.98	96.00	86.77
	LTH_02	0.37	33.28	0.00	26.77	27.86	26.01	93.97	97.37	87.61
	LTH_03	1.99	174.71	0.00	27.21	28.47	26.17	91.17	95.69	84.16
	LTH_04	10.42	120.56	8.33	27.33	28.69	26.39	87.65	93.36	78.04
	LTH_05	11.58	431.18	5.82	26.54	27.70	25.51	92.05	96.81	83.60
	LTH_06	7.30	319.34	2.93	27.19	28.60	26.10	87.77	93.87	77.96

7.3.3 Habitat and Vegetation Types

The Study Area consists of both terrestrial and marine habitats, totalling to an area of 77.8 ha. Three vegetated habitats, fresh waterbodies and two non-vegetated sites are considered to be terrestrial (Table 7-4).

Of the three vegetated habitats, urban vegetation is the largest in size and occupies more than half of the total area (52.1 ha; 66.9%). This vegetation type can be found at three main locations, namely, the Keppel Club golf course, PSA Club, and the Former BP Oil Refinery site. The native-dominated secondary forest (coastal) (2.2 ha; 2.9%) is only found within Bukit Chermin south of the Keppel Club golf course. All freshwater water bodies in the Study Area are man-made ponds; those within the Keppel Club golf course take up 2.6 ha (3.3%), while that at the edge of the Labrador Nature Reserve along Port Road takes up 0.3 ha (0.3%). Of the two non-vegetated site, infrastructure takes up the second largest proportion of the Study Area at 9.5 ha (12.2%). This includes buildings and amenities in the two aforementioned clubs, Labrador MRT station, carparks, restaurants, resorts, and roads, amongst others. The other non-vegetated site–the smallest area of all the terrestrial habitats–is an active construction site found at the north western corner of the Study Area, where construction works were observed to be in progress during surveys.

All marine habitats observed within the Study Area add up to 6.7 ha and occupies only 8.6% of the Study Area (Table 7-4). Of these, the sandy seabed takes up the largest area at 4.6 ha (6.0%). The other three natural habitats—seagrass meadows (0.8 ha; 1.0%), rocky shore (0.3 ha; 0.4%) and soft-sediment seabed (0.7 ha; 0.9%)—make up the other half of the marine habitats observed within the Study Area. The final marine habitat type with the Study Area is the man-made seawall at only 0.3 ha (0.4%).

Table 7-4 Absolute (ha) and relative (%) sizes of each habitat and vegetation type

	Habitat and Vegetation Types	Absolute Size (ha)	Relative Size (%)
Terrestrial	Native-dominated secondary forest (coastal)	2.2	2.9
	Mangrove forest	4.0	5.2
	Urban vegetation	52.1	66.9
	Waterbody (man-made)	2.9	3.6
	Others (infrastructure)	9.5	12.2
	Others (construction)	0.5	0.6
Marine	Seagrass meadow	0.8	1.0
	Rocky shore	0.3	0.4
	Soft-sediment seabed	0.7	0.9
	Sandy seabed	4.6	6.0
	Seawall (man-made)	0.3	0.4
Total		**77.9**	**100.0**

*Note: The waterbody in the Study Area along Port Road next to Labrador Nature Reserve lies on the study boundary but was drawn as a complete unit beyond the arbitrary study boundary. Hence the total area reported here is slightly larger (by about 0.1 ha) than the original size of the Study Area.



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
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- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

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CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Habitat and vegetation distribution

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Note: Source of basemap - Google Earth Map

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7.3.3.1 Native-dominated Secondary Forest (Coastal)

Native-dominated secondary forest takes up less than 3% of the total Study Area and was only found at Bukit Chermin, an approximately 2-ha hilly area southeast of the site ('Bukit' means 'hill' in Malay). It is one of the relatively natural terrestrial habitats in the highly urbanised landscape of the Study Area. Within its immediate vicinity is the private condominium Reflections at Keppel Bay on the east and Keppel Club on the north to northwest boundary (Figure 7-9). Four large bungalows are built on Bukit Chermin, which has some basic infrastructure, such as a road, street lamps, and safety fences, that serve the residential areas (Figure 7-10). Besides these, the rest of Bukit Chermin is by and large undeveloped and dominated by native plants.

This forest type can be further classified as early- or late-successional [P-5]. Early- successional forests dominated by fast-growing and light-demanding pioneer species will eventually develop into late-successional forests in which pioneer species are replaced by slower-growing native trees [P-3]. While a clear distinction between these two forest sub-types cannot be identified as they occur along a successional gradient and are part of a floristic continuum [P-3, P-37,P-48], it is still possible to identify the forest sub-types at the extreme ends along the gradient [P-5]. Based on empirical field observations, the native forest at Bukit Chermin appears to be at a later- than earlier-stage of succession with some coastal elements. Two main features elaborated in the subsequent paragraphs indicate this.

Firstly, the floristic composition largely comprises rare and common native species. Many specimens from the genus *Syzygium* (Figure 7-11A), with up to three recorded native tree species, were widespread. Specimens from the genera *Ixonanthes*, *Elaeocarpus* (Figure 7-11B), and *Litsea* were also relatively widespread, albeit in lower numbers than that of *Syzygium*. These are the genera that commonly make up the canopy layer of late-successional forests in Singapore [P-5]. The presence of some large native trees recorded in the area also indicate the later-stage succession of the forest. Although some of these species are planted in local streetscapes, it is unlikely that they are cultivated propagules. This includes the slow-growing species, *Cyrtophyllum fragrans*, of which a very large specimen of 6 m girth was recorded (Figure 7-11C). Given that it would take a long time for the slow-growing trees to attain their present sizes, it is almost certain they have been at the site for a long time, before which they were neither available in commercial markets nor planted locally. Hence, a reasonable conjecture would be that the specimens were present even before any forms of human disturbance took place. In addition, other threatened species were also recorded in low numbers, such as the nationally Vulnerable *Rourea fulgens* (Figure 7-24A) and *Olea brachiata* (Figure 7-24C). These factors contribute to an above-average native species richness seldom observed in many secondary forests in Singapore (Camphora Pte Ltd, unpublished data).

Secondly, large coastal trees were found throughout the forest. The coastal species commonly encountered during floristic surveys in this study include *Palaquium obovatum* (Figure 7-11D), *Planchonella obovata* (Figure 7-11E), *Casuarina equisetifolia* (Figure 7-11F), *Guioa pubsecens*, *Streblus elongatus*, and *Buchanania arborescens*. Particularly, trees of *Casuarina equisetifolia*, one of the common coastal trees native to Singapore, were of 2 m girth and above on average, with the largest of up to almost 5 m girth (Appendix H). With the large trees acting as seed sources, corresponding large sapling populations of some species, such as *Streblus elongatus* and *Palaquium obovatum*, were observed in the understory. This is good indication to gauge the regeneration potential of the forest. If left undisturbed, it is likely that the propagules would continue to grow as the forest persists. Such floristic composition somewhat overlaps with the forested patches on Sentosa Island (Camphora Pte Ltd, unpublished data), as well as that of the further southern islands [P-38, P-39]. This is likely because of the close proximity of these forested patches, which may allow for the exchange of propagules.

While Bukit Chermin hosts an extensive palette of common and rare native plants, commonly encountered in the area were also some exotic species found to be almost equally abundant and widespread in certain parts on the hill. Some of these include palms such as coconut (*Cocos nucifera*) and *Arenga pinnata*, as well as cultivated crop and fruit species such as oil palms (*Elaeis guineensis*) and mango (*Mangifera indica*). These species were mainly established near infrastructure and forest edges. Introduction of habitat edge conditions may encourage the proliferation of exotic species into the forest interior. This may be challenging to control for if certain areas with steep terrain and loose substrates are prone to landslides after heavy rainfalls (Figure 7-10E).

In Singapore, late-successional native forests are mainly found in the Bukit Timah Nature Reserve (BTNR), Central Catchment Nature Reserve (CCNR), and Southern Ridges. Unlike the typical native forests in the aforementioned localities, that in Bukit Chermin has noticeable coastal elements. While it is not considered a coastal forest—defined by Tan et al. [P-47] as "found along reclaimed coasts where the forest is on sandy or rocky substrate. Dominated by hardy plants which can withstand higher temperatures, strong winds and salt sprays"—still it bears some similarities, such as higher wind speeds and temperatures owing to its steep topography and close proximity to the

sea. Such unique native forests with coastal elements are few and far between in the highly developed cityscape of mainland Singapore, making the one found in this present study rare and valuable.



Figure 7-10 Native-dominated secondary forest at Bukit Chermin with (A) one of the bungalows in the background; (B–C) Abandoned infrastructure and unused road at the hill top; (D) Steep slopes when viewed top down and (E) bottom up; and (F) a walking path leading to one of the bungalows



Figure 7-11 Large native trees recorded at Bukit Chermin. (A) *Syzygium syzygioides*; (B) *Elaeocarpus pedunculatus*; (C) *Cyrtophyllum fragrans* of 6 m Girth; (D) *Palaquium obovatum*; (E) *Planchonella obovata*;(F) *Casuarina equisetifolia* of 4.7 m girth

7.3.3.2 Mangrove Forest

The mangrove forest at Berlayer Creek recorded in the present study is a thin forested strip that measures approximately 50 m by 900 m located in between two extensive patches of urban vegetation – the Keppel Club golf course to its east and Former BP Oil Refinery site to its west (Figure 7-9). The boardwalk (Figure 7-12C) along Berlayer Creek is part of the Labrador Nature and Coastal Walk, with the northern end right outside Labrador MRT station. Unlike other natural mangroves in Singapore with more extensive forested patches, unique to Berlayer Creek is its linear forested patch, where a channel of water in the middle of the strip is flanked by mangrove vegetation on both sides (Figure 7-12A–B).

The establishment of the mangrove strip along the creek originated with the formation of the man-made canal [P-53]. Situated in the south, the mouth of the creek empties into a small channel between mainland Singapore and Sentosa Island, which forms a part of the larger Singapore Strait. Changes in marine tidal levels can be experienced throughout the length of the creek (Figure 7-12D–F). Given the narrow banks of about 20 m width on either side of the water channel, zonation patterns within each strip are not distinct. Wee and Corlett [P-50P-50] and Yang et al. [P-52] attribute this general lack of mangrove vegetation zonation in Singapore to prolonged disturbances in the past. Even so, it was observed that the start of the creek closer to Labrador MRT station resembles a back mangrove zone, where species such as *Nypa fruticans*, *Bruguiera* and *Rhizophora* species were more commonly encountered, presumably owing to the milder wave actions. In contrast, the foreshores are generally occupied by species of *Sonneratia* and *Avicennia*.

In addition to the natural zoning phenomenon, albeit not obvious, planting efforts have enhanced the overall mangrove zonation at Berlayer Creek. For example, rows of sea hibiscus trees (*Hibiscus tiliaceus*) and other coastal species, such as *Ardisia elliptica*, have been planted next to the boardwalk, where the elevation is higher and generally experiences minimal inundation. The former is a common native mangrove associate, usually found in back mangroves where muddy substrates transition to drier land. This broadly mimics the zonation pattern along the low to high tidal zones parallel to the length of the creek. Besides this, the start of the creek near Labrador MRT—previously mentioned to exhibit some resemblance to a back mangrove zone—was also planted with *Bruguiera sexangula*, a back mangrove species thought to be extinct in Singapore but rediscovered at Pulau Tekong more than half a decade ago [P-52]. Active re-introduction of rare extinct species and propagation efforts contribute to the long-term conservation and management of such important mangrove habitats.

A few anthropogenic influences affect the mangrove environment in Berlayer Creek. For example, culverts with diameters ranging between 0.5–2 m feed into the water channel (Figure 7-13A). These culverts are likely to channel water from the Labrador Nature Reserve in the west and Keppel Club golf course in the east into the creek. It was observed that trees along the bank adjacent to the Keppel Club golf course were more prone to falling over compared to those on the other bank (Figure 7-13C). Several *Sonneratia alba* trees within a small area next to Keppel Club at the mouth of the creek were also observed to have prominent diebacks (Figure 7-13D). The former could be owed to the unstable substrates that render them unsuitable for back mangrove or other non-coastal terrestrial species without morphological adaptations to survive in such environments. Some species were planted on the edge of the golf course, within close proximity to the mangrove area.

Most remaining mangroves are found in northern Singapore, where the largest tract of local mangrove forest is at the Sungei Buloh Wetland Reserve. Berlayer Creek is one of only two localities in southern Singapore that support mangroves, the other being Pandan mangroves [P-52]. Although small in size, these habitats provide suitable conditions for rare mangrove species, such as *Rhizophora styolsa*, which is not viable at the Pasir Ris mangroves owing to unfavourable inundation conditions. Specimens of other less widespread mangrove species were also found in small numbers at Berlayer Creek, including *Xylocarpus granatum* and the nationally Vulnerable *Ceriops tagal*.



Figure 7-12 (A) Mangrove forest at Berlayer Creek with a middle channel that empties into the sea; (B) Largely closed canopy; (C) An adjacent boardwalk; (D–E) Pneumatophores that are exposed during low tide and (F) submerged during high tide



Figure 7-13 Other features of the mangrove forest at Berlayer Creek. (A) Culverts that drain into the creek; (B) Water channel that splits at some locations; (C) Prominent tree falls east of the creek next to the Keppel Club golf course; (D) Sub-zones with obvious tree diebacks.

7.3.3.3 Urban Vegetation

Urban vegetation is the largest habitat type in the Study Area (Table 7-4). This vegetation type is dominated by a mix of cultivated exotics, streetscape trees and managed turf. There are three main locations where this vegetation type can be found: Keppel Club golf course, PSA Club, and the Former BP Oil Refinery site (Figure 7-9).

At the Keppel Club golf course, majority of the landscape consists of highly maintained lawns that make up the golf driving range (Figure 7-14A). Several rows of sparsely planted trees line the lawns within the club (Figure 7-14B). These rows of trees are typically of the same species, such as *Syzygium grande*, angsana (*Pterocarpus indicus*), *Casuarina equisetifolia*, and tembusu (*Cyrtophyllum fragrans*). Within the compound, there are some narrow remnant strips of forest left uncleared (Figure 7-14C). These can be found along the edge of the golf course, next to the West Coast Highway, as well as few other scattered areas throughout the driving range.

Unlike the aforementioned habitats, however, exotic instead of native species are planted across the compound for landscaping purposes (Figure 7-14D–F). These make up hedges, artificial habitats indoors, lawns, walkways and fences, amongst others. There are several species of conservation significance within the compound such as the nationally Critically Endangered *Calophyllumn inophyllum,* as well as the Vulnerable *Oxyceros longiflorus* and *Streblus elongatus*.

The urban vegetation at PSA Club comprises 103 sparsely planted trees (Figure 7-15A–B), with the cabbage palms (*Roystonea oleracea*), *Syzygium grande* and rain trees (*Samanea saman*) being the abundant (Appendix H). West of PSA Club is Bukit Chermin Road, which is flanked by two uniform rows of *Roystonea oleracea* palms (Figure 7-15). As Bukit Chermin Road continues south, it passes by Keppel Club golf course on its west, through the entrance of Keppel Club and ends within Bukit Chermin. Some plant species of conservation significance were recorded along this road as well, such as *Palaquium obovatum* and *Ficus vasculosa*.

The second largest area of urban vegetation after the Keppel Club golf course is at the Former BP Oil Refinery site, an approximately 870 m long and 120m wide stretch of land parallel to western bank of Berlayer Creek (Figure 7-9). Similar to the Keppel Club golf course, the landscape at this site is dominated by grassland with several large and mature trees lining the western edge of the compound (Figure 7-15D-E).

At the southern border of the Study Area is Labrador Park (Figure 7-15F). Although this is also a manicured park, different from the other urban vegetation patches in this study is the mix of cultivated exotic and native planting palette used here. Considering that the park is geographically located at the southern coast of Singapore, coastal species, such as *Barringtonia asiatica* and *Podocarpus polystachyus,* may have been selected as they are able to tolerate strong coastal breeze and salt sprays. More notably, more than half the trees plotted here are of native origin. The intentional use of the native planting palette could also have been adopted with the aim to minimise the spread of exotic species into the adjacent Labrador Nature Reserve.



Figure 7-14 Urban vegetation at Keppel Club golf course. (A) Highly maintained lawns; (B) Sparsely-planted trees (usually of the same species); (C) Remnant thin forest strips (Left) and concrete paths (middle); (D–F) Extensive landscaping using the exotic planting palette.



Figure 7-15 Urban Vegetation at the other locations. (A–B) PSA Club; (C) Bukit Chermin road; (D–E) the Former BP Oil Refinery site; (F) Labrador Park.

7.3.3.4 Fresh Waterbodies

A total of seven fresh waterbodies were observed within the Study Area, six in Keppel Club golf course and one along Port Road, abutting the Study Area; the locations of the waterbodies are shown in Figure 7-9. All fresh waterbodies observed were man-made.

The pond observed along Port Road is characterised by low canopy cover, high temperatures and small leaf litter accumulations, with some swampy sections observed around the back of the pond extending towards Labrador Nature Reserve (Figure 7-16A–B).

In comparison, the ponds within Keppel Club golf course are highly manicured with little riparian vegetation (Figure 7-16D) with the exception of pond A4. Other than being heavily planted with riparian vegetation along the edge,

the pond had varying depts – where the shallow areas could provide for odonates and the deep areas could provide for fish.

Additionally, there was one canal cutting across Keppel Club golf course (Figure 7-16C), which seems to be influenced by tidal action. Cross referencing to Section 8.4.2.2, water quality result at sampling point WQ6 shows fluctuating salinity and a higher than usual salinity.



Figure 7-16 Waterbodies in the Study Area. (A–B) Pond along Port Road; (C) Concrete canal that runs through PSA and Keppel Club golf course; (D) Artificial man-made pond in the Keppel Club golf course.

7.3.3.5 Others (Infrastructure)

Infrastructure makes up the second largest proportion of the Study Area at 9.5 ha (12.2%) (Table 7-4). This includes buildings and amenities found within the Study Area. These areas mainly consist of paved ground with little or no vegetation. There are a few trees and palms sparsely planted within the Three Peacocks Restaurant (Figure 7-17A). Similarly, there are also some trees and palms cultivated along the edges of carparks, roads and Villa Samadhi Singapore (Figure 7-17B-D).



Figure 7-17 Some amenities and infrastructure in the Study Area. (A) Three Peacocks Restaurant; (B) Carpark; (C) Resort; (D) Road.

7.3.3.6 Others (Construction)

A minor section of the north western Study Area is undergoing construction works at the point of study. This is a single construction site along Labrador Villa Road and opposite Labrador Park MRT Station and occupies less than 1% of the total Study Area.

7.3.3.7 Seagrass Meadow

Three main seagrass meadows were identified, occupying 12% of the Marine Area (Figure 7-9). Seagrass meadows within the subtidal zones were mapped through the ROV as the seabed is never exposed there, mapping it through intertidal surveys are not possible; while seagrass meadows within the intertidal zones were mapped through intertidal surveys (Figure 7-18). Two species of seagrass were recorded within these meadows – *Halophila ovalis* and *Halodule* sp., with *Halophila ovalis* being the dominant species.

Seagrass tends to be found within the intertidal and shallow subtidal zones due to the need for sunlight for photosynthesis. Further to that, Singapore's coastal activities and developments have restricted the distribution of seagrass to certain areas, where the highest diversity and abundance of seagrass resides along the southern straits of Singapore [P-72, P-51]. Seagrass meadows are an important component of the marine environment, providing vital ecosystem services such as nutrient cycling, food provision, and climate change mitigation [P-69, P-70]. However, similar to other marine ecosystems, seagrass habitats are under threat from human activities such as coastal development and increased nutrient input are bringing about an accelerated decline in seagrass habitats, not only locally but globally as well [P-69].

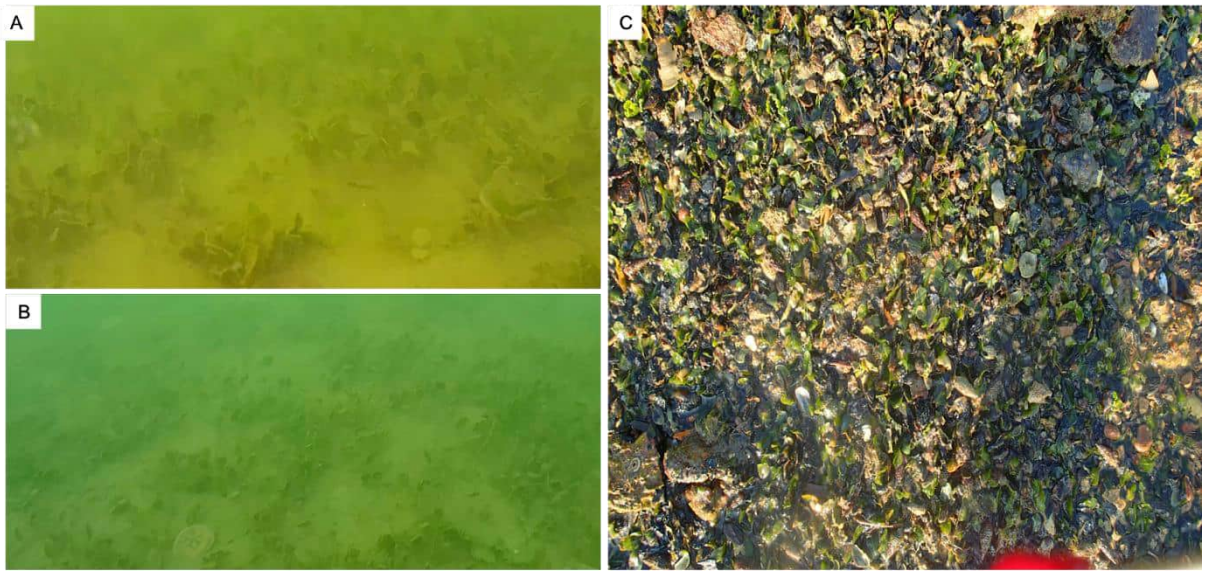


Figure 7-18 Seagrass meadows within the Marine Area. (A–B) Seagrass meadows recorded on the ROV and (C) intertidal surveys.

7.3.3.8 Rocky Shore

This habitat is different from the seawall habitat. A rocky shore habitat is characterised by intertidal areas with loose rock fragments or coral rubble [R-9], of which the habitat observed within the marine study area is the former. This habitat is found directly adjacent to Bukit Chermin on the eastern portion of the marine Study Area and occupy about 4.5% of the marine Study Area. The habitat was formed from the natural erosion of the cliffs (in this case, Bukit Chermin). The natural erosion of the cliff together with the constant wave action, resulted in haphazard placement of the rocks of different sizes along the coast - creating a coastline with increase structural complexity (Figure 7-19). This creates opportunity for marine flora and fauna to colonise and seek shelter, which in turn can be good feeding grounds for some shore birds when the intertidal zone is exposed (Figure 7-19). It is also worthy to note that such a habitat is now extremely rare especially on mainland Singapore [W-10].



Figure 7-19 Rocky shore habitats. (A) Natural erosion of a cliff at Bukit Chermin; (B) Rocky shore.

7.3.3.9 Soft-sediment Seabed

According to NParks (2020) [W-10], such habitats are typically open areas without vegetation and found between mean high-water and mean low-water spring tide datums; it is usually located in estuaries and other low-energy marine environments [P-71]. This habitat was observed in front of the mangrove and occupies about 10.4% of the Marine Area (Figure 7-20). The soft-sediment habitat pattern observed on site is mainly dictated by the water

movement from the mangrove and the water current movement. Though not indicated in the habitat map, this soft-sediment seabed is also located within the mangroves. This soft-sediment habitat is also associated with high organic waste where most of the biomass are just found below the surface. It is important to note that these macrobenthos community serves as an important food source for shore birds.

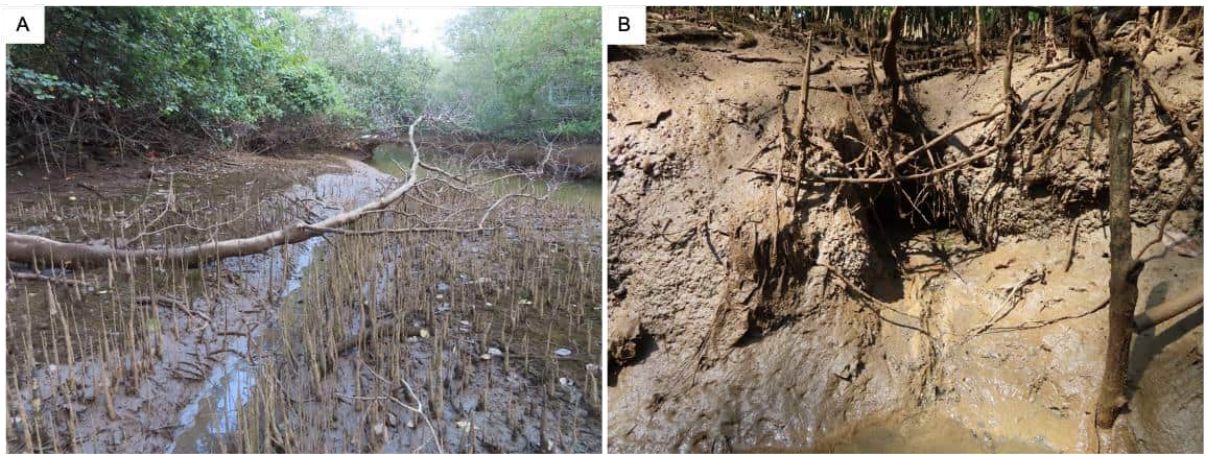


Figure 7-20 Soft-sediment seabed habitats

7.3.3.10 Sandy Seabed

This is the most abundant habitat type found within the Marine Area, amounting to about 68.7% of the Marine Area (Figure 7-9). This habitat is characterised by loose deposits of sand, including some gravel or shells. This habitat supports marine fauna such as snapping shrimps (*Alpheidae sp.*) and their symbiotic shrimp gobies, both of which are probable species for the Marine Area (Appendix J and Figure 7-21). Sting rays and sole fish would also utilise the sandy seabed. In some of the western patch, large quantities of sand dollar species (*Clypeasterioda sp.*) were observed through ROV surveys within this habitat (Figure 7-21) .

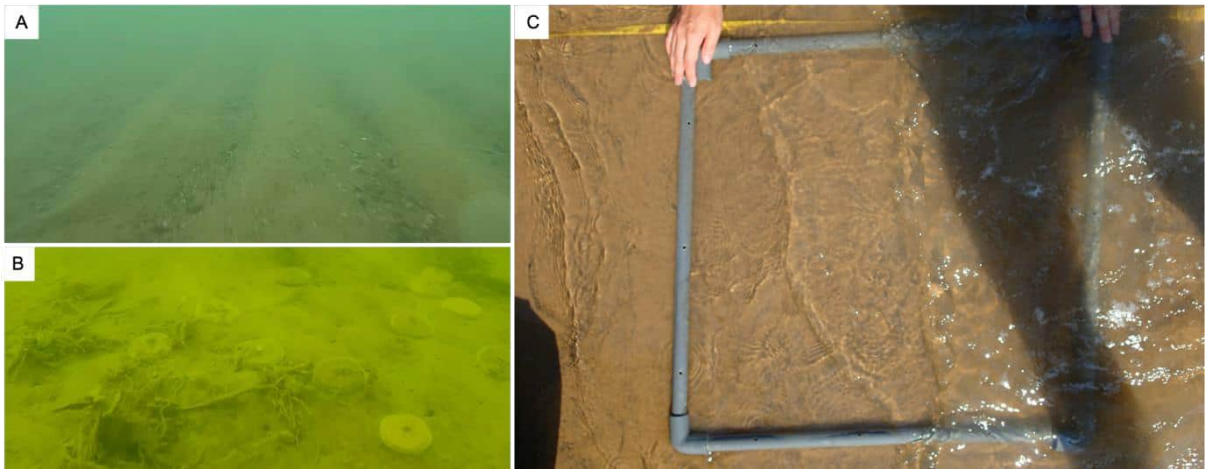


Figure 7-21 Sandy seabed habitats. Sandy seabed habitat recorded during (A) ROV surveys and (C) intertidal surveys. (B) Sand dollars (*Clypeasterioda* sp.) observed within sandy seabed habitat recorded during ROV surveys.

7.3.3.11 Seawall

The seawall was observed abutting the north and east boundary of the Marine Area, amounting to 0.4 km in length and occupying 4.5% of the Marine Area (Figure 7-9). It serves as a form of coastal defence system to protect terrestrial areas from the wave action. The seawall can be differentiated into two habitat types: (1) the seawall directly abutting the terrestrial area, with rocks laid nicely and crevices sealed with cement to attain a smooth

looking surface (Figure 7-22B) and 2. the rocky seabed where boulders are found scattered along the seabed, forming small “rock islands” (Figure 7-22A). These rock islands are considered part of the seawall as it extends from the seawall and tapers off when it approaches 15 m.

The rocks forming the “rock islands” are normally covered in encrusting algae and Ostreidae species. Other seaweed species such as Sargassum sp. are also commonly found attached to the rocks, which can help increase habitat complexity by introducing more spaces for fauna to inhabit (Figure 7-22A). While the seawall is largely a two-dimensional habitat with a relatively smooth surface. Such habitats are not advantageous to marine fauna as there are hardly spaces for marine fauna such as crustacean and fish to use as shelter. Subsequently molluscs and seaweeds species are also unable to attach onto the surface. Therefore, as expected, minimal marine fauna was observed. Species observed were mostly Nerita and barnacle species.

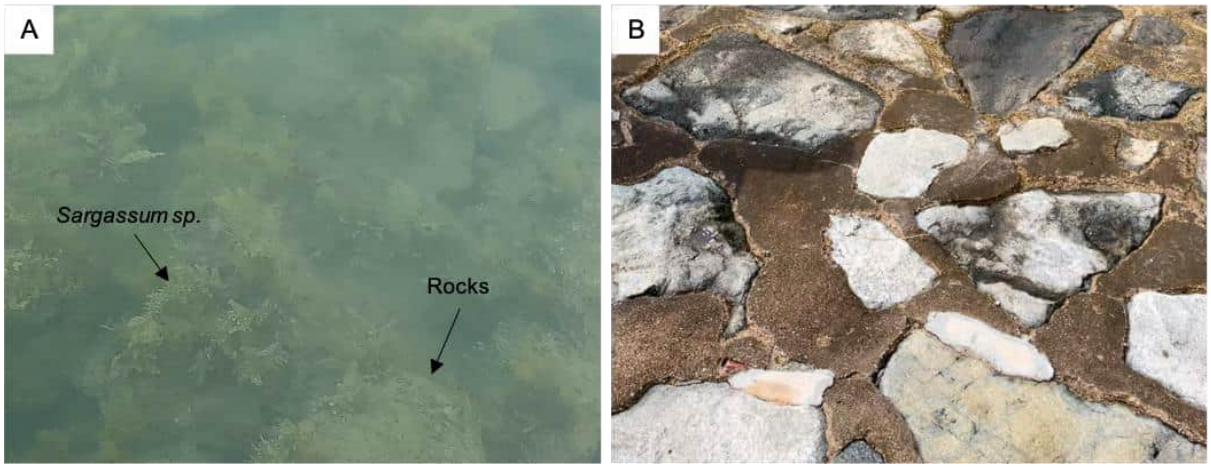


Figure 7-22 Seawalls habitats.

7.3.4 Floristic Field Findings

7.3.4.1 Overall

A total of 392 plant (including seagrass and seaweed) species and species groups (i.e., those that could not be identified to species with certainty), belonging to 115 families were recorded from the Study Area (Table 7-5; Appendix D). Of these, 174 are native (44.4%), 176 (44.9%) exotic, 25 (6.4%) cryptogenic (i.e., of unknown or uncertain origin despite being a known species), 13 (3.3%) have not been assessed, and the remaining four (1.0%) are of unknown origin as they could not be identified to species.

There are 16 species groups in total, of which seven are terrestrial groups comprising (1) *Musa* cultivar, (2) *Pandanus* cultivar, (3) *Saccharum* sp., (4) *Cycas* sp., and three species that could not be identified. The first three species groups are commonly known as banana, pandan, and sugarcane, respectively, all of which are exotic crop species planted within the urban landscape in the Study Area. Many of the exotic crop species planted in the Study Area could be imported from overseas, where there is an extensive range of varieties, sub-species and/or cultivars, which makes it challenging to identify the specific variety. The *Cycas* palm that could not be identified was seen planted in the Keppel Club golf course as part of the landscaping. The remaining three species that could not be identified are of trees from Bukit Chermin. Proper visual examination of the trees’ vegetative features was impeded by overgrown climbers as well as canopies of neighbouring trees. One of the trees also appeared to be experiencing a major dieback with little to no canopy growth for visual examination. Hence, the species identity of all three trees were stated as ‘Unknown’.

The remaining nine species groups are marine groups, i.e., eight seaweed and one seagrass species groups: (1) *Bryopsis* sp., (2) an algae species belonging to the phylum Chlorophyta, (3) *Halimeda* sp., (4) *Neomeris* sp., (5) *Padina* sp., (6) *Sargassum* sp., (7) *Udotea* sp., (8) *Ulva* sp., and (9) *Halodule* sp. which is a seagrass species.

Almost half the floristic composition is made up of exotic species even though the highly diverse native-dominated secondary forest and mangrove forest make up a portion of the Study Area. Most, if not all, of the exotic species were recorded from urban vegetation that occupies majority of the Study Area. While managed turf and grassland take up the largest area of urban vegetation and these areas are typically species-poor, the remaining smaller and

scattered landscape spaces are highly manicured with a huge diversity of exotic cultivated species, especially within Keppel Club golf course. This accounts of the large proportion of exotic species recorded in this study. Even so, the number of exotic species could be underestimated as plants are continually imported and planted within the urban landscape.

Native threatened species comprise species that have been accorded the following statuses: Vulnerable, Endangered, Critically Endangered, or Presumed Extinct. Up to 83 (21.2%) such species were recorded. For overall findings, however, a distinction was not made as to whether threatened species are from native wild populations or are cultivated locally and/or are relics from past cultivation. Species belonging to the latter category may not be of conservation significance even though they have been accorded with a threatened status. This is discussed in greater detail in 'Species of Conservation Significance' under Sections 7.2.1.4 (methods) and 7.3.4.2 (results).

Table 7-5 Number and percentage of plant species belonging to each status category

Origin	Status	Number of Species	Percentage (%)
Native	**–**	**174**	**44.4**
	Common	91	23.2
	Vulnerable	29	7.4
	Endangered	19	4.8
	Critically Endangered	28	7.1
	Presumed Extinct	7	1.8
Exotic	**–**	**176**	**44.9**
	Cultivated Only	77	19.6
	Casual	32	8.2
	Naturalised	56	14.3
	Not assessed	11	2.8
Cryptogenic	**–**	**25**	**6.4**
Not assessed	**–**	**13**	**3.3**
Unidentified	**–**	**4**	**1.0**
Total		**392**	**100.0**

7.3.4.2 Plants of Conservation Significance

A total of 36 plant species (including three seagrass species) are considered of conservation significance (Table 7-6). Some species, though listed as nationally threatened, were not considered of conservation significance in this study because they are most likely escapees from present-day cultivation, relics that had persisted from past cultivation, or were found within the landscaped spaces of the Study Area. The assessment of whether a threatened plant species is of conservation significance was carried out based on the criteria detailed in Section 7.2.1.4.

Altogether, 363 specimens and/or clusters of specimens belonging to these species of conservation significance were recorded. This excludes two seagrass species, *Halophila ovalis* and *Halodule* sp., which were present in all the seagrass meadows and individual specimens/ clusters were not counted. For the latter, the specimens are likely to be either the Critically Endangered *H. pinifolia* or Vulnerable *H. uninervis*.

Majority of the specimens are concentrated within the native-dominated secondary forest (Figure 7-23). Some are scattered in the mangrove forest along Berlayer Creek, especially in the mid and back mangrove zones, as opposed to the foreshores. Some rare coastal plant specimens were also recorded within the remnant forested strips within

Keppel Club golf course, while few others were found scattered in the PSA Club, Labrador Park and the Former BP Oil Refinery site.

Table 7-6 Number of plant species of conservation significance

	Vulnerable	Endangered	Critically Endangered	Presumed Extinct	Total
Non-Cultivated Threatened Species	19	9	7	1	36
Cultivated Threatened Species	10	10	21	6	47
Total	**29**	**19**	**28**	**7**	**83**



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
- Waterbody (man-made)
- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SS	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement: NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Distribution of plant specimens of conservation significance

Designed	Checked	Approved	Figure No. :	Rev.	Sheet
SS	NHT	JAG	7-23	-	1 of 1
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Note: Source of basemap - Google Earth Map

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Numerous nationally threatened species were found in Bukit Chermin although a portion of the hill had been cleared previously for private residential areas and other infrastructure. The only species thought to be nationally extinct in the present study is the native fern *Lindsaea orbiculata* (Figure 7-24D). The specimen was first encountered on 18th February 2021 in the present study. It was growing on the cliff surface of Bukit Chermin, about 1.5–2 m above the sandy shore. A few other individuals were also seen growing in the vicinity, where each scattered cluster was about 10–20 cm in width. Less than five mini clusters were observed. Spores were noted as continuous dark brown bands along the outer margins on the fronds below and each band had a false indusium covering it on the frond.

A voucher specimen was collected and deposited at the Singapore Botanic Gardens' Herbarium (SING). Photographs were also taken and used to match against identification keys and books. The characters observed matched those described in the book Ferns of Malaysia by Piggott [P-45] and website Ferns of Thailand, Laos and Cambodia [W-19]. In particular, the habitat description of this species in Piggott [P-45] bears close resemblance to that where the specimens were discovered in this study, i.e., "Usually found on rocks near the sea, …" Similar accounts of the habitat descriptions were also documented in other sources, including Kramer [P-43].

The geographic coordinates of the specimen are recorded in Appendix F. At least two repeated visits to the same site since then until May 2021 yielded similar observations of small clusters with fertile lamina. From the visit in May 2021 by Dr Stuart Lindsay, taxonomic expert and researcher in botany from the Singapore Botanic Gardens, the species identity was later confirmed to be that of *Lindsaea orbiculata*. This species is listed as nationally Extinct in Davison et al. [P-2] and Chong et al. [P-9]. No voucher specimens seem to have been ever catalogued in the SING. Five specimens from Singapore, however, were catalogued in the Royal Botanic Gardens Herbarium [W-32]. All five specimens were collected from Singapore in the 18th century, but there were no mentions of specific localities. There have been no other botanical records of the species since then.

Besides the aforementioned books and website on ferns in the region, the only other publication with some information on the distribution, population and occurrence of this species in Singapore is Johnson [P-42]. The synonym *Schizoloma orbiculatum* (Lam.) Kuhn was used in the publication, in which it was recorded that the species had been found at "Pulau Brani, Changi, Pulau Pawai and northeast of Sungei Hantu". This species was recorded on "rocks near sea" at Pulau Brani, which had—alongside Changi and Sungei Hantu—undergone extensive developments including land reclamation works, disturbances that may have threatened the species survival for several decades.

This species may be extremely rare, in addition to being under-detected for a very long time, thus thought to be nationally extinct. This finding could be a rediscovery and its presence at Bukit Chermin may indicate that its population may still be persisting on mainland Singapore. While Piggott [P-45] also mentioned that it can also be found "occasionally on stream banks in the hills", other rocky and cliff habitats in the nearby Labrador Nature Reserve, Tanjong Rimau, and Pulau Pawai (one of the original localities where this species had been recorded [P-42]) could also be additional potential areas of refuge for this species.

Other findings of rare and restricted plants at Bukit Chermin include one single tree specimen of *Syzygium claviflorum* var. *claviflorum* which was flowering on the day it was encountered (Figure 7-24F) and a small cluster of about five specimens of *Lasianthus hirsutus*. Both of these species are listed as nationally Critically Endangered [P-9]. In addition, some nationally threatened species more often associated with late-successional forests, such as *Rourea fulgens* (Figure 7-24A), were also encountered during floristic surveys at Bukit Chermin. One distinctive feature of the native forest here is the presence of some coastal species, such as *Symplocos adenophylla*, *Olea brachiata* and *Rapanea porteriana* (Figure 7-24B, C, E, respectively). Particularly, the presence of mature and young trees of *Rapanea porteriana* of girths ranging between 0.2–1.2 m and seedlings and saplings of girths between 0.05–0.1 m (Appendix E) indicates active recruitment of these species.

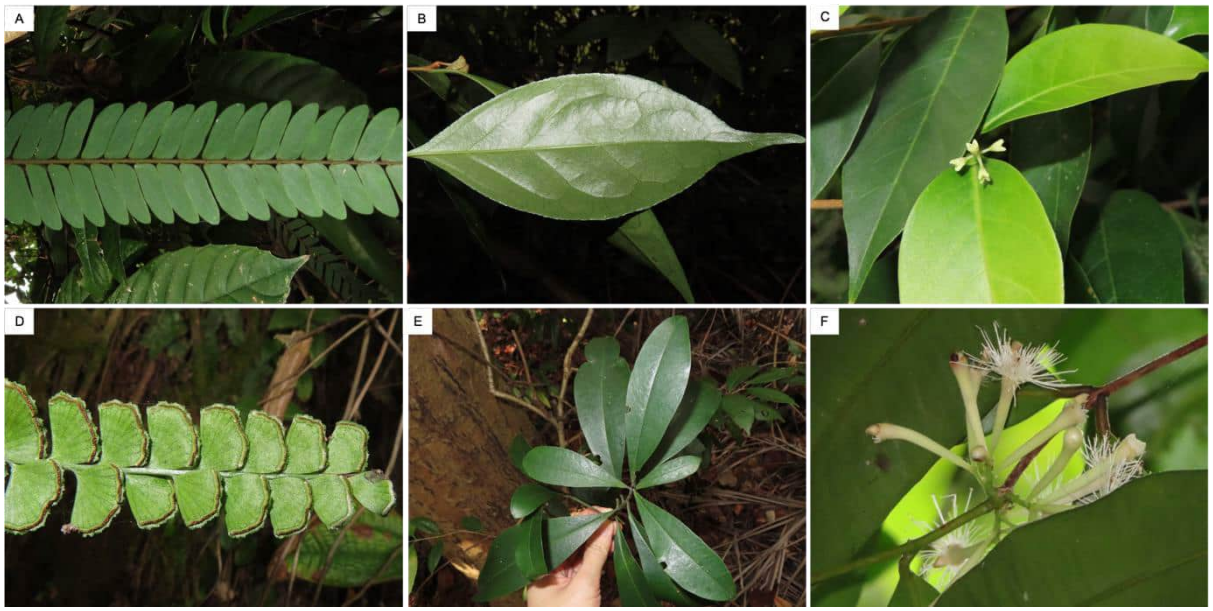


Figure 7-24 Coastal and secondary forest plant species of conservation significance recorded at Bukit Chermin. (A) *Rourea fulgens*; (B) *Symplocos adenophylla*; (C) *Olea brachiata*; (D) *Lindsaea orbiculata*; (E) *Rapanea porteriana*; (F) *Syzygium claviflorum* var. *claviflorum*.

Three species of conservation significance were recorded along the mangrove forest of Berlayer Creek, the nationally Critically Endangered climber *Dalbergia junghunii* and nationally Vulnerable *Nypa fruticans* (Figure 7-25E) and *Rhizophora stylosa*. All three species are associated with coastal and/or back mangrove habitats. They were recorded in the northern half of the creek, where tidal influence is presumably milder and the environment more similar to a back mangrove zone. Besides these threatened species, the mangrove forest is also host to a variety of other native mangrove species, such as those shown in Figure 7-25.

The Keppel Club golf course also hosts numerous threatened species. Field findings from the present floristic surveys indicate that the Keppel Club golf course used to support a coastal forest. Two large *Calophyllum inophyllum* trees of 3.1 m (Figure 7-28D) and 2.7 m girths respectively (Appendix E) were found in the forest stretch along the edge of the golf course next to the West Coast Highway. *Calophyllum inophyllum*, listed as Critically Endangered in Chong et al. (2009) [P-9], is a native coastal species. Currently, the only known area in Singapore where mature individuals of this species still persist is the natural coastal forest southwest of St. John's Island, where a population was found to be widespread [P-40]. Given that it would take a long time for the slow-growing trees to attain their present sizes, it is almost certain they have been at the site for a long time, and are remnant trees of the original forest that covered the site.

Several specimens of *Streblus elongatus* were also recorded within the remnant forested strips in Keppel Club golf course. The plants could still be persisting in spite of the surrounding human developments, such as the construction of the golf course as well as the West Coast Highway.

The remaining specimens of conservation significance, which are mostly listed as nationally Vulnerable, were found in low numbers, scattered sparsely across the PSA Club, Labrador Park, as well as the Former BP Oil Refinery site (Figure 7-23).



Figure 7-25 Coastal and mangrove plants recorded along Berlayer Creek. (A) *Clerodendrum inerme*; (B) *Avicennia alba*; (C, F) *Sonneratia alba*; (D) *Bruguiera gymnorrhiza*; (E) *Nypa fruticans*; (G) *Rhizophora* sp.

Three species of seagrass belonging to two families were recorded within the Marine Area, all of which are threatened and considered of conservation significance. *Halophila ovalis,* listed as nationally Vulnerable, was recorded in all three patches of seagrass meadow (Figure 7-26). All three seagrass species recorded in the Study Area are considered pioneer species amongst all twelve seagrass species recorded in Singapore [P-51]. In this study, it was observed that the leaves of *Halophila ovalis* specimens in the western portion of the Marine Area were covered in soft sediments, yet they are still continuing to persist in the environment. This corroborates previous findings proving that *Halophila ovalis* is a resilient pioneer species and is frequently associated with mangrove and/or estuarine habitats.

The second species *Halodule* sp. was also recorded throughout the seagrass meadows, although only in the western portion (Figure 7-26). Specimens of this species could only, at best, be identified to genus using footage obtained from the underwater drone. Plant characters such as leaf tip and rhizomes could not be examined in detail to narrow down to species. There are five known species in Singapore that belong to this family Cymodoceaceae, all of which are nationally threatened. Based on distribution information from the current and past studies, it is likely that the specimens belong to the genus *Halodule*. [P-72, P-51, W-34].

The final seagrass species of conservation significance is *Enhalus acoroides*. This is listed as nationally Vulnerable and was only observed at one location in the eastern portion of the marine (Figure 7-26). This patch of seagrass was about 5 m wide and specimens were observed to be producing female flowers at the time of observation (Figure 7-26).

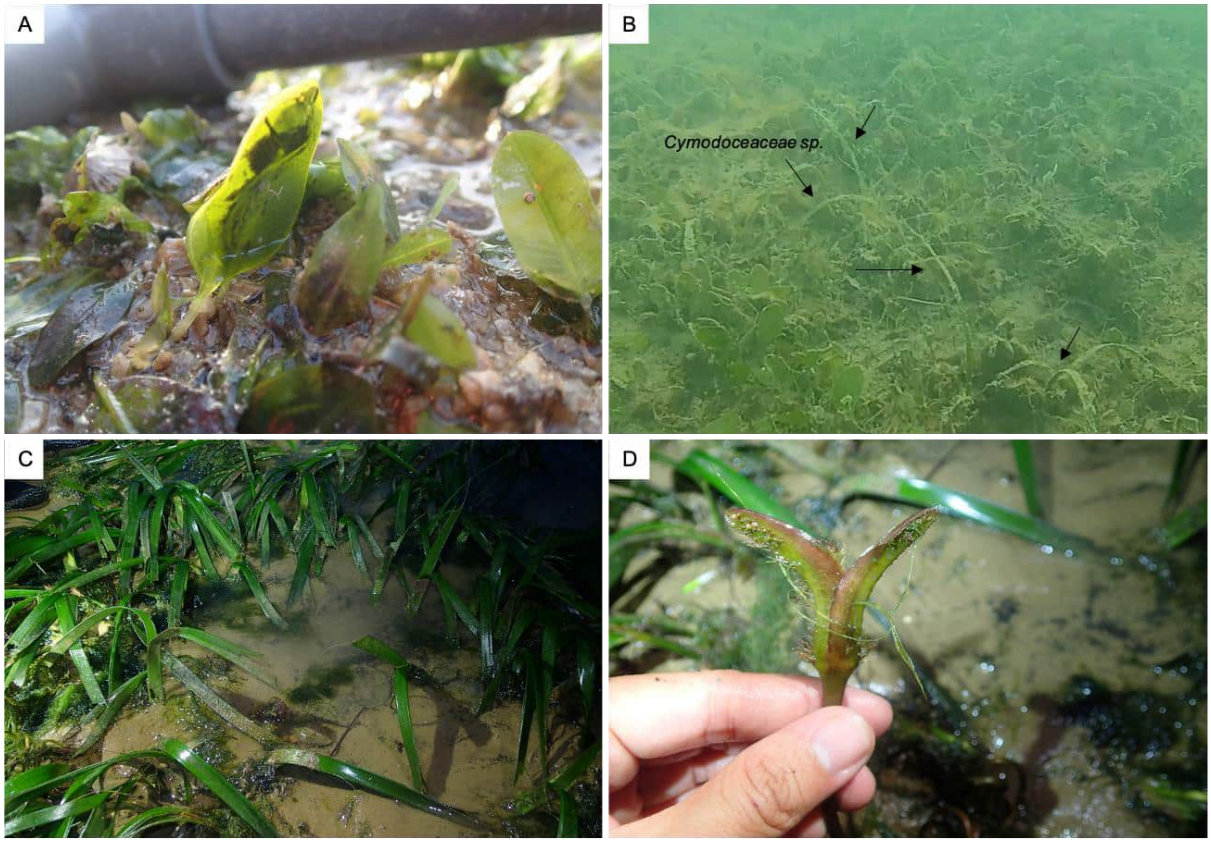


Figure 7-26 Seagrass species. (A) *Halophila ovalis*; (B) Seagreass meadow composed of a mix of *Halophila ovalis* and *Cymodoceaceae sp.* (indicated by black arrows); (C) *Enhalus acoroides*; (D) *Enhalus acoroides* specimen was observed to be flowering - female flowers.

7.3.4.3 Large Plant Specimens

A total of 152 large plant specimens belonging to 33 species of native and exotic origin were recorded in the Study Area (Figure 7-27; Appendix F). Of these, 123 are trees (3–7.5 m girth), 22 stranglers (3–10 m spread), five bamboo clusters (3–12 m spread) and the remaining two cluster palms (both of 3 m spread). The large majority of these large specimens (103; 67.8%) were found within the Keppel Club golf course. Native threatened large specimens include the Vulnerable tree species *Streblus elongatus*, as well as palm species *Onocosperma tigillaria* and *Nypa fruticans*. Other species such as *Callophyllum inophyllum, Cyrtophyllum fragrans* and *Adenanthera pavonina* were also found in the Study Area (Figure 7-28D–F).

The five most abundant tree species in the Study Area are, in descending order, *Pterocarpus indicus* (32 specimens), *Casuarina equisetifolia* (17 specimens), *Falcataria moluccana* (14 specimens), *Samanea saman* (14 specimens), and *Cyrtophyllum fragrans* (8 specimens). The two most abundant large strangler species belong to *Ficus microcarpa* (14 specimens) and *Ficus benjamina* (5 specimens) (Figure 7-28B-C).

One heritage tree was also recorded at Keppel Club golf course. It is an exotic asam tree (*Tamarindus indica*) of 5.3 m girth (Figure 7-29). The Critically Endangered *Calophyllum inophyllum* and *Peltophorum pterocarpum* were also found within Keppel Club golf course.

While of exotic origin, the bamboo clusters belonging to the species *Bambusa vulgaris* (two clusters in Bukit Chermin) (Figure 7-28A) and *Thyrsostachys siamensis* (three clusters in Keppel Club golf course) are valuable because they could be potential refugia for bamboo bats (Figure 7-28A). The remaining two palm specimens were found at Berlayer creek and Labrador Park respectively.



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
- Waterbody (man-made)
- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

N

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Qualified Person Endorsement : NA

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Consultant : AECOM

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Project Title :
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Figure Title :
Distribution of large plant specimens

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Figure 7-28 Large plant specimens recorded at the Study Area. (A) *Bambusa vulgaris* of 12 m spread at Bukit Chermin; (B) *Ficus benjamina*; (C) *Ficus microcarpa* of 8 m spread; (D) *Calophyllum inophyllum* of 3.1 m girth; (E) *Cyrtophyllum fragrans* of 7.5 m girth; and (F) *Adenanthera pavonina* of 5.1 m girth at Keppel Club golf course



Figure 7-29 *Tamarindus indica* of 5.3 m girth, a heritage tree at Keppel Club golf course

7.3.4.4 Other Specimens of Value

Eleven other plant specimens of value were recorded at the Study Area. Nine are within Keppel Club golf course, one at the north entrance of Berlayer Creek and remaining along the western edge of the Former BP Oil Refinery site (Figure 7-30; Appendix G).

Of the nine specimens at Keppel Club golf course, one is an albizia tree (*Falcataria moluccana*) with an active raptor nest (Figure 7-31), six are trees, strangers and a bamboo cluster (Figure 7-32A–B) with bird nests, one is a yellow flame tree (*Peltophorum pterocarpum*) with an active beehive (Figure 7-32C), and the last a cluster of bamboo (*Thyrsostachys siamensis*) of less than 3 m spread.

Two of the six specimens in Keppel Club golf course with bird nests are rain trees (*Samanea saman*) that likely belong to woodpeckers. One active raptor nest belonging to the white-bellied sea eagle (*Haliaeetus leucogaster*) was found in the crown of an albizia tree (*Falcataria moluccana*) in Keppel Club golf course (Figure 7-31). A raptor was seen nearby or perched on the nest on several occasions during floristic surveys throughout this study, indicating that the nest is most likely actively in use. Raptors are known to nest all year round in Singapore and

existing nests may be reused given that nest building is comparatively costly [P-41, P-54]. There were also anecdotal accounts from staff of Keppel Club golf course that this is the fourth nest built by the raptors because the previous three were destroyed following lightning strike events that struck both the tree(s) and nest(s).

At the northern end of Berlayer Creek, a bird nest was found on an *Avicennia officinalis* (Figure 7-32D). An active nest belonging to pink-necked green pigeons (*Treron vernans*) was found on a *Licuala spinosa* shrub at the Former BP Oil Refinery site.



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Figure Title :
Distribution of other plant specimens of value

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Figure 7-31 Albizia tree with an active raptor nest at Keppel Club golf course. The photographs were taken on two separate occasions.



Figure 7-32 Other plant specimens of value recorded at the Study Area. (A–B) Bamboo cluster with a nest and (B) *Peltophorum pterocarpum* tree with an active bee hive at Keppel Club golf course; (D) *Avicennia officinalis* with a nest at Berlayer Creek.

7.3.4.5 Tree Distribution

A total of 2,787 trees were mapped in the Study Area (Figure 7-33; Appendix H). Majority (1,411) of the trees are within Berlayer Creek, which has the highest density of trees in the Study Area. This is because all tree mangrove tree species of 0.3 m girth and above were tagged, whereas all other non-mangrove tree species were only tagged if they have a girth of 1 m or more (refer to Section 7.2.2.2.3). The trees are mainly distributed along the two banks of the mangrove forest with *Sonneratia alba, Aviccenia officinalis* and *Avicennia rumphiana* being the top three most abundant species.

The second compound with the greatest number of trees is Keppel Club golf course, in which 822 trees were mapped. The trees belong to a mix of exotic and native species, distributed in thin strips along the cart routes. The top five most abundant tree species planted in Keppel Club golf course are (1) *Pterocarpus indicus*, (2) *Syzygium grande*, (3) *Casuarina equisetifolia*, (4) *Cocos nucifera*, and (5) *Elaeis guineensis*. The other trees are mainly roadside trees lining Bukit Chermin Road or planted trees within and along the Former BP Oil Refinery site.



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Figure Title :
Distribution of mapped trees

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7.3.5 Faunistic Field Findings

7.3.5.1 Overall

The field assessment documented 384 species (194 marine and 190 terrestrial), dominated by molluscs (95 species) and birds (93 species) (Table 7-7; Appendix I). From these, 29 species (14 marine and 15 terrestrial) of conservation significance were recorded, including one fish species and one mollusc species that was not listed was originally deem not likely to occur from desktop assessment.

The terrestrial species recorded were largely common and found across the site. The man-made waterbodies within Keppel Club golf course mainly supported exotic aquatic species as well as the common odonate species. Similarly, the marine species recorded were mostly common but largely clustered at the eastern portion of Marine Area, where the rocky shore is. This is because surveys were largely limited by where the intertidal zone was. Subtidal zone was only mapped for habitats via an ROV, no marine fauna surveys were conducted. The findings for each faunal group are described in Sections 7.3.5.3 to 7.3.5.13.The list of probable and recorded species is available in Appendix I, and summarised in Table 7-7. The list of faunal species of conservation significance and their conservation status is available in Table 7-8. The faunal survey and camera trap data are provided in Appendix J and Appendix K respectively.

Table 7-7 Summary of recorded faunal species

Faunal group	No. of recorded species	
	All species	CS species
Butterflies	**37**	**0**
Odonates	**20**	**0**
Dragonflies	16	-
Damselflies	4	-
Herpetofauna	**25**	**0**
Amphibians	10	0
Reptiles	15	0
Birds	**93**	**13**
Mammals	**15**	**2**
Non-volant mammals	10	2
Bats	5	0
Fish	**40**	**1**
Crustacean	**38**	**3**
Molluscs	**95**	**7**
Others	**21**	**3**
Total	**384**	**29**

Table 7-8 List of faunal species of conservation significance recorded

Taxon	Species	Common name	Local status	Global status	Location of records
Bird	*Accipiter trivirgatus*	Crested goshawk	Critically Endangered	Least Concern	Berlayer Creek, Keppel Club golf course
Bird	*Nisaetus cirrhatus*	Changeable hawk-eagle	Endangered	Least Concern	Berlayer Creek
Bird	*Ardea cinerea*	Grey heron	Vulnerable	Least Concern	Bukit Chermin, Keppel Club golf course, PSA Club
Bird	*Ardea purpurea*	Purple heron	Endangered	Least Concern	Keppel Club golf course
Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Critically Endangered	Least Concern	Berlayer Creek, Keppel Club golf course
Bird	*Vanellus indicus*	Red-wattled lapwing	Endangered	Least Concern	Keppel Club golf course, Labrador Nature Reserve
Bird	*Copsychus saularis*	Oriental magpie-robin	Endangered	Least Concern	Berlayer Creek, Bukit Chermin, Keppel Club golf course, Labrador Nature Reserve, PSA Club
Bird	*Gallus gallus*	Red junglefowl	Endangered	Least Concern	Berlayer Creek, Bukit Chermin, Former BP Oil Refinery site, Keppel Club golf course, Labrador Nature Reserve
Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Endangered	Least Concern	Berlayer Creek, Former BP Oil Refinery site, Keppel Club golf course, Labrador Nature Reserve, PSA Club
Bird	*Pycnonotus zeylanicus*	Straw-headed bulbul	Endangered	Critically Endangered	Berlayer Creek
Bird	*Rallina fasciata*	Red-legged crake	Vulnerable	Least Concern	Keppel Club golf course
Bird	*Treron curvirostra*	Thick-billed green pigeon	Endangered	Least Concern	Labrador Nature Reserve
Bird	*Strix seloputo*	Spotted wood owl	Critically Endangered	Least Concern	Berlayer Creek, Keppel Club golf course, Labrador Nature Reserve
Mammal	*Macaca fascicularis*	Long-tailed macaque	Not Assessed	Vulnerable	Berlayer Creek, Former BP Oil Refinery site, Keppel Club golf course

Taxon	Species	Common name	Local status	Global status	Location of records
Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Endangered	Vulnerable	Berlayer Creek, Bukit Chermin, Keppel Club golf course, PSA Club
Fish	*Hippocampus kuda*	Estuarine seahorse	Vulnerable	Vulnerable	Marine Area
Mollusc	*Mauritia arabica*	NA	Vulnerable	Not Assessed	Marine Area
Mollusc	*Murex trapa*	NA	Vulnerable	Not Assessed	Marine Area
Mollusc	*Clithon oualaniensis*	NA	Vulnerable	Least Concern	Berlayer Creek
Mollusc	*Nerita planospira*	Flat-spire nerite	Vulnerable	Not Assessed	Berlayer Creek
Mollusc	*Canarium urceus*	NA	Vulnerable	Not Assessed	Marine Area
Mollusc	*Umbonium vestiarium*	Button snail	Vulnerable	Not Assessed	Marine Area
Mollusc	*Acanthopleura gemmata*	Jewelled chiton	Endangered	Not Assessed	Marine Area
Crustacean	*Coenobita violascens*	Land hermit crab	Vulnerable	Not Assessed	Marine Area
Crustacean	*Eriphia ferox*	Ferocious reef crab	Vulnerable	Not Assessed	Marine Area
Horseshoe Crab	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Vulnerable	Data Deficient	Berlayer Creek
Echinoderm	*Jacksonaster depressum*	Thick-edged sand dollar	Vulnerable	Not Assessed	Marine Area
Platyhelminthes	*Pseudoceros concinnus*	Blue-lined flatworm	Vulnerable	Not Assessed	Marine Area
Platyhelminthes	*Pseudoceros indicus*	Blue-dot margined flatworm	Vulnerable	Not Assessed	Marine Area



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Figure Title :
Distribution of terrestrial fauna of conservation significance

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Labrador MRT Station
West Coast Highway
Keppel Club Golf Course
Berlayer Creek
PSA Club
Former BP Oil Refinery Site
Bukit Chermin Road
Labrador Nature Reserve
Reflections at Keppel Bay
Port Road
Keppel Club
Bukit Chermin

0 100 200 m

Species of Conservation Significance
- Jewelled chiton
- Canarium urceus
- Mangrove horseshoe crab
- Clithon oualaniensis
- Land hermit crab
- Ferocious reef crab
- Estuarine seahorse
- Thick-edged sand dollar
- Mauritia arabica
- Murex trapa
- Flat-spire nerite
- Blue-lined flatworm
- Blue-dot margined flatworm
- Button snail

Legend

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Figure Title :
Distribution of marine fauna of conservation significance

Designed	Checked	Approved	Figure No. :	Rev.	Sheet
SS	NHT	JAG	7-35	-	1 of 1
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7.3.5.2 Taxon Sampling Curves

Along the terrestrial sampling route, the sample coverage for each taxon were all above 80% (Figure 7-36; Table 7-9). With doubled sampling effort, additional species may be detected. Likewise, sample coverage for molluscs was above 85% (Figure 7-37; Table 7-9). Sample coverage was not calculated for faunal groups with less than two species recorded. This included the bats, fish, crustaceans and horseshoe crab and other marine fauna. The sample coverage was also not calculated for mammals recorded using camera traps due to the low incidence of targeted records.

Along the terrestrial sampling route, the sample coverage for each taxon were all above 70% (Figure 7-36; Table 7-9). With doubled sampling effort, additional species may be detected. It is generally low across all taxa, although a higher number is expected for butterflies (17 species) and birds (9 species). Likewise, sample coverage for molluscs was above 70% (Figure 7-37; Table 7-9). Sample coverage was not calculated for faunal groups with less than two species recorded. This included the bats, fish, crustaceans and horseshoe crab and other marine fauna.

Table 7-9 Result summary of taxon sampling analysis

Taxon	Interpolated Sample Coverage (%)	Extrapolated Sample Coverage (%)	Observed	Estimated ± S.E.	95% lower	95% upper
Butterfly	86.7	95.4	33	51.7 ± 13.7	38.2	100.8
Odonate	84.8	89.7	19	66.4 ± 56.5	26.5	318.2
Amphibian	96.4	99.9	10	10.9 ± 1.8	10.1	20.6
Reptile	96.1	99.0	13	15.9 ± 4.3	13.3	37.4
Bird	95.8	99.0	76	89.8 ± 8.1	80.7	115.9
Mammal	96.6	100.0	4	4.2 ± 0.7	4.0	8.6
Molluscs	85.05	93.8	58	51.7 ± 13.7	72.4	161.2

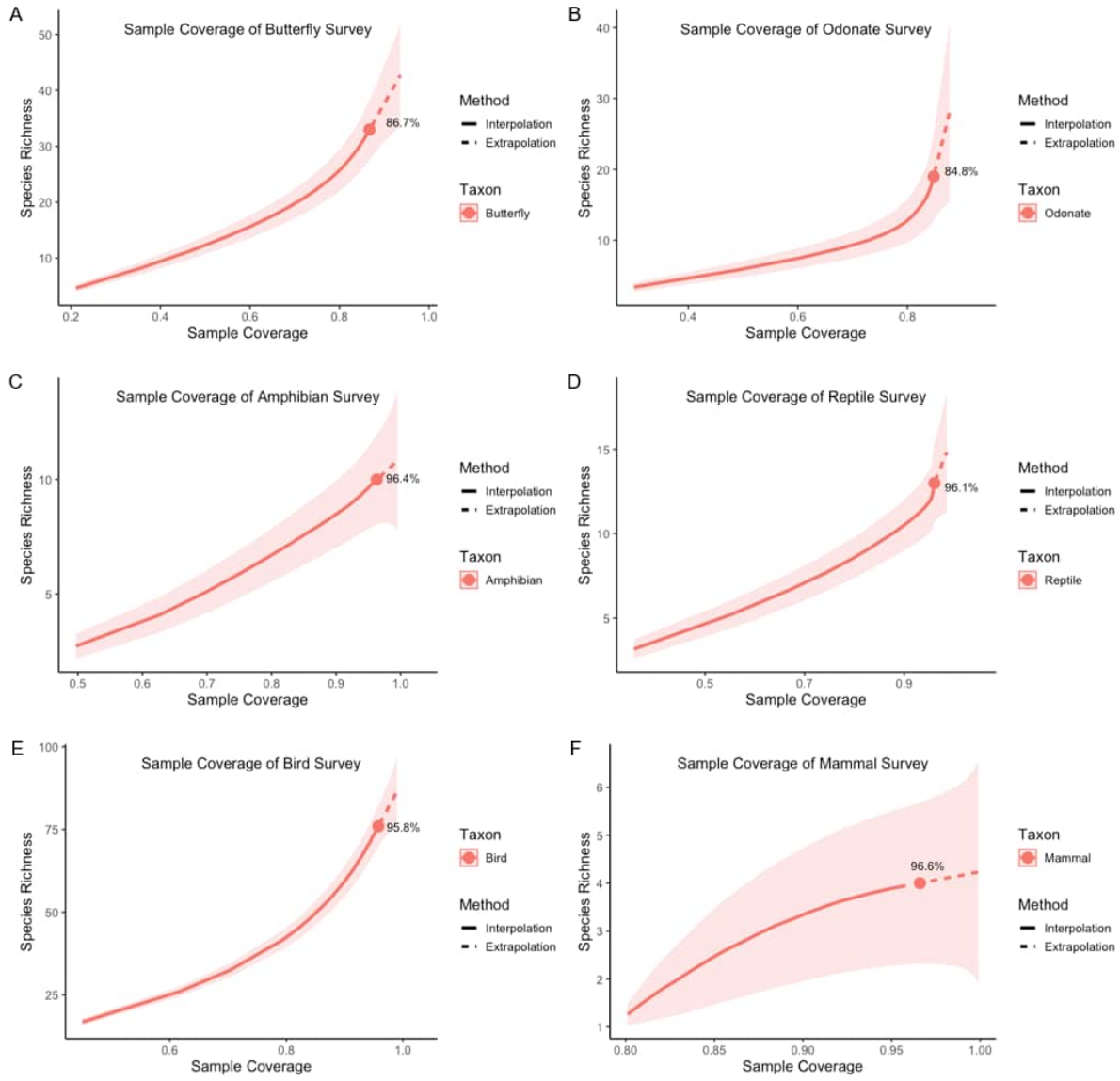


Figure 7-36 Taxon sampling curves for respective faunal groups along terrestrial sampling routes

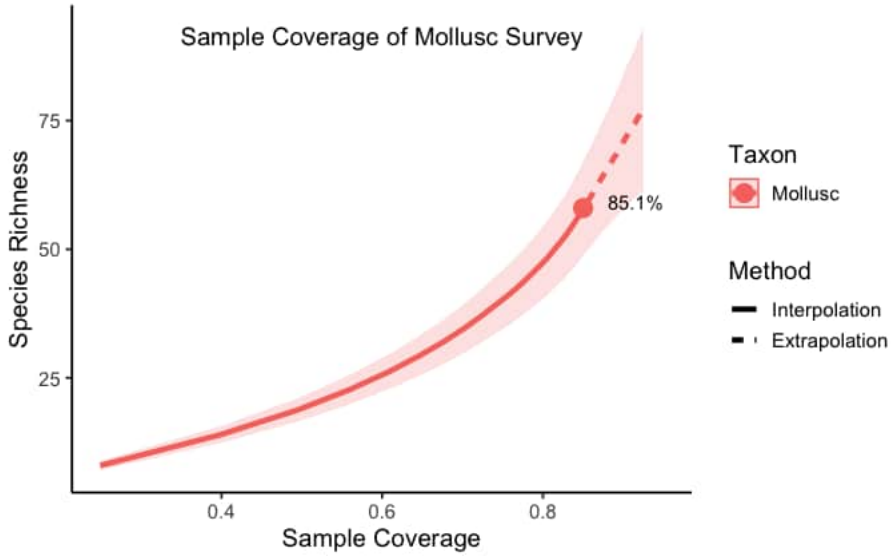


Figure 7-37 Taxon sampling curves for molluscs at sampling points

7.3.5.3 Butterflies

During field assessment, 37 species of butterflies were recorded within the study area, none of which were of conservation significance. Most of the recorded butterfly species were common or moderately common in Singapore, with 6 species of butterflies being moderately rare. The six moderately rare butterfly species are the palm king (*Amathusia phidippus phidippus*), pointed ciliate blue (*Anthene lycaenina miya*), the silver forget-me-not (*Catochrysops panormus exiguous*) (Figure 7-38), the common banded awl (*Hasora chromus chromus*), the dark caerulean (*Jamides bochus nabonassar*) and the slate flash (*Rapala manea chozeba*). Apart from the palm king, the five other rare butterfly species are known to be forest-dependent.

Among the species recorded are sun-loving butterflies such as the grass yellow (*Eurema* sp.), painted Jezebel (*Delias hyparete metarete*), chestnut bob (*Iambrix salsala salsala*) and common palmfly (*Elymnias hypermnestra agina*). This is likely due to the open habitat of urban vegetation that characterised a large part of the survey area. In spite of the small size of the native-dominated secondary forest area, at least half of the butterfly species recorded are forest-dependent species, highlighting the importance of the forest habitat in supporting a healthy butterfly population within the Study Area.

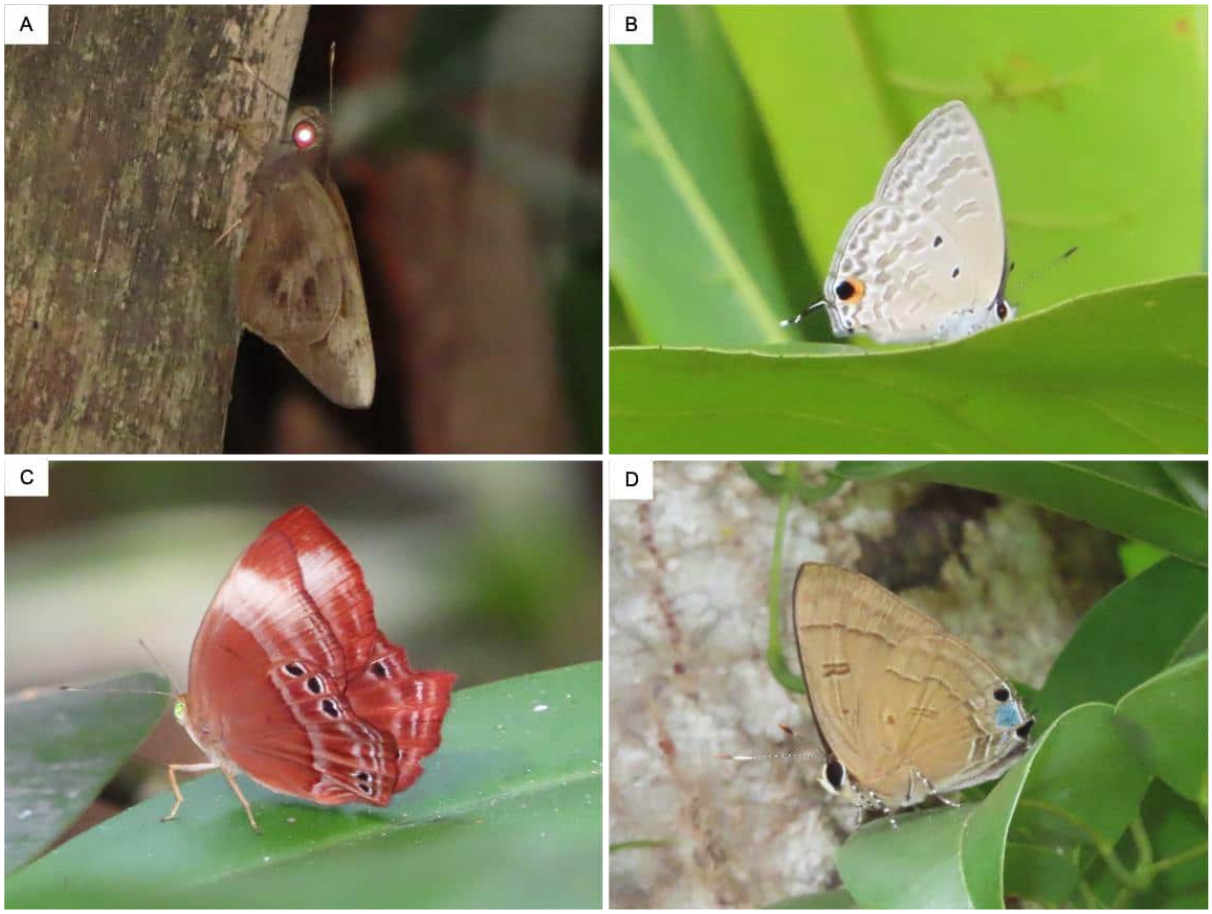


Figure 7-38 Butterflies recorded within the Study Area. (A) Banana Skipper (*Erionota trax thrax*) at Bukit Chermin; (B) Silver Forget-Me-Not (*Catochrysops panormus exiguus*) at the Former BP Oil Refinery site; (C) Malayan Plum Judy (*Abisara saturate kausambiodes*) and (D) Copper Flash (*Rapala pheretima sequeira*) at Berlayer Creek.

7.3.5.4 Odonates (Dragonflies and Damselflies)

During field assessment, 20 odonate species were recorded within the study area, all of wide are widespread and common species. The recorded odonate species included those that are adapted to disturbed open ponds such as the white-barred duskhawk (*Tholymis tillarga*), common parasol (*Neurothemis fluctuans*) (Figure 7-39), blue dasher (*Brachydiplax chalybea*), and variable wisp (*Agriocnemis femina*) [P-61].

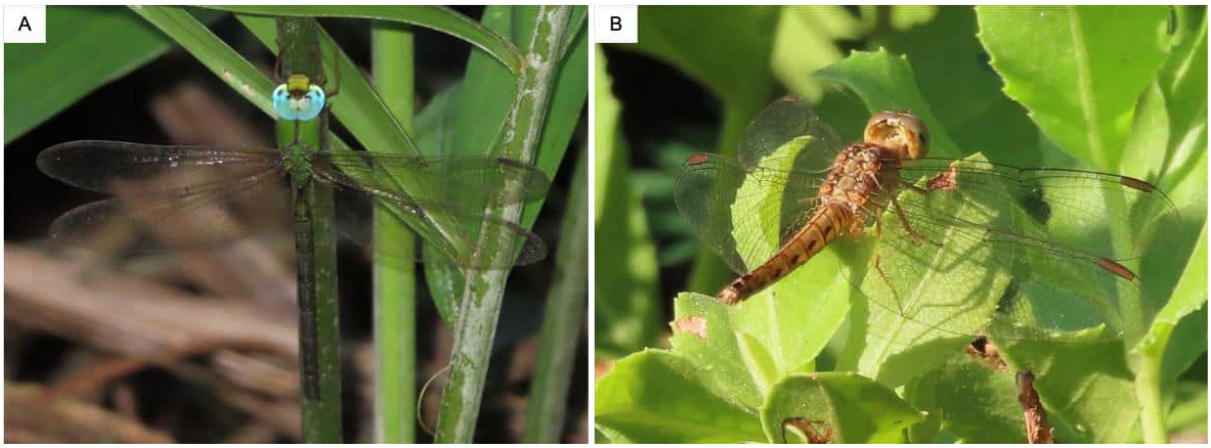


Figure 7-39 Odonates recorded within the Study Area. (A) Spear-tailed duskhawker (*Gynacantha dohrni*) at Keppel Club golf course; (B) Common Parasol (*Neurothermis fluctuans*) at Berlayer Creek.

7.3.5.5 Amphibians

During field assessment, 10 species were recorded, of which three are non-native. The amphibian sightings were predominantly recorded along Berlayer Creek and around the waterbodies found in the site. The amphibian assemblage was dominated by species that are usually found in urban areas as well as parks and gardens, such as the Asian toad (*Duttaphrynus melanostictus*), four-line tree frog (*Polypedates leucomystax*) and greenhouse frog (*Eleutherodactylus planirostris*). The green paddy frog (*Hylarana erythraea*) was also frequently recorded near the ponds within Keppel Club golf course. All these species are widespread and common, being highly tolerant of disturbance and are often found near or in human habitation. The only exception is the non-native East Asian ornate chorus frog (*Microhyla mukhlesuri*), which is restricted and rare in distribution.

7.3.5.6 Reptiles

During the field assessment, 15 species were recorded, of which three are non-native. 90 of the 142 reptile sightings recorded were geckos (Gekkonidae family), of which more than half of the sightings were of the Spotted house gecko (*Gekko monarchus),* the Spiny-tailed house gecko (*Hemidactylus frenatus*) and the Brooke's house gecko (*Hemidactylus brookii*). The Malayan monitor lizard (*Varanus salvator*) was recorded frequently across the site which is consistent with its preferred habitat of terrestrial environment close to waterbodies.

The remaining recorded reptilian assemblage was characterised by widespread and common species adapted to open habitats such as the changeable lizard (*Calotes versicolor*), painted bronzeback (*Dendrelaphis pictus*), and Oriental whip snake (*Ahaetulla prasina*). One widespread but uncommon species, the forest-dependent green crested lizard (*Bronchocela cristatella*) was also recorded.



Figure 7-40 A pair of male water monitor lizards fighting at Keppel Club golf course

7.3.5.7 Birds

The field assessment recorded 93 bird species within the study area. Most of the recorded bird species are resident species, including the crested goshawk (*Accipiter trivirgatus*) (Figure 7-41D) and oriental pied hornbill (*Anthracoceros albirostris*), both of which are nationally Critically Endangered resident breeders. Twenty-one of the recorded bird species are visitors (migrants), including the Chinese pond heron (*Ardeola bacchus,* Figure 7-41E) and the crested honey-buzzard (*Pernis ptilorhynchus*) (Figure 7-41F). The yellow-rumped flycatcher, one of the six species in Singapore to be considered more susceptible to bird strike was also recorded [O-5]. Thirteen of the recorded species are of conservation significance, and they include the nationally Endangered red junglefowl (*Gallus gallus*), blue-crowned hanging parrot (*Loriculus galgulus*) and purple heron (*Ardea cinerea*), and the nationally Vulnerable red-legged crake (*Rallina fasciata*).

Five of these species are nationally threatened species that were previously regarded as rare but have since increased in range and numbers [P-52]. They are the changeable hawk-eagle (*Nisaetus cirrhatus*; endangered), grey heron (*Ardea cinerea*; vulnerable), oriental magpie-robin (*Copsychus saularis*; endangered), red junglefowl (*Gallus gallus*; endangered), and blue-crowned hanging-parrot (*Loriculus galgulus*; endangered). On the other hand, other uncommon bird species recorded include the purple heron (*Ardea cinerea*) and the red-legged crake (*Rallina fasciata*), whose population numbers have shown a decreasing trend [P-52] over the past years.

Other species of note include the straw-headed bulbul, which is listed as nationally endangered although its population appears to be growing more stable in Singapore. The straw-headed bulbul is regarded as a globally critically endangered species due to its melodious and attractive songs, making it highly sought-after for the songbird trade. This has resulted in its extirpation throughout much of its range and making it necessary to list it as a CITES-protected species. Furthermore, it is also threatened by loss of forest habitat. Its global conservation status was recently revised in 2018 from Endangered to Critically Endangered as populations have been declining extremely rapidly [W-45]. According to Yong et al. [P-82], the estimated population size in Singapore is slightly over 200 birds, possibly making up one-third of the global population [P-83]. However, in Singapore, habitat loss to development remains a primary threat to species. During our field assessment, we recorded one targeted and one incidental encounter of this species within the mangrove area along Berlayer Creek.

Aside from the species of conservation, the recorded resident bird assemblage was characterised by common species adapted to disturbed habitats, such as the spotted dove (*Spilopelia chinensis*), Asian glossy starling (*Aplonis panayensis*), and Javan myna (*Acridotheres javanicus*), with high representation by species such as the Daurian starling (*Agropsar sturninus*), yellow-vented bulbul (*Pycnonotus goiavier*) and pink-necked green pigeon (*Treron vernans*).

Subsequently, given the ecological significance of Study Area within the Southern Ridges (serving as an ecological connection) as mentioned in Section 7.3.1, the EIS has made comparative studies to data collected by NParks in

2010 for Labrador Nature Reserve and Nature Society Singapore in 2008 for Keppel Club golf course [P-1]. A total of 27 species were recorded across these three studies, consisting of both canopy and understory birds.



Figure 7-41 Birds recorded at the Study Area. (A) Grey Heron (*Ardea cinerea*) and (B) Red-Wattled Lapwing (*Vanellus indicus*) at Keppel Club golf course; (C) White-belied sea-eagle (*Haliaeetus leucogaster*) soaring over Three Peacocks restaurant; (D) Crested goshawk (*Accipiter trivirgatus*) and (E) Crested honey buzzard (*Pernis ptilorhynchus*) at Berlayer Creek; (F) Chinese pond heron (*Ardeola bacchus*) almost assuming breeding plumage at the Former BP Oil Refinery site.

7.3.5.8 Mammals (Non-Volant)

The field assessment recorded 10 species of mammals within the study area, of which two species recorded are of conservation significance. They are the globally Vulnerable long-tailed macaque (*Macaca fascicularis*) (Figure 7-42C&D) and the globally Vulnerable and locally Endangered smooth-coated otter *(Lutrogale perspicillata)* (Figure 7-42A&B). The long-tailed macaques were observed across the study area while the smooth-coated otters were recorded within Berlayer Creek and near the waterbodies in Keppel Club golf course.

Five species of mammals were only recorded via camera traps. All these species are common and are mostly small ground-dwelling species, which were better detected via the camera traps than transect surveys. The camera traps yield a total of 946 detections. The most commonly recorded species on the terrestrial camera traps are the unidentified rat species (*Rattus* sp.) with 329 detections, followed by the Plantain squirrel (*Callosciurus notatus*) with 210 detections and the Oriental house rat (*Rattus tanezumi*) with 209 detections.



Figure 7-42 Non-volant mammals recorded at the Study Area. Smooth-coated otters (*Lutrogale perspicillata*) at Keppel Club golf course (A) and Berlayer Creek (B); (C–D) Long-tailed macaques (*Macaca fasicularis*) at Keppel Club golf course.

7.3.5.9 Mammals (Bats Only)

During the field assessment, five species of bats—four insectivorous and one frugivorous—were recorded. The insectivorous bats were all identified through acoustic recordings (Figure 7-43), while the frugivorous bat (lesser dog-faced fruit bat; *Cynopterus brachyotis*) was identified visually during the transect surveys. All these species are widespread and common, except for the Horsfield's large-footed myotis (*Myotis horsfieldii*), which is not assessed. The Horsfield's large-footed myotis (*Myotis horsfieldii*) is known to roosts at rock crevices and boulders near streams, which explains the records found along Berlayer Creek (T2) and along Keppel golf course (T3) near where the canal lies.

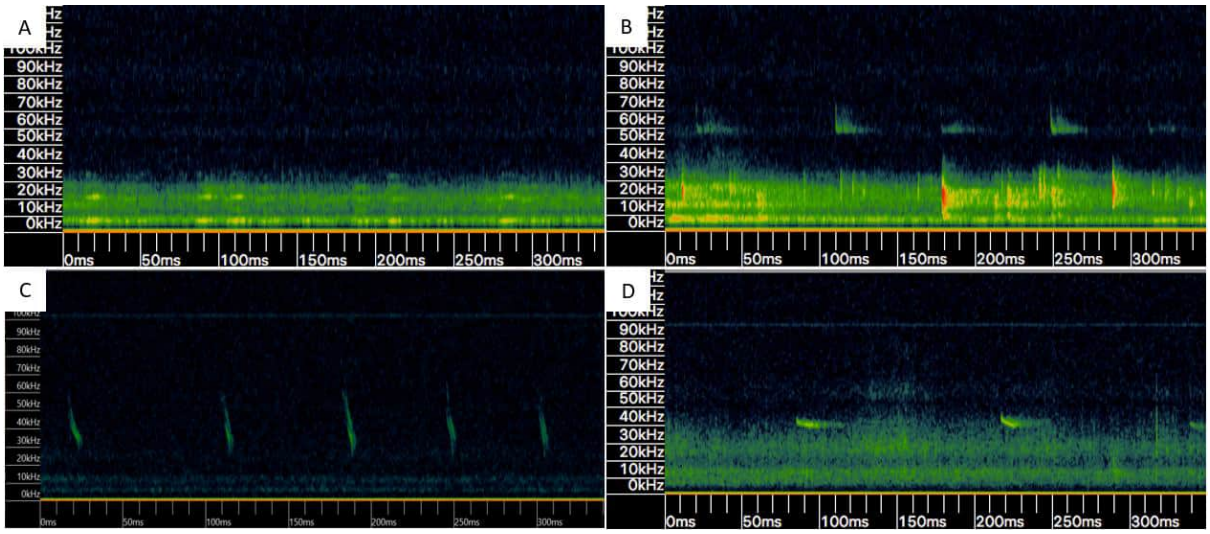


Figure 7-43 Spectrograms of bat acoustic calls. (A) pouch-bearing bat (*Saccolaimus saccolaimus*); (B) Whiskered myotis (*Myotis muricola*); (C) Horsfield's large-footed myotis (*Myotis horsfieldii*); (D) Asiatic lesser yellow house bat (Scotophilus kuhlii).

7.3.5.10 Fish

There were three types of fish species recorded across site due to the different waterbodies present in the Study Area: five species of freshwater fish were recorded within the ponds in Keppel Club golf course and a man-made waterbody near Labrador Nature Reserve, 15 species in the brackish water of the mangrove and soft-sediment seabed along Berlayer Creek and 20 species in the marine habitat. A total of 40 species of fish were recorded across all the aquatic habitats, of which only one was of conservation significance, the estuarine seahorse (*Hippocampus kuda*).

Freshwater

Four of the five freshwater fish species were recorded within the ponds in Keppel Club golf course. All ponds within Keppel Club golf course were surveyed except pond A5 due to safety concerns (deep water). Majority of the fish species recorded in Keppel Club golf course ponds were non-native and likely introduced by the Keppel Club golf course management. The most abundant species recorded was the Midas cichlid (*Amphilophus citrinellus*) (Figure 7-44A), a species known to display a wide range of variation in morphology and is typically found in artificial environments like canals and man-made ponds or reservoirs in Singapore.

While the common snakehead (*Channa striata*) was recorded along port road near Labrador Nature Reserve.

Brackish

The record of an Indopacific tarpon (*Megalops cyprinoides*) was observed at Keppel Club golf course. The juveniles of the Indopacific tarpons commonly enter freshwater and migrate towards the sea/mangroves when they are adults. This record was initially considered to be an unexpected record because Keppel Club golf course ponds were expected to be isolated freshwater ponds and thus should yield only freshwater species (Figure 7-44A). However, upon investigation, pond A6 where the Indopacific tarpon was recorded is connected to the tidally influenced canal through a discharge pipe–which was likely how the tarpon ended up in pond A6.

Four species, including the yellow-spotted mudskipper (*Periophthalmus walailakae*) and slender mudskipper (*Periophthalmus gracilis*) (Figure 7-44B-C), were recorded in the upstream freshwater areas of the mangrove and these species are known to prefer that kind of habitat. The other 10 species recorded, including the Quoy's halfbeak (*Hyporhamphus quoyi*) and squaretail mullet (*Ellochelon vaigiensis*), were found in more saline conditions further downstream. These 10 species are also known to prefer more saline estuarine conditions and would not be found in the upstream parts of the mangrove. All 15 species are able to tolerate some fluctuations in salinity.

Marine

A total of 20 species were recorded during the field assessment. Of these, the nationally Vulnerable estuarine seahorse (*Hippocampus kuda*) was recorded on the western side of the Marine Area. This species can usually be found hiding in coral reefs, seagrasses and sponges and are important predators of bottom-dwelling organisms. The remaining 20 common species were found near or within the intertidal habitats in small pools at low tide during

intertidal surveys, including the seagrass filefish (*Acreichthys tomentosus*) and long-spined waspfish (*Paracentropogon longispinis*) (Figure 7-44D-E). While Longhorn cowfish (*Lactoria cornuta*) (Figure 7-44F) and Singapore's tuskfish (*Choerodon oligacanthus*) can also be found in the intertidal habitats, they are typically found in the deeper waters and were caught only during the seine netting surveys further from shore.

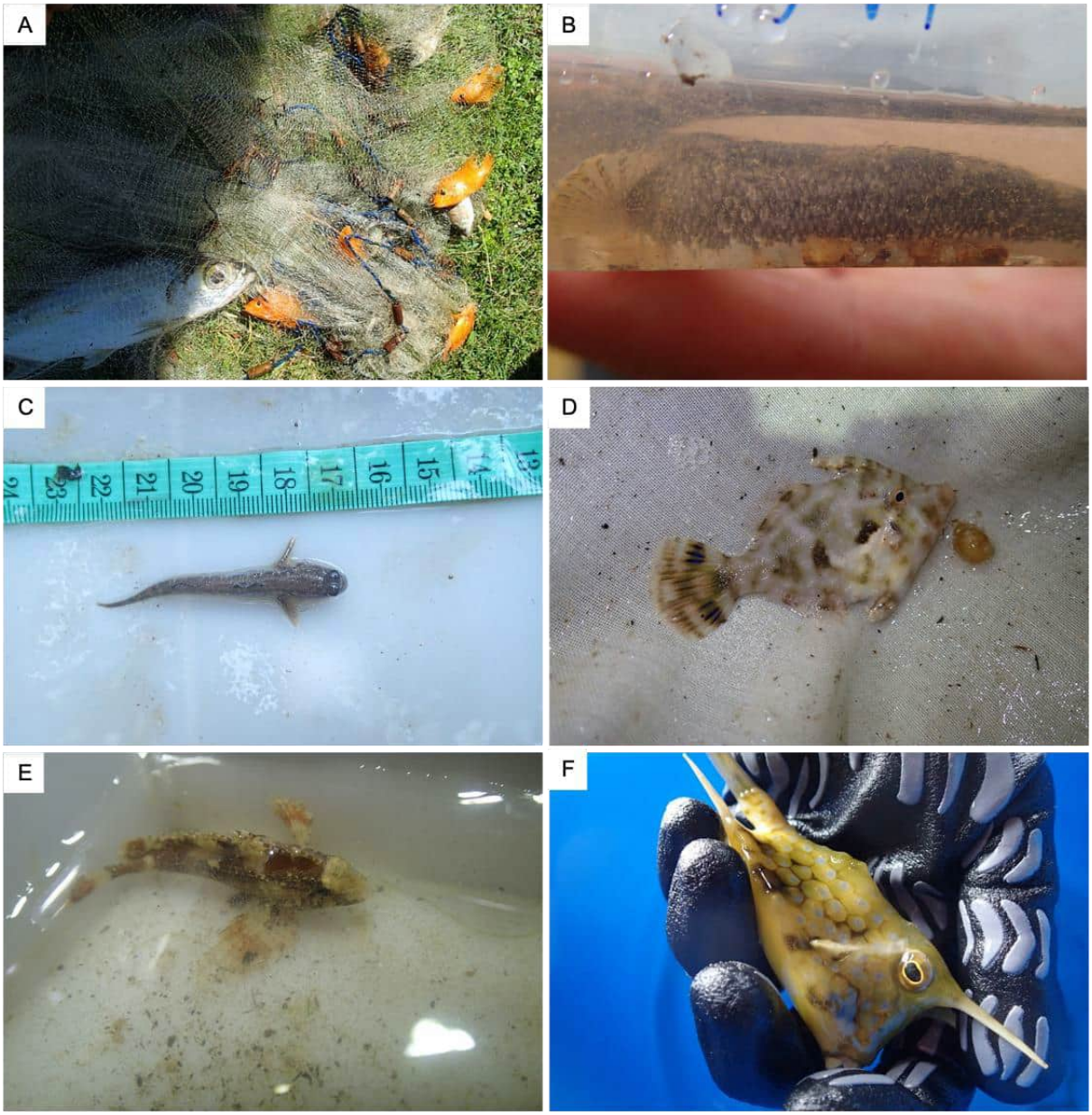


Figure 7-44 Fish recorded across the waterbodies surveyed within Study Area. (A) Fish species recorded in Keppel Club golf course ponds, (B) Yellow-spotted mudskipper (*Periophthalmus walailakae*) and (C) Slender mudskipper (*Periophthalmus gracilis*) recorded along Berlayer Creek, (D) Seagrass filefish (*Acreichthys tomentosus*) and (E) Long-spined waspfish (*Paracentropogon longispinis*) and (F) Longhorn cowfish (*Lactoria cornuta*), all recorded along the sandy shores.

7.3.5.11 Crustaceans and Horseshoe crabs

During the field assessment, 38 species of crustaceans were recorded within the Study Area including 19 species not identified to the species level. Crustacean recorded were all within the mangrove area and Marine Area, no crustaceans were recorded within the freshwater ponds in Keppel Club's golf course. Some species that were recorded include porcelain crabs (*Petrolisthes* sp.), sand bubbler crabs, purple climbing crabs (*Metopograpsus* sp.) and rock crabs (*Xanthidae* sp.) (Figure 7-45A-B). Accurate identification of these crabs to species level would

usually require closer analysis of anatomical features and would be challenging based on just the morphology in the field.

Of the species recorded, three were of conservation significance with nationally Vulnerable status (Table 7-8; Figure 7-35): land hermit crab (*Coenobita violascens*), ferocious reef crab (*Eriphia ferox*) and mangrove horseshoe crab (*Carcinoscorpius rotundicauda*) (Figure 7-45C-D). All of these species were recorded only once except for the mangrove horseshoe crab which was recorded several times along mangrove as dead specimens (Figure 7-35; Figure 7-45). The land hermit crab was recorded along the sandy shore near Bukit Chermin (Figure 7-35) and the ferocious reef crab was along sandy shore (Figure 7-35).



Figure 7-45 Crustacean and horseshoe crab species recorded across the waterbodies surveyed within Study Area. (A) Purple climbing crabs (*Metopograpsus* sp.), (B) Rock crabs (*Xanthidae* sp.) and (C) Ferocious reef crab (*Eriphia ferox*) all recorded along the sandy shore. (D) Dead specimen of mangrove horseshoe crab (*Carcinoscorpius rotundicauda*) recorded along Berlayer Creek.

7.3.5.12 Molluscs

Molluscs that were recorded were distributed across the two different intertidal habitats present: mangrove and sandy shore. However, these specimens have a chance of being washed down from the upstream mangrove to the sandy shore habitat and thus species assessment will not be discussed separately. During the field assessment, 95 species of molluscs were recorded within the Study Area; including 14 species not identified to the species level. Some examples are *Onchidium* slugs, *Modiolus* sp. and *Ostreidae* sp. As with the crustaceans, accurate identification of the molluscs to species level would usually require closer analysis of anatomical features through dissection and would be challenging based on just the morphology in the field. This difficulty exists for the family Isognomonidae, which used to be part of Ostreidae family.

Of the species recorded, seven were of conservation significance (Table 7-8; Figure 7-35). Both nationally Vulnerable Flat-spire nerite (*Nerita planospira*) and dubious nerite snail (*Clithon oualaniensis*) were recorded along the mangrove (Figure 7-46A-B). All of the other five species of conservation significance were recorded at the sandy and rocky shore. These included the jewelled chiton (*Acanthopleura gemmata*), black-lipped conch (*Canarium urceus*), rare-spined murex (*Murex trapa*), button snail (*Umbonium vestiarium*) and Arabian cowrie (*Mauritia arabica*) (Figure 7-46C-D). These specimens were all dead except for jewelled chiton and Arabian cowrie.

However, these species are still expected to be using the habitat present. Most of the button snails recorded were shells that were inhabited by tidal hermit crabs.

Ovulidae sp. (false cowrie sp.) was an interesting find as it is usually found attached to sea fans and soft corals, which could indicate presence nearby, possibly at the Keppel Marina, although the sea fans and soft corals were not picked up during ROV survey. Some species that were recorded was representative of a back mangrove environment including species in the Ellobiidae and Littorinidae families, indicating some form of zonation even within such a short stretch of mangrove. One specimen, *Subulinidae* sp., with strict freshwater requirement was recorded along the mangrove. This recorded species might have been washed down from Keppel Club golf course or the canal, although the specimen seems fresh upon examination.



Figure 7-46 Molluscs species recorded across the waterbodies surveyed within Study Area. (A) Flat-spire nerite (*Nerita planospira*) and (B) Dubious nerite snail (*Clithon oualaniensis*) recorded along Berlayer Creek; (C) Jewelled chiton (*Acanthopleura gemmata*), (D) Button snail (*Umbonium vestiarium*) and (E) Rare-spined murex (*Murex trapa*) recoded along the sandy shore.

7.3.5.13 Others

Twenty-two other marine intertidal species were recorded during the field assessment from six different taxa: (1) cnidarian, (2) echinoderm, (3) nemertea, (4) platyhelminthes, (5) polychaete and (6) sipuncula. Of which three species are considered of conservation significance- the nationally Vulnerable, blue-dot margined flatworm (*Pseudoceros indicus*), blue-lined flatworm (*Pseudoceros concinnus*) and nationally Vulnerable thick-edge sand dollar (*Jacksonaster depressum*).

Cnidarians consist mostly of anemones such as the Haddon's carpet anemone (*Stichodactyla haddoni*) and *Actiniaria* sp. (Figure 7-47A-B). One echinoderm species of conservation significance was recorded, the nationally Vulnerable thick-edge sand dollar (*Jacksonaster depressum*) (Figure 7-47C). Dead specimens of this species were recorded along the sandy shore. Although only dead specimens were recorded along the sandy shore, this species is likely to use the habitat present. Platyhelminths consist of records of flatworms from the genus *Pseudoceros* such as nationally Vulnerable blue-dotted margined flatworm (*Pseudoceros indicus*), nationally Vulnerable blue-lined flatworm (*Pseudoceros indicus*) and silver-lining flatworm (*Pseudoceros prudhoei*) (Figure 7-47D-E). Ribbon worms (Nemertea), polychaete worms and peanut worms (Sipuncula) were recorded but are morphologically hard to identify to species as well (Figure 7-47F).

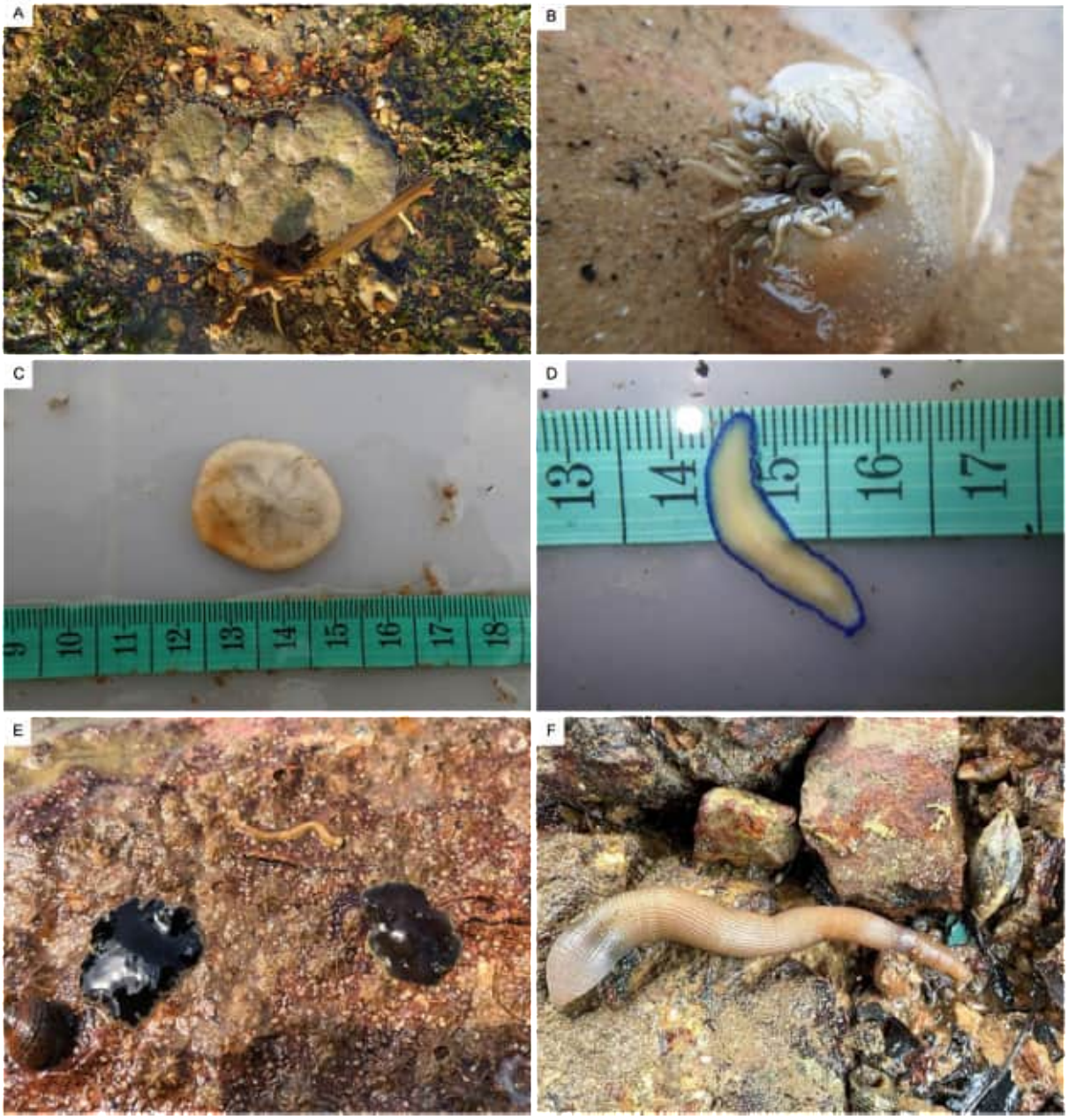


Figure 7-47 Other marine species recorded across the waterbodies surveyed within Study Area. (A) Haddon's carpet anemone (*Stichodactyla haddoni*) and (B) *Actiniaria* sp.; (C) The nationally Vulnerable thick-edge sand dollar (*Jacksonaster depressum*); Flatworm species from the Genus *Pseudoceros*, (D) Nationally Vulnerable blue-dotted margined flatworm (*Pseudoceros indicus*) and (E) silver-lining flatworm (*Pseudoceros prudhoei*); (F) Peanut worm from the taxa Sipuncula.

7.4 Assessment of Ecological Value

Habitats and species within the Study Area were assessed for their ecological value based on the criteria described in Table 7-10 (habitat) and Table 7-11 (plant species) [R-43, R-44] and write up below (fauna species). Those of high ecological value were assigned the Priority 1 sensitivity level, while those of moderate or low ecological value were assigned the Priority 2 or 3 sensitivity levels, respectively.

Habitats and species accorded with higher ecological value were regarded of greater importance for conservation relative to other habitats and species, respectively, within the Study Area. The assessment was carried out using biodiversity baseline findings.

Table 7-10 Criteria for assessing the ecological value of habitats

Criterion	Definition	Classification		
		High	Medium	Low
Size	Area occupied by the habitat relative to the study area or length of a stream	≥ 40%	10–40%	≤ 10%
Naturalness	Degree to which the habitat has been modified or disturbed as a result of human activities	Habitat with minimal human disturbance	Moderately disturbed habitat that has been modified to some extent	Highly disturbed habitat that has been modified to a large extent
Abundance of species of conservation significance	Number of plant specimens and sightings of fauna of conservation significance recorded within the habitat relative to the Study Area	≥ 40%	10–40%	≤ 10%
Abundance of large and other plant specimens of value	Number of large and other plant specimens of value recorded within the habitat relative to the Study Area	≥ 40%	10–40%	≤ 10%
Ecological linkage	Connectedness to a highly-valued habitat	Highly connected	Moderately connected	Unconnected/ isolated
Recreatability	Level of difficulty in re-constructing the habitat through human intervention	Very difficult	Moderately difficult	Easy

All plant species were first accorded with a tentative ecological value, i.e., high, medium, or low, based on the following basic framework:

- High ecological value (Priority 1): Species of conservation significance
- Medium ecological value (Priority 2): All other native species
- Low ecological value (Priority 3): Exotic and cryptogenic species

Species that were tentatively assigned medium (all other native species) or low (exotic and cryptogenic species) ecological value were then evaluated individually based on the criteria listed in Table 7-11. The evaluation of individual species served to either maintain or raise the pre-assigned ecological value. The following paragraphs detail how each criterion was considered in the evaluation.

Association with important fauna (native, exotic, and cryptogenic species): The ecological value of plant species that directly support the growth and survival of important fauna at one or various life cycle stages were raised to high, irrespective of plant species origin, cultivation intensity and effects, as well as national distribution. Examples of such plant species include caterpillar host plants for rare butterfly species and bamboos that are refugia for nationally threatened bamboo bats. The ecological value of plant species without associations with important fauna was maintained at the original level, i.e., medium or low.

Cultivation intensity and effects (native species only): The ecological value of all native species previously or presently cultivated and/or with populations of relics or escapees, respectively, present in the secondary forests of Singapore were maintained at the medium level. Otherwise, those that are associated with important fauna were raised to high ecological value.

National distribution (non-cultivated native species only): The ecological value of non-cultivated native plant species with restricted national distribution—i.e., largely found in certain forest patches in Singapore or offshore islands, such as the primary and old growth secondary forests of the CCNR—were raised from the original medium level to high. On the other hand, that of non-cultivated plant species that are nationally widespread—i.e., occur at several secondary forest patches throughout Singapore—were maintained at the medium level.

There are, however, a few exceptions in which the highest ecological value was automatically assigned to species regardless of the criteria listed below. They are (1) species endemic to Singapore, (2) keystone fig (*Ficus* sp.) and mangrove species as they fruit all year round and provide a steady source of food for frugivores [P-44] and (3) species planted for reforestation and/or previously thought to be extinct and are planted for species reintroduction. Additionally, the exotic rain tree (*Samanea saman*) was also automatically raised from low to medium ecological value given that it often supports the growth of epiphytes that provide habitats for fauna

Table 7-11 Criteria for assessing the ecological value of plant species

Criterion	Definition
Conservation Significance	Listed as nationally threatened, i.e., Vulnerable, Endangered, Critically Endangered, or Extinct, and are considered of conservation significance in this study
Cultivation Intensity and Effects	Cultivated previously or presently—for various purposes such as reforestation, landscaping, species reintroduction, commercial sale, etc—and populations of relics and/or escapees are present/absent in forests
National Distribution	Extent of spread and/or occurrence at one or multiple forest patches in Singapore
Association with Important Fauna	Directly associated with the survival of important fauna at one or various life cycle stages

For the fauna ecological assessment framework, every recorded faunal species was provided an ecological value based on the conservation significance and species origin:

- High ecological value (Priority 1): Species of conservation significance
- Medium ecological value (Priority 2): All other native species
- Low ecological value (Priority 3): Exotic and cryptogenic species

7.4.1 Habitats

The ecological value of three terrestrial habitats, five marine habitats and all freshwater bodies habitat within Study Area were assessed. For assessment of terrestrial habitats, the abundance of faunal and flora species of conservation significance, only terrestrial species were considered. Likewise for the assessment of marine habitats. Marine habitats do not consider the criterion abundance of large and other plant specimens of value.

Two terrestrial habitats (native-dominated secondary forest and mangrove forest) and two marine habitats (seagrass meadows and rocky shores) were assessed to have high ecological value. One terrestrial habitat (urban vegetation) and two marine habitats (sandy seabed and soft-sediment seabed) were assessed to have medium ecological value. While all freshwater bodies were assessed to have low ecological value. A summary of the assessment of each habitat is shown in Table 7-12.

I. Native-dominated Secondary Forest (High Ecological Value; Priority 1)

The native-dominated secondary forest occupies 2.2 ha (2.9 %), making it the smallest terrestrial habitat within the Study Area; this habitat makes up Bukit Chermin. It has minimal human disturbance and thus considered to have high level of naturalness.

Amongst the habitats assessed, it has the highest abundance of conservation significant plant species but low abundance of large and other plant specimens of value. It also possesses low abundance of conservation significant faunal species. Yet it has value in supporting high faunal diversity which are dependent on native floral host or food plants due to its floristic composition of native species and conservation significance plant species.

It is a highly connected habitat as it is a high-valued habitat connected to other high-valued habitat such as the mangrove forest and Marine Area. Finally, as the complexities of such forests are difficult to reconstruct through human intervention, a “high” score for ease of recreatability was accorded.

With three criterion assessed to be high, one assessed to be medium and two assessed to be low, the overall ecological value of the native-dominated secondary forest is high, i.e., Priority 1.

II. Mangrove Forest (High Ecological Value; Priority 1)

The mangrove forest occupies 4.0 ha (5.1 %), making it the second largest terrestrial habitat within the Study Area. This habitat lies in conjunction with Berlayer Creek. It is considered moderately disturbed due to the presence of infrastructure within the mangrove and past history of mangrove clearing and straightening of the creek (as mentioned in Section 4.1) and thus considered to have moderate level of naturalness. Despite this moderate disturbance, mangrove forests in Singapore are generally uncommon due to anthropogenic pressures such as land reclamation and coastal developments.

This habitat harbours the second highest abundance of conservation significant plant species but consists of low abundance of large and other plant specimens of value. It also possesses the second highest abundance of conservation significant faunal species such as the blue-crowned hanging parrot (*Loriculus galgulu*) and smooth-coated otter (*Lutrogale perspicillata*). The mangrove forest is able to provide habitats or foraging opportunities for faunal species, making it a highly valuable habitat.

Similar to native-dominated secondary forest, it has “high” ecological linkage since the habitat are in close proximity to multiple other high-valued habitats. Subsequently, it is highly connected for ecological linkage as it serves as a connection between the terrestrial and marine habitats. Finally, as the complexities of such forests are difficult to reconstruct through human intervention, a “high” score for ease of recreatability was accorded.

With two criterion assessed to be high, two assessed to be medium and two assessed to be low, to take the conservative approach, the overall ecological value of the mangrove forest is high, i.e., Priority 1.

III. Urban Vegetation (Moderate Ecological Value; Priority 2)

The urban vegetation occupies 52.1 ha (66 %), making it the most expansive terrestrial habitat within the Study Area (high level for “size”). These urban vegetations existing within the Study Area are all considered highly disturbed and manicured; therefore accorded low naturalness.

This habitat harbours the highest abundance of conservation significant faunal species. It possesses a low abundance of conservation significant plant species but consists of the highest abundance of large and other plant specimens of value.

As urban vegetation is generally open habitat type, it is difficult for most floral and faunal species to disperse or move across to areas of (high) ecological value, with the exception of urban adapted species. Thus, it provides only moderate value in ecological linkage within the Study Area. Finally, as such habitats are common and easily reconstructed through human intervention, a “low” score for ease of recreatability was accorded.

With one criterion assessed to be high, three assessed to be medium and two assessed to be low, the overall ecological value of the urban vegetation is medium, i.e., Priority 2.

IV. Waterbodies (man-made) (Low Ecological Value; Priority 3)

There are eight man-made waterbodies present in the study area, amounting to 2.8 ha (3.6 %). All eight waterbodies are man-made, highly disturbed and regularly manicured habitat, and thus are accorded of low naturalness.

Only the ponds within Keppel Club were survey and yielded no conservation significant plant or faunal species. Subsequently, large plant and other specimens of value are not applicable to an aquatic context and thus not included in the assessment.

The waterbodies here are considered low in ecological linkage as they are not connected to and larger waterbodies/source. Together with the “low” ease of recreatability, this habitat fulfils the criterion of low ecological value, i.e., Priority 3.

V. Seagrass Meadow (High Ecological Value; Priority 1)

Despite only occupying 0.8 ha (1.0 %) of the Study Area, it accounts for the second largest marine habitat within the Study Area. This habitat is not disturbed and naturally occurring, according it high naturalness.

This habitat harbours the highest abundance of conservation significant marine floral species but consists of the no conservation significant faunal species. Yet it is able to support numerous faunal species by providing feeding and nursery grounds.

With water as a medium, all marine habitats are highly connected as floral and faunal species can easily traverse between marine habitats. Therefore, all marine habitats are accorded high ecological linkage. There has been a few attempts in recreating seagrass meadows through replanting. However due to the complexities of such habitats, it is difficult to reconstruct through human intervention; therefore a “high” score for ease of recreatability was accorded.

With three criterion assessed to be high, one assessed to be medium and one assessed to be low, the overall ecological value of the seagrass meadows is high, i.e., Priority 1.

VI. Rocky Shore (High Ecological Value; Priority 1)

The rocky shore occupies 0.3 ha (0.4%), making it one of the smaller marine habitats within the Study Area. This habitat is considered high for “naturalness” as formation is a result of natural erosion of the cliff (Bukit Chermin).

This habitat harbours no conservation significant marine floral species but consists of moderate numbers of significant faunal species.

With water as a medium, all marine habitats are highly connected as floral and faunal species can easily traverse between marine habitats. Therefore, all marine habitats are accorded high ecological linkage. Due to the complexities of rock shore habitats, it is difficult to reconstruct through human intervention; therefore a “high” score for ease of recreatability was accorded. Furthermore, it is rocky shore habitat is the last remaining natural rocky shore on mainland Singapore [W-10]. It possesses high value in providing a myriad of microhabitats that can be utilised by many faunal species.

With two criteria assessed to be high, one assessed to be medium and two assessed to be low, the overall ecological value of the rocky shore is high, i.e., Priority 1. This is mainly due to the rarity of such natural habitats in Singapore

VII. Soft sediment seabed (Moderate Ecological Value; Priority 2)

It is worthy to note that soft sediment seabed is also found within the mangrove forest. However, to avoid double counting the areas and for the ease of calculations, only the soft sediment seabed area within the Marine Area is considered. This would amount to 0.7 ha (0.9 %), making it one of the smaller marine habitats within the Study Area. Similar to the description in mangrove forest sub-section above, it is moderately disturbed due to the presence of infrastructure such as the boardwalk within the mangrove and past history of mangrove clearing and straightening of the creek (as mentioned in Section 4.1).

This habitat harbours no conservation significant marine floral species but consists of the highest numbers of significant faunal species.

With water as a medium, all marine habitats are highly connected as floral and faunal species can easily traverse between marine habitats. Therefore, all marine habitats are accorded high ecological linkage.

Finally, as it is still possible to reconstruct such habitat through human intervention; therefore a “medium” score for ease of recreatability was accorded.

With two criterion assessed to be high, three assessed to be medium and one assessed to be low, the overall ecological value of the soft sediment seabed is medium, i.e., Priority 2.

VIII. Sandy Seabed (Moderate Ecological Value; Priority 2)

The sandy seabed occupies 4.6 ha (6.0 %), making it a rather small habitat type within the Study Area. This habitat is high in terms of “naturalness” due to minimal anthropogenic disturbances.

This habitat harbours moderate numbers of conservation significant marine floral and faunal species.

With water as a medium, all marine habitats are highly connected as floral and faunal species can easily traverse between marine habitats. Therefore, all marine habitats are accorded high ecological linkage.

Finally, it is not difficult to reconstruct sandy seabed habitats through human intervention; therefore a “low” score for ease of recreatability was accorded.

With two criteria assessed to be high, one assessed to be medium and two assessed to be low, the overall ecological value of the sandy seabed is medium, i.e., Priority 2.

Table 7-12 Habitat ecological assessment table for Berlayer Creek

Criterion	Native-dominated secondary forest	Mangrove forest	Urban vegetation	Waterbodies (man-made)	Seagrass meadow	Rocky shore	Soft sediment seabed	Sandy seabed
Size	2.9% (2.2 ha)	5.1% (4.0 ha)	66.9% (52.1 ha)	3.6% (2.8 ha)	1.0% (0.8 ha)	0.4% (0.3 ha)	0.9% (0.7 ha)	6.0% (4.6 ha)
Naturalness	Habitat with minimal human disturbance	Moderately disturbed habitat that has been modified to some extent	Highly disturbed habitat that has been modified to a large extent	Highly disturbed habitat that has been modified to a large extent	Habitat with minimal human disturbance	Habitat with minimal human disturbance	Moderately disturbed habitat that has been modified to some extent	Habitat with minimal human disturbance
Abundance of species of CS	Flora: 76.2% (163) Fauna: 2.4% (5)	Flora: 10.3% (22) Fauna: 18.9% (39)	Flora: 9.8% (21) Fauna: 77.0% (158)	NA	Flora: 66.6% (2) Fauna: 0% (0)	Flora: 0% (0) Fauna: 23.8% (5)	Flora: 0% (0) Fauna: 50.0% (9)	Flora: 33.3% (1) Fauna: 33.3% (7)
Abundance of large and other plant specimens of value	Large: 14 Others: 0 Total: 8.8 %	Large: 4 Others: 1 Total: 3.1 %	Large: 118 * Others: 9 Total: 79.9 %	NA	NA	NA	NA	NA
Ecological linkage	Highly connected	Highly connected	Moderately connected	Unconnected	Highly connected	Highly connected	Highly connected	Highly connected
Ease of recreatability	Very difficult	Very difficult	Easy	Easy	Very difficult	Very difficult	Moderately difficult	Easy
Summary of categorisations	Size: **Low**	Size: **Low**	Size: **High**	Size: **Low**	Size: **Low**	Size: **Low**	Size: **Low**	Size: **Low**
	Naturalness: **High**	Naturalness: **Medium**	Naturalness: **Low**	Naturalness: **Low**	Naturalness: **High**	Naturalness: **High**	Naturalness: **Medium**	Naturalness: **High**
	Abundance of species of CS: **Medium**	Abundance of species of CS: **Medium**	Abundance of species of CS: **Medium**	Abundance of species of CS: **Low**	Abundance of species of CS: **Medium**	Abundance of species of CS: **Low**	Abundance of species of CS: **Medium**	Abundance of species of CS: **Medium**
	Abundance of large and other plant specimens of value: **Low**	Abundance of large and other plant specimens of value: **Low**	Abundance of large and other plant specimens of value: **Medium**	Abundance of large and other plant specimens of value: **Low**	Abundance of large and other plant specimens of value: **NA**	Abundance of large and other plant specimens of value: **NA**	Abundance of large and other plant specimens of value: **NA**	Abundance of large and other plant specimens of value: **NA**
	Ecological linkage: **High**	Ecological linkage: **High**	Ecological linkage: **Medium**	Ecological linkage: **Low**	Ecological linkage: **High**	Ecological linkage: **Medium**	Ecological linkage: **High**	Ecological linkage: **High**
	Ease of recreatability: **High**	Ease of recreatability: **High**	Ease of recreatability: **Low**	Ease of recreatability: **Low**	Ease of recreatability: **High**	Ease of recreatability: **High**	Ease of recreatability: **Medium**	Ease of recreatability: **Low**
Total	**High X3 (majority)** Medium X1 Low X2	**High X2 **** Medium X2 Low X2	High X1 **Medium X3 (majority)** Low X2	**Low X6 (majority)**	**High X3 (majority)** Medium X1 Size X1	**High X2 **** Medium X1 Low X2	High X1 **Medium X3 (majority)** Low X1	High X2 **Medium X1** Low X2
Sensitivity	Priority 1	Priority 1	Priority 2	Priority 3	Priority 1	Priority 1	Priority 2	Priority 2

7.4.2 Flora

The ecological value of 375 plant species (including seagrasses) and 13 seaweed species in the Study Area were assessed. The four morpho species (three trees and one algae) that could not be identified (Section 7.3.4.1)—and hence are without information on origin and status—were excluded in the assessment of ecological value. The list of species is in Appendix D.

Of the 388 species assessed for their ecological value at the Study Area, 78 are of high value, 117 of medium value, and 193 of low value. Altogether, 43 species had their ecological value raised after assessment. One species was raised from low to medium ecological value, while that of 42 species were raised to high from low (20 species) and from medium (22 species).Ten of the species that had their ecological value raised to high are fig species. Five of these fig species are Common native species (e.g., *Ficus fistulosa* and *F. microcarpa*) and were therefore accorded an initial level of medium, while the remaining five species (e.g., *F. benjamina* and *F. religiosa*) are cryptogenic or of exotic origin and thus were originally accorded low ecological value. The ecological value of these fig species was raised as they are keystone species important for the health of entire ecosystems; they produce figs year-round that provide a steady source of food for frugivores [P-44].

Fifteen mangrove species also had their ecological value raised to high. All 15 species are of native origin listed as either nationally Common or threatened but were planted in Berlayer Creek (e.g., *Bruguiera sexangula*). These species were originally accorded medium ecological value. Given that they are keystone species within mangrove habitats, the ecological value was therefore raised to high; they play an important role in maintaining the health and integrity of mangroves through their complex and unique root systems [P-52].

Additionally, 13 seaweed species had their ecological value raised to high as well. As all marine seaweed species have not been assessed for their origin and conservation status, all 13 species were given an original ecological level of low. Seaweed species are considered keystone species within coastal ecosystem as they provide diverse habitats that serve as breeding areas for many marine organisms [P-49]. Additionally, they are a crucial food source for herbivores (e.g., marine gastropods, echinoderms, chitons) and detritivores (e.g., filter feeders, zooplankton) [P-49].

The ecological value of two bamboo species present was raised from low to high. Albeit of exotic origin, *Thyrsostachys siamensis* and *Bambusa vulgaris* may be inhabited by bamboo bats that are known to reside within the bamboo internodes, where they roost for long hours. Such bamboo clusters play an important role in the survival of these nationally threatened bat species. Therefore, retaining bamboo clusters in the Study Area is essential in safeguarding local populations that continually face the threat of habitat loss.

The remaining two species raised to high ecological value from an initial medium level are native species. Although listed as nationally Common, *Alyxia reinwardtii* and *Elaeocarpus mastersii* have restricted distribution nationally where they more often occur in later-stage successional secondary forests or forest reserves. This Study Area may therefore serve as an additional refuge for these species outside forest reserves.

The sole species raised to medium ecological value from an initial low level is the rain tree (*Samanea saman*). It was given an initial priority level of low before assessment as it is an exotic tree. Rain trees support the growth of many epiphytes which provide different microhabitats for a variety of fauna. Hence, it was raised by one level to medium ecological value.

7.4.3 Fauna

The ecological value of 372 faunal species - 194 marine and 178 terrestrial, and one raptor's nest were assessed. Of these, 26 faunal species - 14 terrestrial and 12 marine species were assessed to be of high ecological value.

7.5 Areas of High Conservation Value

The assessment of habitat and species ecological value was used to identify areas of high conservation value. In this study, all habitats with Priority 1 sensitivity level were classified as areas of high conservation value. This would thus automatically accord the native-dominated secondary forest (Bukit Chermin), mangrove forest (Berlayer Creek), seagrass meadows and rocky shore habitats as areas of high conservation value (Figure 7-48). Since the Marine Area is highly connected, it is difficult and counter-intuitive to distinguish the boundary of marine areas. Thus, all marine areas will also be considered areas of high conservation value. It is important to note that while

certain areas have to be prioritised over others, those accorded with medium of low conservation value are also important and contribute to the ecological integrity of the entire site.

Areas of high conservation value are of the highest priority for conservation and should be left untouched as far as possible. Any developments or construction activities within them are likely to result in **Moderate** to **Major** impacts. Subsequently, it is worthy to note that none of the identified areas of high conservation value are within the proposed development (Figure 7-48).



Legend

- Overall EIS Study Area
- Development Area
- Native-dominated secondary forest
- Mangrove forest
- Urban vegetation
- Waterbody (man-made)
- Others (infrastructure)
- Others (construction)
- Seagrass meadow
- Rocky shore
- Sandy seabed
- Soft sediment seabed
- Seawall
- Boardwalk

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SS	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement: NA

Consultant : AECOM

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Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Areas of high conservation value

Designed	Checked	Approved	Figure No. :	Rev.	Sheet
SS	NHT	JAG	7-48	-	1 of 1
	Drawn: SS	Date: APR 2022	CAD File Name : NA		A3

Note: Source of basemap - Google Earth Map

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7.6 Identification of Biodiversity Sensitive Receptors

7.6.1 Habitats

Following the assessment of ecological value faunal species (Section 7.6.1), all habitats within the worksite and within 30 m from the proposed worksite area were identified as the sensitive receptors for habitats.

7.6.2 Flora

Following the assessment of ecological value for all plant species (including seagrasses) and seaweed species (Section 7.4.2), some were selected for the assessment of ecological impacts. The selection was based on the following: (1) species with specimens of conservation significance, large specimens, other specimens of value, and/or trees found inside and within 30 m from the proposed worksite area, (2) keystone species, which are the fig, mangrove, seagrass, and seaweed species in this study, (3) species associated with important fauna, and (4) species that make up ≤ 1% of the total number of specimens of conservation significance.

7.6.3 Fauna

Following the assessment of ecological value faunal species (Section 7.6.3), all species of fauna with high ecological value in this study were identified as the sensitive receptors for faunal species.

7.7 Potential Sources of Biodiversity Impacts

Potential impacts to biodiversity arising from construction (Section 3.3) and operational (Section 3.4) activities are assessed in this section. The latest proposed development plans used for this assessment were provided by URA on July 2021.

According to development plans, worksite–expected to be about 48 ha–will be confined to Keppel Club; no construction activities are to be conducted outside of Keppel Club. Due to the current undulating topography, there would be a need for major cut and fill to prepare the site at pre-construction phase. Pre-construction phase would also include demolition of current infrastructure such as the club house within Keppel Club. Aforementioned activities are expected to occur concurrently with construction activities such as excavating, pilling and building. It is worthy to note that pre-construction and construction are planned to be conducted in three phases. Three terrestrial habitat types, freshwater bodies within Keppel Club and 145 floral species are likely to be impacted, while all terrestrial faunal species recorded are expected to be indirectly impacted as well, since most terrestrial fauna are mobile throughout the Study Area. While habitats outside of Keppel Club are not expected to be directly impacted through loss of vegetation/habitat, indirect impacts such as habitat degradation and changes in species composition could still occur.

At the operational phase, Keppel Club will be converted into a residential space. Thus, human traffic is expected to increase due to presence of new residential buildings. Increase in human traffic would inevitably increase disturbance to surrounding biodiversity in the form of noise and light generated. Increase in waste could also potentially become an impact if not properly managed; waste in the form of rubbish/litter or wastewater discharge.

Habitats such as urban vegetation and freshwater bodies will not be considered in the operational phase as these habitats would have been removed from Study Area during the construction phase. While the native-dominated secondary forest (Bukit Chermin), mangrove forest (Berlayer Creek) and marine areas will remain at the operational phase and will be indirectly affected. These habitats will be assessed for impacts arising from the operational phase of the project–60 floral species and all faunal species recorded are still expected to be indirectly impacted.

The impacts were separately assessed for habitats, plant and faunal species (Table 7-13). There are two main categories in which the impacts fall into, namely, (1) direct, i.e., impacts to habitats and species within the worksites and (2) indirect, i.e., impacts to habitats and species outside the worksites but within the impact zone. Impact zones for habitat and species receptors are defined as areas within 30 m from worksites of the proposed development, even though there are some studies that found edge effects affecting vegetation up to 150 m from forest boundaries [P-73, P-74, P-75, P-76]. The 30-m impact zone is based on the assumption that edge effects in the forests adjacent to worksites are the greatest within 30 m from the worksites.

Table 7-13 List of ecological impacts

Receptor	Impact Type	Description	Impact Category
Construction Phase			
Habitats	Loss of vegetation	Direct removal of vegetation (with extensive underground root systems that protect against soil erosion) to create space for construction activities	Direct
	Habitat degradation	Improper disposal of construction waste, accidental release of hazardous materials (such as construction slurry, paint, and/or solvents), increase in dust, noise, and light levels, changes in forest hydrology	Indirect
	Change in species composition	Formation of forest edge habitats that favour the growth of certain exotic plants and fauna, and accidental introduction of exotic species from construction materials (such as soil with seeds or bio-degradable erosion blankets with insect eggs)	Indirect
Plant Species	Mortality	Direct removal of vegetation to create space for construction activities	Direct
	Impediment to seedling recruitment	Pollution of habitats from improper disposal of construction waste and accidental release of hazardous materials (such as construction slurry, paint, and/or solvents)	Indirect
	Competition from exotic plant species	Formation of forest edge habitats that favour the growth of certain exotic plants and accidental introduction of exotic species from construction materials (such as soil with seeds)	Indirect
	Decline in plant health and survival	Changes in microclimatic conditions (i.e., dust, noise, and light, temperature, and humidity) and hydrology	Indirect
Faunal Species	Loss of/reduction in habitats and food sources	Direct removal of vegetation to create space for construction activities	Direct
	Injury or mortality	Collisions with machineries, entrapments in construction materials (such as non-biodegradable erosion control blankets) and structures (such as exposed pits or drains), and accidental kills by construction personnel	Direct
	Loss/reduction of ecological connectivity for faunal movement	Habitat fragmentation from the removal of vegetation	Indirect
	Light disturbances	Increase in light levels from construction activities	Indirect
	Human disturbances	Increase in human traffic flow, such as workers and site personnel, which may result in human-wildlife conflicts	Indirect
Operational Phase			
Habitat	Change in plant species composition	Long-term changes in light, temperature, and humidity in habitats surrounding facility structures	Indirect
	Habitat degradation	Trampling on vegetation and pollution from increased human traffic	Indirect
Plant Species	Mortality	Stealing/poaching of plants by humans	Direct
	Competition from exotic plant species	Accidental and/or intentional release of exotic plants by humans	Indirect
Faunal Species	Injury or mortality	Navigation failures into the wrong areas and entrapment in facility structures, including bird collision into buildings (distorted perceptions of reflective surfaces on buildings as flyways, greenery, and/or water)	Direct/Indirect

Receptor	Impact Type	Description	Impact Category
	Loss of ecological connectivity for faunal movement	Habitat fragmentation from the removal of vegetation	Indirect
	Light disturbances	Increase in light levels from development	Indirect
	Human disturbances	Increase in human traffic flow, such as residents and visitors, which may result in human-wildlife conflicts	Indirect

7.8 Minimum Control Measures

This section lists biodiversity-specific minimum control measures that are commonly implemented in Singapore for construction activities. These are assumed to be implemented for the purpose of the impact assessment and should be proposed in tandem with the measures proposed for other environmental receptors (e.g, hydrology, noise). Minimum controls for each potential impact occurring from the construction and operational phases are listed in Table 7-14. The main construction activities that would likely occur at all worksites include vegetation clearance for worksite and excavation for levelling ground, followed by below and above ground construction.

At the operational phase, the new residential estate will present new sources of disturbance (light and noise disturbance) to the surrounding habitats. However, minimum control measures will not be applicable because the residential estate might likely be privately owned with separate jurisdiction. Mitigation measures in Section 7.10 would be more applicable and useful to help mitigate for impacts at the operational stage.

Table 7-14 Minimum control measures for the construction phase

Work activities	Minimum controls
Vegetation Clearance	• Trees that are to be retained within worksite would require an arborist to clearly mark out Tree Protection Zones where no works are allowed. The Tree Protection Zones should be set up in accordance with NParks guidelines. • Before vegetation removal, pre-felling fauna inspection should be conducted by an Ecologist to identify wildlife or nesting structures that are being actively used such as bird nests, tree hollows, burrows and bamboos clusters. • Soil erosion control measures are to be executed once vegetation has been removed and soil is exposed as described in Section 8.5.3 under Hydrology and Surface Water Quality and Section 9.6 under Soil and Groundwater.
Excavation	• Implement soil erosion control measures as described in Section 8.5.3 under Hydrology and Surface Water Quality. • Implement dust control measures as described in Section 10.6 under Air Quality. • Implement noise barrier as described in Section 11.6 under Airborne Noise.
Below and Above Ground Construction	• Proper storage of materials that are likely to leech harmful chemicals and fuel-powered equipment away from waterbodies or sensitive habitats as described in Section 9.6 under Soil and Groundwater (and Waste).

General	• Installation of hoarding to delineate worksite.
	• Fogging is not recommended. To implement preventive measures against mosquito breeding by removing sources of stagnant water or water-bearing receptacles. E.g.,
	  • Providing well-maintained pitched roof, clearing discarded items daily, store materials appropriately, level up ground depression/uneven surfaces, ensure effective drainage flow.
	  • Daily checks by Environmental Manager on site.

7.9 Prediction and Evaluation of Biodiversity Impacts

In this section, the identified biodiversity sensitive receptors were evaluated based on impact intensity and likelihood, which eventually gives the impact significance.

The various levels of impact intensity and likelihood for each impact type during construction and operation were specifically defined for the ecologically sensitive receptors. Some assumptions were made in defining the levels of impact intensity.

7.9.1 Construction Phase

The two assumptions made in defining the levels of impact intensity (Table 7-15) and likelihood (Table 7-16) for habitat receptors during the construction phase are:

1. Habitats within 30 m from the worksites are assumed to experience the greatest extent of edge effects, although some studies have shown that edge effects could be up to 150 m (refer to Section 7.7 for the definition of the impact zone).

2. The likelihood of habit degradation [i.e., improper disposal of construction waste, accidental release of hazardous materials (such as construction slurry, paint, and/or solvents), increase in dust, noise, and light levels, changes in forest hydrology; refer to Table 7-13] is presumed to be **Less Likely** for all habitat receptors, based on the assumption that all minimum controls (Section 7.8) are adequately and properly implemented.

Table 7-15 Definitions of each level of impact intensity for all three impact types during construction for habitat receptors

Impact Type	Negligible	Low	Medium	High
Loss of vegetation	The habitat does not overlap with the worksites	≤ 10% of the habitat overlaps with the worksites	10–40% of the habitat overlaps with the worksites	³ 40% of the habitat overlaps with the worksites
Habitat degradation	The habitat does overlap with areas 30 m from the worksites	≤ 10% of the habitat overlaps with areas 30 m from the worksites	10–40% of the habitat overlaps with areas 30 m from the worksites	³ 40% of the habitat overlaps with areas 30 m from the worksites
Change in species composition				

Table 7-16 Definitions of each level of likelihood for all three impact types during construction for habitat receptors

	Loss of Vegetation	Habitat Degradation	Change in Species Composition
Unlikely/Remote	The habitat does not overlap with the worksites	N.A.	No formation of forest edges (i.e., construction activities are fully underground and/or in existing built-up areas outside the forest)
Less Likely/ Rare	N.A.	N.A. (see assumption above)	Formation of scrubland edges in scrubland areas only
Possible/ Occasional	N.A.	N.A.	Formation of some forest and scrubland edges in a mix of managed vegetation, scrubland and forested areas
Likely/ Regular	N.A.	N.A.	Formation of new forest edges (i.e., complete clearance within forested areas)
Certain/ Continuous	The habitat overlaps with the worksites	N.A.	N.A.

Assumptions made in defining the levels of impact intensity (Table 7-17) for plant and seaweed species receptors during the construction phase:

1. Habitats within 30 m from the worksites are assumed to experience the greatest extent of edge effects, though some studies have shown that edge effects could be up to 150 m (refer to Section 7.7 for the definition of the impact zone). The effects of forest edges may be experienced by species more sensitive to microclimatic changes more than 30 m away from the worksites; these are considered during species-specific impact evaluations.

2. For some fig species (i.e., native species that are not considered of conservation significance, exotic, or cryptogenic species) that are known to be locally widespread, it was assumed that the intensity of impacts of work activities on them is **Negligible**. The impacts, however, will still be considered specifically for each species during evaluation (e.g., *Ficus heteropleur*a and *Ficus punctata*).

3. For some mangrove species (i.e., common native species that are not trees that are known to be locally widespread), it was assumed that the intensity of mortality is **Negligible** since most of these are expected to be within Berlayer Creek which will not be developed. On the other hand, the intensity of the other three impact types is **Medium** based on the assumption that 50% or more of the specimens lie within 30 m from the worksite (half of Berlayer Creek overlaps with the 30-m buffer from the worksites).

Table 7-17 Definitions of each level of impact intensity for all four impact types during construction for plant species receptors

Impact Type	Negligible	Low	Medium	High
Mortality	No plant specimens of this species are within the worksites	Less than 50% of all plant specimens of this species are within the worksites	More than or exactly 50% of all plant specimens of this species are within the worksites	All plant specimens of this species are within the worksites
Impediment to seedling recruitment	No specimens of this species are within 30 m from the worksites	Less than 50% of all plant specimens of this species are within 30 m from the worksites	More than or exactly 50% of all plant specimens of this species are within 30 m from the worksites	All specimens of this species are within 30 m from the worksites
Competition from exotic species				
Decline in plant health and survival				

The assumptions made in defining the levels of likelihood for plant and seaweed species receptors (Table 7-18) during the construction phase are as follows:

1. For some mangrove species (i.e., common native species that are not trees that are known to be locally widespread), it was assumed that the likelihood of mortality is **Unlikely** based on the assumption that all the mangrove species are in Berlayer Creek which will not be developed.

2. The likelihood for impediment to seedling recruitment for mangrove species is **Unlikely** as mangrove propagules may grow while still attached to the parent plant (e.g., for *Rhizophora* species) or may drop off from the parent plant and float on the water until they finally root in mud.

Table 7-18 Definitions of each level of likelihood for all four impact types during construction for plant species receptors

	Mortality	Impediment To Seedling Recruitment	Competition From Exotic Species	Decline In Plant Health And Survival
Unlikely/Remote	No plant specimens of this species are within the worksites	Plants are epiphytes and/or do not grow on soil (including seaweeds and seagrasses if there are no developments in the marine areas)	No formation of forest edges (i.e., construction activities are fully underground and/or in existing built-up areas outside the forest)	

	Mortality	Impediment To Seedling Recruitment	Competition From Exotic Species	Decline In Plant Health And Survival
Less Likely/ Rare	N.A.	N.A.	Formation of scrubland edges in scrubland areas only	
Possible/ Occasional	No count data and/or locations of specimens of this species is available, but specimens could possibly be within the worksites	Plants that grow on soil and whose dispersals are not restricted, i.e., they disperse via wind, water, and/or terrestrial fauna	Formation of some forest and scrubland edges in a mix of urban vegetation, scrubland and forested areas	
Likely/ Regular	N.A.	N.A.	Formation of new forest edges (i.e., complete clearance within forested areas)	
Almost Certain/ Continuous	Plant specimens of this species are within the worksite	Plants that grow on soil whose dispersals are restricted owing to environmental factors and/or growth strategies (e.g., bamboos that propagate via underground rhizomes and ground orchids)	N.A.	

The definitions for impact intensity and likelihood for faunal species at construction phase are presented in Table 7-19 and Table 7-20, respectively.

Table 7-19 Definitions of level of impact intensity for all five impact types during construction for faunal species receptors

Impact Type	Negligible	Low	Medium	High
Loss of/ reduction in habitats and food sources	No loss of original habitat	– Loss of <10% of original habitat;	– Loss of 10–40% of original habitat;	– Loss of >40% of original habitat;
Injury or mortality	Negligible susceptibility to roadkills	Species with low susceptibility to injury/mortality from construction activities (large vehicles, excavation, piling, etc): – Volant species (e.g., odonates, butterflies, highly volant birds, raptors and bats) – Pelagic species (marine context), ability to swim/crawl away quickly from danger (most fishes, crabs, shrimp) Low susceptibility to roadkills	Species that are mobile but possibly susceptible to injury/mortality from construction activities (large vehicles, excavation, piling, etc): – Amphibious aquatic species – All amphibians – Mammals: squirrels, shrews – Species (marine context) with ability to swim/crawl away but not very quickly (slow moving marine creatures, worms) Possibly susceptible to roadkills	Species with high susceptibility to injury/mortality from construction activities (large vehicles, excavation, piling, etc): – Less volant birds – Reptiles (snakes) – Mammals: Pangolin, long-tailed macaque, otter – Sessile species (marine

Impact Type	Negligible	Low	Medium	High
				context) cannot swim away (coral, anemone), move extremely slowly (echinoderms, molluscs, seahorses) – Birds, specifically migratory species
Loss/reduction of ecological connectivity for faunal movement	– Not dependent on connected and forested habitats for dispersal and able to traverse urban infrastructures;	– Slightly dependent on connected and forested habitats for dispersal and adaptable to traverse urban infrastructures if needed;	– Dependent on connected and forested habitats for dispersal;	– Highly dependent on connected and forested habitats for dispersal;
Light disturbances	Species that are not sensitive to changes in light levels: aculeate hymenopterans, most aquatic and marine species	Species that are slightly sensitive to changes in light levels: odonates, butterflies	Species that are sensitive to changes in light levels: diurnal birds, reptiles and mammals	Species that are extremely sensitive to changes in light levels: nocturnal, crepuscular fauna and nesting/hatching sea turtle species
Human disturbances	Species that are not sensitive to human presence	Species that are slightly sensitive to human presence	Species that are sensitive to human presence	Species that are extremely sensitive to human presence

Table 7-20 Definitions of each level of likelihood for all five impact types during construction for faunal species receptors

Impact Type	Unlikely/Remote	Less likely/Rare	Possible/ occasional	Likely/Regular	Almost certain/ Continuous
Loss of/ reduction in habitats and food sources	Impact is not expected to happen during the construction phase of the project	Impact is not likely to happen during the construction phase of the project	Impact could possibly happen or known to occur during the construction phase of the project	Impact is a common occurrence during the construction phase of the project	Impact is a continual or repeated process during the construction phase of the project
Injury or mortality					
Loss/reduction of ecological connectivity for faunal movement					
Light disturbances					
Human disturbances					

7.9.1.1 Habitats

In the assessment of the three types of impact for the identified sensitive receptors for habitat receptors during the construction phase—(1) loss of vegetation, (2) habitat degradation, and (3) change in species composition—the impact significance was negligible, low, moderate, or major. Only the most substantive impact for each impact type is presented.

Loss of vegetation

The only **Major** impact would result from the loss of vegetation due to the removal of urban vegetation in the golf course, i.e. removing of approximately 30 ha, equating to more than 40% of this habitat type within Study Area (Table 7-21; Table 7-15). Though the freshwater bodies within Keppel Club golf course would be removed during construction, impacts were assessed to be **Moderate** due to the low sensitivity (Priority 3) of the habitat. All other habitat outside the worksite should not be affected by the loss of vegetation and thus experience **Negligible vegetation loss** impacts.

Habitat degradation

Though impact intensity of habitat degradation was high, because of Less Likely likelihood–due to the implementation of minimum controls (Section 7.8)–**Minor** significance was assessed for habitat degradation impacts.

Change in species composition

As there would be complete vegetation removal within most of the development site (i.e. Keppel Club), there will be no remanent vegetation within worksite to result in any creation of new forest edges. While adjacent habitats are expected to be left intact (i.e. no works outside work site). There is thus no expected change in species composition and this impact is expected to be **Negligible**.

A summary of the key biodiversity habitat receptors impacted during construction phase is shown in Table 7-21.

Table 7-21 Key biodiversity habitat receptors likely to experience direct and indirect impacts within the Study Area during construction phase

Category	Key biodiversity receptor	Priority level and other relevant status	Direct impact (% of total habitat type within study area)	Indirect impact (% of total habitat type within study area)		Most Severe Impact Rating
Habitat	Native-dominated Secondary Forest	Priority 1 Area of High Conservation Value	N.A.	0.48 ha (21.8 %)		Minor
	Mangrove Forest	Priority 1 Area of High Conservation Value	N.A.	2.52 ha (63 %)		Minor
	Rocky Shore	Priority 1 Area of High Conservation Value		N.A.	0.03 ha (10 %)	Minor
	Soft Sediment Seabed	Priority 2 Area of High Conservation Value		N.A.	0.27 ha (38.6 %)	Minor
	Sandy Seabed	Priority 2 Area of High Conservation Value		N.A.	0.11 ha (2.4 %)	Minor
	Urban Vegetation	Priority 2	33 ha (63 %)	N.A.		Major
	Freshwater bodies	Priority 3	2.6 ha (90 %)	N.A.		Moderate

7.9.1.2 Flora

In the assessment of the four types of impact for individual species during the construction phase—(1) mortality, (2) impediment to seedling recruitment, (3) competition from exotic species, and (4) decline in plant health and survival—the impact significance was negligible, low, moderate, or major. Only the most severe impact for each species from the assessment of all four impact types is presented.

A total of 145 sensitive plant species receptors recorded in the Study Area were selected for the assessment of ecological impacts (refer to Section 7.6.2 on how the sensitive receptors were selected). The significance of the impacts is **Major** for 28 species, **Moderate** for 47 species, **Minor** for 36 species, and **Negligible** for the remaining 34 species.

The 28 species are likely to experience **Major** impacts owing to mortality.

1) Of the 28 species, 17 have 100% of all recorded specimens located within the proposed worksite, giving an impact intensity of **High**. All 17 species are native, of which six of have high ecological value (**Priority 1**) as they are species of conservation significance (four species; *Bridelia stipularis*, *Calophyllim inophyllum*, *Ficus globosa*, and *Neolitsea cassia*), have restricted national distribution (one species; *Elaeocarpus mastersii*) and/or are keystone species (two species; *Ficus fistulosa* and *Ficus globosa* which is also a species of conservation significance). The other 11 native species have medium ecological value (**Priority 2**). As it is **Certain** (likelihood) that these specimens would be removed for construction activities, the resulting impact significance is therefore **Major**.

2) The other 11 species likely to experience **Major** impacts have 50% or more of all specimens located within the proposed worksite, which gives an impact intensity of **Medium**. All of these species have medium ecological value (**Priority 2**), except for *Thyrsostachys siamensis* which is a species of high ecological value (**Priority 1**) owing to its association with bamboo bats. As it is **Certain** (likelihood) that the specimens would be removed for construction activities, the resulting impact significance is also **Major**.

The 47 species likely to experience **Moderate** impacts are owing to two impact types, namely, (1) mortality (46 species) and (2) impediment to seedling recruitment (one species).

1) Of the 46 species likely to experience **Moderate** impacts as a result of mortality, 32 have 100% of all specimens are located within the proposed worksite, giving an impact intensity of **High**. All 32 species are exotic and have low ecological value (Priority 3). For the other 14 species, less than 50% of all specimens for each species were recorded within the worksite, which gives an impact intensity of **Low**. However, 12 species of these are either of conservation significance and/or are keystone figs with high ecological value (Priority 1). The remaining two species are the exotic *Samanea saman* and native *Terminalia catappa* with medium ecological value (Priority 2). Therefore, since it is **Certain** (likelihood) that these specimens would be removed for construction activities, the impact significance for all 46 species is **Moderate**.

2) The remaining one species (*Cerbera odollam*) is likely to experience **Moderate** impacts owing to impediment to seedling recruitment. *Cerbera odollam* is of native origin and has been accorded medium ecological value (Priority 2). It will likely experience **High** impact intensity as 100% of its specimens are found within 30 m from worksite. As it is a flowering seed plant that grows on soil and whose dispersal modes are not restricted, there is a possibility (likelihood is **Possible**) that seedling recruitment for the specimens found within 30 m from the proposed worksite may still be somewhat impeded as a result of construction activities, such as pollution from improper disposals and/or accidental release of construction waste. Hence, the impact significance is **Moderate**.

The 36 species are likely to experience **Minor** impacts owing to both mortality and impediment to seedling recruitment (14 species), mortality only (six species), or impediment to seedling recruitment only (16 species).

1) Of the 14 species that are likely to experience **Minor** impacts owing to both mortality and impediment to seedling recruitment, three are of high ecological value (Priority 1) and 11 are of low ecological value (Priority 3). These species either had **Medium**, **Low** and/or **Negligible** impact with a likelihood for mortality being **Certain** or **Possible** and only **Possible** for impediment to seedling recruitment.

2) The six species which experience Minor impacts owing to mortality only are all exotic species with low ecological value (**Priority 1**). The impact intensity for these species is either **Low** or **Medium** depending on whether more than 50% of its specimens are found within the worksite. Since it is **Certain** (likelihood) that these specimens would be removed for construction activities, the impact significance for these species is **Minor**.

3) The 16 species likely to experience **Minor** impacts are owing to impediment to seedling recruitment only. All species have less than 50% specimen count within worksite which gives an impact intensity of either **Negligible** or **Low**. As the likelihood of the impact occurring is **Certain** (for the two bamboo species that propagate via underground rhizomes) or **Possible** (for the remaining 14 species), the impact significance is **Minor**.

The remaining 34 species are likely to experience **Negligible** impacts as the likelihood of the impacts occurring is **Unlikely**. Hence, the impact significance for these species is **Negligible**.

7.9.1.3 Fauna

The clearing of the golf course in Keppel Club within the Study Area is **Certain** (likelihood) to happen. The intensity of impacts on different faunal groups will vary based on how these species make use of the habitats. The impact significance for light disturbances for all species is predicted to be **Negligible** since no night works are expected to happen.

Birds

A total of 12 species of birds of conservation significance were recorded during the field assessment (Appendix I). In addition, the nest of a white-bellied sea eagle (*Haliaeetus leucogaster*; globally least concern) was also identified within the study area, on one albizia (*Falcataria moluccana*). While the white-bellied sea eagle is not globally or locally threatened, the nest of this species is of notable significance because their use of the habitat indicates that the surrounding habitats can support a breeding population of these large raptors. The presence of this nest indicates that these birds will continue returning to the area as long as their nest is intact and surrounding habitats are suitable. For the nest, the impact significance of loss or reduction of habitat and food is **Moderate**. White-bellied sea eagles are known to reuse their nesting sites (Ferguson-Lees & Christie, 2001). Site clearance and construction activities within the Keppel Club is likely to remove some sources of food for the eagles that can include fishes in

the ponds of Keppel Club. Construction activities and the increase in human traffic into the construction site where the nest was observed could also give rise to disturbances that cannot be tolerated by the nesting eagles and could result in the nest being abandoned. Pre-felling inspections that are conducted as part of minimum controls should reduce the risk of injury and mortality to the adults and any chicks or juveniles that are still using the nest at the time of site clearance, i.e. likelihood can be considered **Less Likely**. The impact significance of loss of ecological connectivity is considered not to be applicable.

For the changeable hawk-eagle, the crested goshawk, the blue-crowned hanging parrot and Oriental pied hornbill, the impact significance for loss of habitat and food sources and loss of ecological connectivity is **Moderate**. The upcoming construction in Keppel Club within the Study Area is likely to reduce the available habitats for their prey species and thus reduce their source of food. Subsequently, with the above species mentioned being stronger flyers, the impact of losing Keppel Club as a stepping stone between the ridges is not as significant as the passerines birds which require forest cover for dispersal. The impact significance of injury or mortality and human disturbances is **Minor**. These species are highly volant and are thus unlikely to be trapped and injured from construction activities in the Study Area. These birds can sometimes be found in suburban areas and can also make use of urban infrastructure to rest and perch, indicating that ecological connectivity will not be greatly affected due to the construction activities in the Study Area.

For the grey heron and purple heron, the impact significance of loss and reduction of habitat and food sources is **Major** and **Moderate** respectively. The clearing of the Keppel Club and the associated ponds within the golf course is likely to impact the available habitat and food sources for these birds since they do use the ponds within the golf course to hunt for fish and to rest. Despite being capable of flying large distances between waterbodies, the disappearance of the waterbodies within Keppel Club could create a larger gap between the next available waterbody; where simultaneously, the waterbodies are slowly vanishing within Singapore's landscape. The impact significance of injury or mortality and human disturbances is **Minor**. These birds are highly volant and can fly away from danger relatively quickly. As such, in addition to pre-felling inspections that are conducted as part of minimum controls, they can fly away relatively easily once construction activities begin in the Study Area. These birds can sometimes be found in suburban areas and can also make use of suburban waterbodies for foraging and resting.

For the spotted wood owl, straw-headed bulbul, Oriental magpie robin, red junglefowl, red-legged crake and red-wattled lapwing, the impact significance of loss and reduction of habitats and food sources and loss of ecological connectivity is **Moderate** and **Major** respectively. The construction in the Study Area will likely reduce the available habitat for both species, reducing food sources and reduce the patches of connected vegetation that both species use to move around. However, the impact intensity from the loss of ecological connectivity has a larger impact than the impact from loss and reduction of food sources (i.e impact intensity was assessed to be low and high respectively). Without Keppel Club, the ecological connectivity between Southern Ridges and LNR/Berlayer Creek is likely to deteriorate. The impact significance of injury or mortality and human disturbance is **Minor**. Both species are sensitive to human disturbance and are not found in urban environments but minimum controls of ensuring these species are not within the worksite during construction should ensure injury or mortality is less likely to occur. After minimum controls are in place, these bird species would likely make use of Berlayer Creek which should not experience any significant increase in human traffic arising from worksite personnel since work will be restricted to within the worksite boundary of Keppel Club site.

Non-volant Mammals

Two non-volant mammal species of conservation significance was recorded during the field assessment: the smooth-coated otter (*Lutrogale perspicillata*; nationally critically endangered) and long-tailed macaque (*Macaca fascicularis*) (Appendix I). The impact significance of loss and reduction in habitats and food sources for both species is **Moderate**. The construction in the Study Area will likely reduce the available habitat for both species, reducing food sources and reduce the patches of connected vegetation that both species use to move around. In addition, both species are likely to experience **Moderate** impact from injury or mortality due to construction activities. The impact significance of human disturbances is **Minor** since both species are quite tolerant to the presence of humans. The impact significance of loss of ecological connectivity is **Negligible** since both species can traverse urban infrastructure relatively easily.

Marine fauna

Ten species of conservation significance were recorded during the field assessment (Appendix I). Of these, the impact significance for loss and reduction in habitats and food sources, injury or mortality, loss of ecological connectivity and human disturbances are all **Negligible** due to the construction area being restricted within the boundary of Keppel Club.

7.9.2 Operational Phase

The tables below state the definitions of impact intensity (Table 7-22) and likelihood (Table 7-23) of the respective impact types on the habitat and species receptors, respectively.

Table 7-22 Definitions of each level of impact intensity for all three impact types during operational phase for habitat receptors

Impact type	Negligible	Low	Medium	High
Habitat degradation	Developed area is not accessible to public.	Developed area is not designed with the intention for the public to use or visit, but may increase human accessibility to the surrounding natural habitats.	Developed area is designed for members of the public to visit (e.g., parks with boardwalks)	Developed area is designed for large groups of people to live in in the long-run (e.g., residential estates)
Change in species composition	Development footprint is temporary and/or operational activities are fully underground (e.g., train alignment)	Development footprint is permanent and small relative to the size of the surrounding habitats (i.e., ≤ 10%)	Development footprint is permanent and medium-sized relative to the size of the surrounding habitats (i.e., 10-40%)	Development footprint is permanent and large-sized relative to the size of the surrounding habitats (i.e., ≥40%)

Table 7-23 Definitions of each level of likelihood for all three impact types during operational for habitat receptors

	Habitat Degradation	Change in Species Composition
Unlikely/Remote	Development is largely green (e.g., Thomson Nature Park)	Surrounding natural habitats are not accessible to public
Less likely/Rare	Development involves the building of urban infrastructures but will be heavily landscaped (e.g, Gardens by the Bay)	Surrounding natural habitats are less accessible and public use is restricted/controlled
Possible/Occasional	Development involves the building of infrastructure that are designed to release heat (e.g., ventilation shafts)	Surrounding natural habitats are accessible and have some infrastructure for the public to use, such as boardwalks (but people can still stray off track)
Likely/Regular	Development involves the building of extensive pavements, structures, and other infrastructures with surfaces that absorb and retain heat (e.g., residential estate)	Surrounding natural habitats are easily accessible and do not have infrastructure for the public to use, such as boardwalks (but people can still stray off track)
Certain/ Continuous	N.A.	N.A.

Assumptions made in defining the levels of impact intensity (Table 7-24) for plant and seaweed species receptors in the operational phase:

1. The impact intensity of mortality for all plant and seaweed species is **Low** as less than 50% of the specimens could get stolen by members of the public. This includes the fern listed as Presumed Extinct (*Lindsaea orbiculata*) which only has one recorded specimen in this study, based on the assumption that the location of the fern is not known to members of the public and/or published in papers.

2. The impact intensity of competition from exotic plant species is assumed to be **Negligible** for all marine species (seagrasses and seaweeds) as landscaping works will not take place in the marine areas.

Table 7-24 Definitions of each level of impact intensity for all four impact types during operational phase for plant species receptors

	Negligible	Low	Medium	High
Mortality	No plant specimens of this species could get stolen	Less than 50% of plant specimens of this species could get stolen (i.e., most plant species)	More than or exactly 50% of all plant specimens of this species could get stolen (i.e., orchids)	All plant specimens of this species could get stolen (i.e., pitcher plants)
Competition from Exotic Species	Species is cryptogenic, or exotic and listed as "Naturalised"	Species is exotic and listed as "Casual" or not assessed	Species is exotic and listed as "Cultivated Only"	Species is native

Assumptions made in defining the levels of impact likelihood (Table 7-25) for plant and seaweed species receptors in the operational phase:

1. The impact likelihood of mortality for seaweed species is assumed to be **Possible** as some seaweeds might be harvested by members of the public.

2. The impact likelihood of competition from exotic plant species is **Unlikely** for all mangrove species as these species grow in brackish environments; other plants without the physiological adaptations will not be able to grow alongside the mangrove species and compete with them. This is assumed to be so for seaweed and seagrass species too, which grow in seawater.

Table 7-25 Definitions of each level of likelihood for all four impact types during operation for plant species receptors

	Mortality	Competition From Exotic Species
Unlikely/Remote	Species not known to have been stolen before	Original vegetation mostly retained with no new landscaping
Less Likely/Rare	N.A.	Some original vegetation retained with some new landscaping using only native species, or original vegetation mostly cleared with new large-scale landscaping using only native species
Possible/Occasional	Flowering species known to have been stolen before	Some original vegetation retained with some new landscaping using exotic species
Likely/Regular	N.A.	Original vegetation mostly cleared with new large-scale landscaping using exotic species
Certain/Continuous	"Charismatic species" known to be stolen most of the time (i.e., pitcher plants and orchids)	N.A.

The definitions for impact intensity and likelihood for faunal species at operational phase are presented in Table 7-26 and Table 7-27, respectively.

Table 7-26 Definitions of each level of impact intensity for all four impact types during operational phase for faunal species receptors

Impact Type	Negligible	Low	Medium	High
Injury or Mortality	Operation activities cause no injuries/deaths to the species.	Extent of injuries/ mortality arising from operation activities is low OR Species is able to move away from danger in operation activities relatively easily: – Volant species (e.g., odonates, butterflies, non-ground-dwelling birds, raptors and bats) – Pelagic species (marine context), ability to swim/crawl away quickly from danger (most fishes, crabs, shrimp) Low susceptibility to roadkills, poaching and/or collision with buildings	Extent of injuries/ mortality arising from operation activities is medium OR Species is not able to move away from danger in operation activities very easily: – Amphibious aquatic species – All amphibians (frogs, lizards) – Mammals: squirrels, shrews – Species (marine context) with ability to swim/crawl away but not very quickly (slow moving marine creatures, slow swimming fishes, worms, snails) Possibly susceptible to roadkills, poaching and/or collision with buildings	Extent of injuries/mortality arising from operation activities is high – Has small population size – Birds, specifically migratory species OR Species is unable to move away from danger in operation activities easily: – Ground-dwelling birds – Reptiles (snakes) – Mammals: Pangolin, long-tailed macaque, otter – Sessile species (marine context) cannot swim away (coral, anemone), move extremely slowly (echinoderms, molluscs, seahorses) High susceptibility to roadkills, poaching and/or collision with buildings
Loss of Ecological Connectivity for Faunal Movement	– Not dependent on connected and forested habitats for dispersal and able to traverse urban infrastructures;	– Slightly dependent on connected and forested habitats for dispersal and adaptable to traverse urban infrastructures if needed;	– Dependent on connected and forested habitats for dispersal;	– Highly dependent on connected and forested habitats for dispersal;

Impact Type	Negligible	Low	Medium	High
Light Disturbances	Species that are not sensitive to changes in light levels: aculeate hymenopterans, aquatic and marine species	Species that are slightly sensitive to changes in light levels: odonates, butterflies	Species that are sensitive to changes in light levels: diurnal birds, reptiles and mammals	Species that are highly sensitive to changes in light levels: nocturnal, crepuscular fauna and nesting/hatching sea turtle species
Human Disturbances	Species that are not sensitive to human presence	Species that are slightly sensitive to human presence	Species that are possibly sensitive to human presence	Species that are sensitive to human presence

Table 7-27 Definitions of each level of likelihood for all five impact types during operational for faunal species receptors

Impact Type	Injury or Mortality	Loss of Ecological Connectivity for Faunal Movement	Light Disturbances	Human Disturbances
Unlikely/Remote	Impact is not expected to happen during the operational phase of the project			
Less Likely/Rare	Impact is not likely to happen during the operational phase of the project			
Possible/ Occasional	Impact could possibly happen or known to occur during the operational phase of the project			
Likely/Regular	Impact is a common occurrence during the operational phase of the project			
Certain/ Continuous	Impact is a continual or repeated process during the operational phase of the project			

7.9.2.1 Habitats

In the assessment of the three types of impact for identified sensitive receptors for habitat receptors during the operational phase— (1) habitat degradation, (2) change in species composition—the impact significance was negligible, low, moderate, or major. Only the most substantive impact for each impact type is presented.

Habitat degradation

The impact resulting from the habitat degradation is likely to be **Major** due to the permanent and extensive nature of the development that will change light, humidity and temperature of the surrounding habitats. The structures, buildings and network of paths and roads that will be built in the area of the current Keppel Club is likely to lead to an increase in heat absorption and surface run-off that might decrease salinity of the mangrove. Light level changes are also expected to occur due to the street lighting that is expected to be present throughout the residential development. Increase human traffic that is also likely to come along with the residential development would lead to habitat degradation associated with human traffic such as litter, trampling and waste discharge.

Change in species composition

The impact resulting from changes in species composition to the mangrove forest, native-dominated secondary forest and marine areas will likely be **Moderate.** Due to relative ease of accessibility to these areas once the residential development is completed-as boardwalks and footpaths exist throughout these habitats, it is Possible (likelihood) that residents/public release exotic pets (e.g. red-eared sliders) or introduce non-native plants through landscaping.

As the impact assessment criterion is focus on terrestrial habitats, a qualitative assessment on the substantive impacts to marine areas will be discussed. Changes in species composition to the marine environment would mainly be releasing of exotic marine fish species; brackish and freshwater fish species impacts would have been considered in the above paragraphs through the assessment of changes in species composition to mangrove forest habitats. On the contrary, impacts from the release of exotic species would not result in significant impacts to the

marine areas as it connects to the wider ocean, where impacts (if any) would result in minute affects. However, habitat degradation impacts such as litter, trampling and waste discharge could potentially result in impacts to the marine areas. A summary of the key biodiversity habitat receptors impacted during operational phase is shown Table 7-28.

Table 7-28 Key biodiversity habitat receptors likely to experience indirect impacts within the study area during operational phase

Category	Key Biodiversity Receptor	Priority Level and Other Relevant Status	Direct Impact (% of total habitat type within Study Area)	Indirect Impact (% of total habitat type within Study Area)	Most Severe Impact Rating
Habitat	Native-dominated Secondary Forest	Priority 1 Area of High Conservation Value	N.A.	0.48 ha (21.8 %)	**Major**
	Mangrove Forest	Priority 1 Area of High Conservation Value	N.A.	2.52 ha (63 %)	**Major**
	Rocky Shore	Priority 1 Area of High Conservation Value	N.A.	0.03 ha (10 %)	N.A.
	Soft Sediment Seabed	Priority 2 Area of High Conservation Value	N.A.	0.27 ha (38.6 %)	N.A.
	Sandy Seabed	Priority 2 Area of High Conservation Value	N.A.	0.11 ha (2.4 %)	N.A.

7.9.2.2 Flora

A total of 145 plant species were selected for the assessment of ecological impacts. In the assessment of the two types of impact for individual species during the operational phase—(1) mortality and (2) competition from exotic species—the impact significance was negligible, low, moderate, or major. Here, the most severe impact for each species from the assessment of both impact types is presented. Sixty species are likely to experience **Major** impacts, six species are likely to experience **Moderate** impacts, 54 are likely to experience **Minor** impacts and the remaining 25 are likely to experience **Negligible** impacts.

The 60 species likely to experience **Major** impacts is all owing to competition from exotic species. They are all native species with either medium (Priority 2) or high (Priority 1) ecological value. Some plant specimens of these species could get stolen, thus giving an impact intensity of **Low**. Hence, the impact significance of mortality is **Major**.

Six species are likely to experience **Moderate** impacts as a result of competition from exotic species too. All six species are of high ecological value (Priority 1), except *Samanea saman* which is of medium ecological value (Priority 2). Four of these species (*Bambusa vulgaris*, *Ficus elastica*, *Samanea saman* and *Thyrostachys siamensis*) are listed as “Casual”, while two (*Ficus benghalensis* and *Ficus* lyrate) are listed as “Cultivated Only”, giving them an impact intensity of **Low** or **Medium,** respectively. This is a **Possible** (likelihood) event as some original vegetation are expected to be retained, with some others cleared and replaced with landscaping. Hence, the impact significance of competition from exotic species is **Moderate**.

The 54 species likely to experience **Minor** impacts is owing to competition with exotic species only (41 species) or mortality only (13 species; all seaweed species).

1) Of these 54 species, 39 species are exotic trees with low ecological value (Priority 3). They will either experience either **Low** or **Medium** impact intensity if the species is listed as “Casual” or “Cultivated Only”, respectively. On the other hand, the other 15 species are either keystone fig species or keystone seaweed species of high ecological value (Priority 1), but **Negligible** impact intensity given that they are either

cryptogenic or listed as naturalised. Given that the original vegetation will mostly be cleared with new large-scale landscaping using exotic species, it is **Likely** (likelihood) that these species will be impacted. This results in an impact significance of **Minor** for competition from exotic species.

2) The 13 seaweed species of unassessed origin likely to experience **Minor** impacts as a result of mortality. They are of high ecological value (Priority 1) and are known to have been stolen before. As this is a **Possible** (likelihood) event, the impact significance of mortality is **Minor**.

The remaining 25 species are likely to experience **Negligible** impacts due to both impact types. This is due to the likelihood of either or both impact types for each species being **Unlikely**. Hence, the resulting impact significance **Negligible**.

7.9.2.3 Fauna

In the assessment of operational phase impacts on fauna, it is assumed that all faunal species recorded during the baseline study may return to utilise the Study Area, although realistically, some species may not. During operational phase, disturbances to fauna are largely expected in the form of noise, light and human presence from the surrounding residential areas. Increased road infrastructure, as well as high-rise buildings, may lead to increased injury and mortality rates for all fauna species.

The increase in road infrastructures will likely result in increased injury or mortality for fauna. The smooth-coated otter and long-tailed macaque are especially at risk of increased injury and mortality arising from roadkill due to the way they make use of urban infrastructure like roads and buildings; and therefore impacts were assessed to be **Major**. High-rise buildings in the residential area might also lead to increased bird collisions with buildings. Impacts to birds were assessed to range from **Minor** to **Moderate**, where the red junglefowl (*Gallus gallus*) and red-legged crake (*Rallina fasciata*) were assessed to experience Minor impacts due to their ground dwelling behaviour. In addition, the ease of accessibility and proximity to the intertidal areas along Berlayer Creek and Labrador Nature Reserve may likely lead to increased injury and mortality to marine fauna in the intertidal area. As such, many of the fauna species that were assessed to experience at **Moderate** impacts with respect to injury and mortality. While relatively faster moving species such as the land hermit crab (*Coenobita violascens*), ferocious reef crab (*Eriphia ferox*) and common seahorse (*Hippocampus kuda*) were assessed to experience **Minor** impacts.

Loss of ecological connectivity for marine species are assessed to be **Negligible**, similar to the construction phase as there are no works/structures that would impede the connectivity within the marine areas. Subsequently, with the presence of road infrastructure, as well as high-rise buildings, connectivity is assumed to be lost for terrestrial species, resulting in **Major** to **Moderate** impacts.

Higher light levels around the residential areas are expected to have mostly **Moderate to Major** impacts for both diurnal and nocturnal terrestrial species. For diurnal species, higher light levels from human activities may affect their rhythmic patterns and may reduce the suitability of habitats for roosting and resting at night. Similarly, the higher light levels may reduce the suitability of habitats for nocturnal species, resulting in less-than-optimal condition for nocturnal species to forage and move around. The increase in light levels is expected to affect the bird species that were recorded during the study period. Marine fauna that were identified are less sensitive to light level changes and would thus experience at most **Minor** impacts.

Increased human presence in the Study Area during the operation phase is also likely to lead to **Moderate** impacts for human disturbance. Impact intensity would be higher for species that are less tolerant of human disturbances, such as the spotted wood owl or crested goshawk. While species that are more tolerant of human disturbances such as the smooth-coated otter, long-tailed macaques, Oriental magpie robin and red junglefowl, would have a low impact intensity. Marine fauna that were identified are less sensitive to light level changes and would thus experience at most **Minor** impacts.

7.10 Recommended Mitigation Measures

In this section, mitigation measures for the future residential developments are discussed. Mitigation measures are implemented in the following order: 1) avoidance; 2) minimisation; 3) compensation and enhancement. Avoidance of the impact is first attempted. If avoidance is not possible, the construction impacts will be minimised. Finally, if habitat loss has to occur, compensation and enhancement of remaining/nearby habitats will be suggested as a form of impact mitigation.

It is important to note that the successful implementation of mitigation measures requires the commitment of contractors, arborists and biodiversity specialists. Some of the major concerns around this proposed project include habitat loss, habitat connectivity and human-wildlife interactions/conflict.

7.10.1 Design Phase and Pre-construction Phase

The design of a development should be considered in the mitigation as it has the potential to influence the extent and types of impacts that can influence any sensitive biological receptors at the operational phase.

7.10.1.1 Avoid

Due to the nature of the plans at Keppel Club, there is little chance to avoid site clearance and habitat loss within the work site. As a result of the topography, there would major cut and fill works carried out across the worksite. Therefore, it is important to apply restoration and compensation methods (refer to Section 7.10.1.3), as recommended in the mitigation hierarchy (refer to Section 6.5).

Overall, it is proposed that the master planning process of designing the area for development should, preferably, avoid areas with high value habitats. These areas are namely, Berlayer Creek, Bukit Chermin, and nearby seagrass meadows and rocky shores. Subsequently, it is worthy to note that the development boundary has avoided all high value habitats identified.

Subsequently, retaining large trees as much as possible can also be considered as part of the 'avoidance' strategy. This can include:

- Retention of existing keystone plants such as *Ficus benjamina*, *Ficus macrocarpa*, *Ficus religiosa* as much as possible. In the event that such plants are unable to be retained, enhancement efforts can be carried out with the planting of keystone flora such as fig trees. These trees have uncoordinated fruiting periods but fruit abundantly over the year as a community, forming an important food source for avian fauna and small mammals. In addition, planting of flowering plants will attract the pollinators such as butterflies, bees, wasps can potentially improve ecological processes in the region.
- Retention of the Asam (*Tamaindus indicus*) Heritage tree.

7.10.1.2 Minimise

Major impacts arising from injury or mortality at the operational stage is a concern that can be addressed using impact minimisation via design—the unnecessary deaths of birds, which tend to collide with glass windows due to their inability to perceive these structures. The frequency of these events can be reduced by substituting aspects of the building design with bird-friendly designs [P-55]:

- Minimise the quantity or surface area of glass. This could be achieved by reducing the amount of glass façade or installing a decorative cladding over the glass façade so that the reflections on the glass facades are broken up.
- Incorporate features that increase the visibility of glass (including mirrored and non-mirrored reflective glass, and transparent glass) or dampen reflections to reduce the appearance of clear passage to sky or vegetation. Possible strategies include film coating (e.g., CollidEscape; http://www.collidescape.org), angled glass, interior or exterior shades, decals, fenestration patterns, grilles, sunshades, screens, blinds and netting. Exterior shades confer the freedom of choosing to only use it during periods where bird collisions are expected to be most frequent, such as during the migratory seasons.
- When decals or patterns are added to increase the visibility of the glass, it is advised that the pattern should be as dense as possible as it will appear more clearly as a solid object to birds and thus be more effective [R-42]. For example, for WindowAlert decals, it is recommended for decals to be 5cm apart horizontally and 10cm apart vertically [W-20].
- Avoid interior vegetation near windows as birds may confuse this with exterior vegetation and fly towards them. This can include adding balconies to help prevent reflections on windows.
- Avoid planting vegetation close to glass so that reflection of vegetation would not confuse birds that may fly into the building. If there are sides which are close to the natural vegetation, the façade should have shades installed or netting that are a short distance away from the glass to prevent birds from crashing into it.
- Buildings should not have courtyards or corridors that are enclosed by glass as these may confuse birds to fly through.

While light disturbance impacts at the operational stage can be minimised by incorporating proper lighting strategies. Any level of artificial light above that of moonlight masks the natural rhythms of lunar sky brightness and thus, can disrupt patterns of foraging, mating, as well as the circadian rhythm [P-84]. Artificial lighting at night (ALAN) can disorient birds, bats and insects, altering their behaviour that results in them being more vulnerable to predation and other risks. For example, ALAN may repel light-adverse bats from lit areas and restrict their use of commuting or feeding space. It is recommended to adopt the following framework:

- Prevent areas from being artificially lit — lighting should only be installed when necessary.
- Limit the duration of lighting, where peak nocturnal fauna activity is avoided.
- Reduce the trespass of lighting. This can be done via the use of a minimal number of luminaires, at low positions in relation to the ground, directed and shielded to provide the least amount of spill to adjacent habitats while achieving the necessary lighting levels for working safely (Figure 7-49). Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed [P-85].
- Change the spectrum of lighting. Lights with reduced or filtered blue, violet and ultra-violet wavelengths should be used. Short wavelength light (blue) scatters more readily in the atmosphere and therefore contributes more to sky glow than longer wavelength light. Furthermore, most wildlife is sensitive to short wavelength (blue/violet) light. Therefore, as a general rule, only lights with little or no short wavelength (400–500 nm) violet or blue light should be used to avoid unintended effects. Where wildlife is sensitive to longer wavelength light (e.g., some bird species), consideration should be given to wavelength selection on a case-by-case basis. It is also recommended that warm colour temperature light sources to be employed preferably at <2,700 Kelvin.
- Set dark buffers and illuminance limits of < 100 lux to minimise effects on animal behaviour due to light pollution and zonation.
- Employ species-specific strategy.
- Minimise noise levels at night.

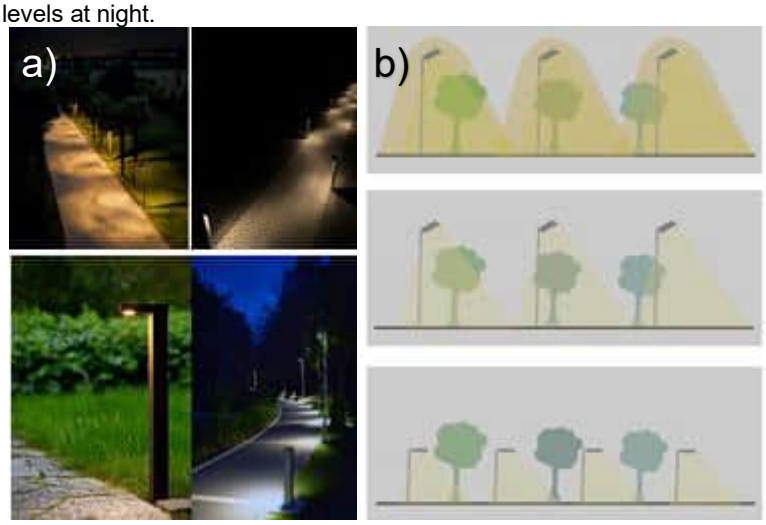


Figure 7-49 (a) Low level bollards directed downwards and shielded to limit lighting to only the area intended. Combined effect of shielded luminaires and short poles on reducing light trespass. (b) First picture—unshielded luminaires, second—luminaires with shield, third—shielded luminaires on short poles which cut-off light trespass and keep adjacent areas dark.

Finally, adopting road calming measures such as speed bumps, and other mitigation measures such as restriction on speed of vehicles can help potentially to minimise roadkill accidents at the operational stage.

7.10.1.3 Remedy/Repair/Restore and Compensate

Results from the baseline surveys that was conducted not only suggest the importance of Study Area as a habitat for fauna, literature review indicate the importance of Keppel Club as a nesting and foraging ground for birds and an important ecological corridor between Labrador Nature Reserve and the Southern Ridges (which includes Mount Faber Park, Telok Blangah Hill Park and Kent Ridge Park) [P-1]. Additionally, an ecological profiling exercise conducted by NParks further substantiates the importance of this connectivity.

Connectivity with other habitats is often required for a habitat to maintain its ecological functioning [P-86] and the development of Keppel can potentially negatively influence the ecological function of this area during the operational stage. As such, the recommendation is to enhance and create habitats and green connectors to

maintain and even improve connectivity at the operational stage. This would ensure that the future development at Keppel Club remains permeable to wildlife (e.g. birds and small mammals), to facilitate connectivity between Labrador Nature Reserve and the Southern Ridges. This would also reduce the potential interruption of the connectivity routes in the southern part of Singapore, rather than having a purely urban design that would prevent any wildlife from passing through. Such designs, when incorporated, will likely help raise the aesthetic appeal of the development. These proposed green corridors can also help shade development building surfaces, divert radiation from the sun, and provide moisture to the surroundings; thereby reducing urban heat island effect.

A key strategy to maintain, enhance and create connectivity and habitats within the development area as suggested below (Figure 7-50):

1. An ecological corridor along Berlayer Creek (herein referred to as Berlayer Corridor).
2. An ecological corridor across the middle of the development (herein referred to as Central Green Corridor) located at the ‘valley’ of the site.
3. An ecological corridor on the east aligned to the planned Nature Way along Henderson Road (herein referred to as Henderson Road Corridor).
4. A northern green corridor is proposed along West Coast Highway to further enhance connectivity between the three ecological corridors.



Legend

- Proposed Green Corridor
- Proposed Road
- Berlayer Creek & Marine Area
- Overall EIS Study Area
- Development Area

N

The development area, proposed green corridors and road are subject to further review.

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	CQA	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

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Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Conceptual Connectivity Plan

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn: CQA	Date: APR 2022

Figure No. : **7 - 50**

Rev. : -

Sheet : 1 of 1

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Note: Source of basemap - Google Earth Map

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Considerations For Connectivity

In setting out the recommendations for corridor sizes, an extensive literature review was carried out to determine parameters that will best suit the site context. The USDA National Agroforestry Centre recommends as a guideline that a corridor will generally need to be wider in landscapes that provide limited habitat or that are dominated by human use. While most of the literature review studied had a temperate context and the reviewed literature yielded no papers that could fit concisely to the context at Keppel, it is important to note that the fundamental considerations still apply. These considerations are highlighted below,

- Target species: In general, the larger the focal species, the wider the corridor needed. Singapore's species diversity composes of few large mammal species and in Keppel's context, the focal species of birds (both edge and interior species) and small mammals can be used to gauge for a narrower minimum width of 30 to 60 m [P-92]. Refer to Figure 7-51.
- Edge effects: Literature review indicate that changes in temperature, light intensity and soil moisture happens between 20 to 30 m (on average) from the edge. While at least 32 m of heavily forested vegetation will be required to buffer for noise. Refer to Table 7-29. As two corridors (Henderson Road Corridor and Central Green Corridor) are new and will have two edges, it would infer that a corridor size of 60m width would be a minimum requirement for the reduction of edge effects.
- Temporal considerations: Corridors that need to function for decades and are situated in landscapes that are dominated by human use need to be wider [P-92]. The corridor will also need time to establish, evolve and mature into an effective connection. It is estimated that it will take at least ten years for the canopy of trees to merge and for a sufficient microclimate to establish. This will in turn create conditions suitable to sustain interior species while the corridor (trees) matures.

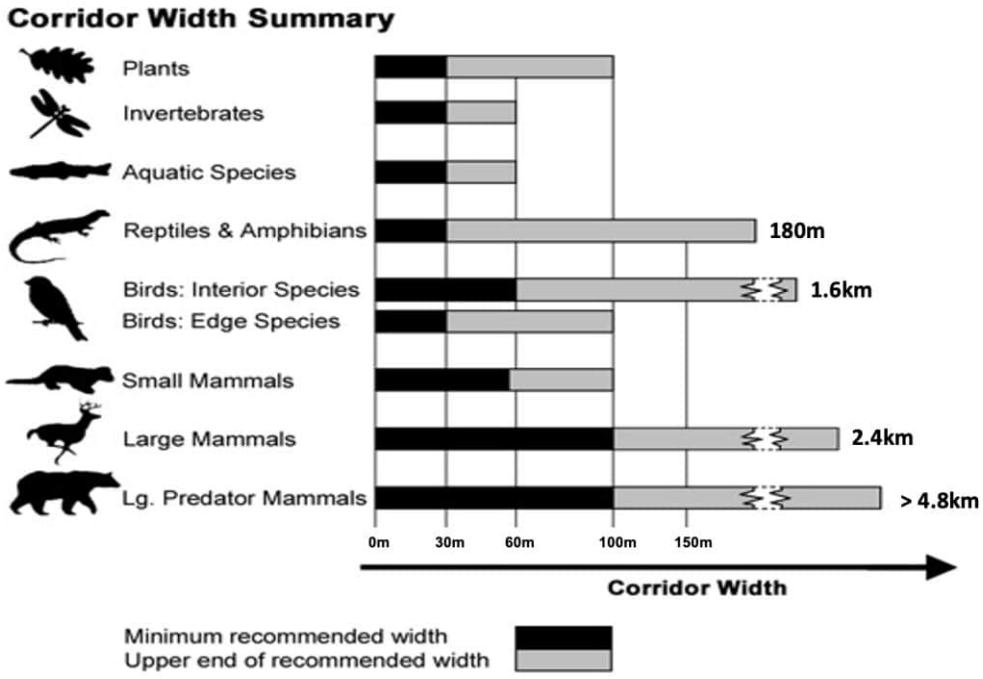


Figure 7-51 Corridor width of different fauna groups [P-92]. Extracted from USDA National Agroforestry Centre Guidelines.

Table 7-29 Summary of literature review of edge effects and buffers

Factors	Impact threshold	Species/subject	Study findings	References
Light, temperature, litter moisture, vapour pressure deficit, humidity and shrub cover.	50 m	Abiotic	Significant edge effects were detected in light, temperature, litter moisture, vapour pressure deficit, humidity, and shrub cover, affecting the forest microenvironment up to 50 m from the edge.	[P-93]
Temperature	10 - 30 m	Abiotic	-	[P-94]
Temperature	⩾ 30 m	Abiotic	-	[P-104]
Microclimate	8 m	Abiotic	Microclimatic differences were limited to the first 8 m in the forest fragments.	[P-95]
Light intensity and soil moisture	20 m	Abiotic	In a study of 22 mature upland forest fragments, increases in light intensity and reductions in soil moisture extended up to 20m from the edge, irrespective of forest fragment size.	[P-96]
Light	- Separate street lights at least 50 m from ecological corridors - Avoid vertical light trespass beyond 0.1 lx for light sensitive bats	Bats	Negative effect from artificial lights on Myotis sp. and E. serotinus detected up to 50 m away from streetlights. Even after streetlights were turned-off, negative effect persisted in Myotis sp.	[P-97]
Shade	> 30 m	Riparian buffer	-	[P-98]
Shade	> 30 m	Riparian buffer		[P-99]
Shade	> 30 m	Riparian buffer	Provided 50 – 100% shading	[P-105]
Shade	28 – 38 m	Riparian buffer	Provided 80% shading	[P-104]
Seedlings recruitment	65 m	Plants	Populations in forest remnants within 65 m of forest clear-cut edges have almost no	[P-104]

Factors	Impact threshold	Species/subject	Study findings	References
			recruitment of young plants.	
Predation and parasitism.	50 m	Birds	Predation and parasitism rates are often significantly greater within 50 m of an edge.	[P-100]
Noise	> 32 m (heavily forested)			[P-101]
Noise (industrial)	700 m	Birds (boreal forest)	Areas up to a distance of 700 m from compressor stations resulted in lower abundance of forest birds.	[P-91]
Road traffic noise	Effects strongest at 200 m, but detected at 2000 - 3000 m (in forested wetlands)	Amphibian species diversity and abundance		[P-102]
Road traffic noise	~ 650 m	Birds - forest-interior species		[P-103]

To note, patches within the development as stepping stones in place of a linear corridor were also considered but eventually not adapted due to the following reasons:

- Minimum recommended patch size is species specific and are often protected by a buffer zone [P-90]. In Keppel's context, a minimum of 2 to 38 ha is recommended [P-90]. This would not only consume more space within the development, it might also make parcellation of planning units harder due to irregularity of patch shape.
- Many interior bird species are strongly dispersal limited and are incapable of crossing even small gaps in forest cover [P-106]. If patches are too far apart, these patches might not be effective for its intended use.

Finally, to maximise the effectiveness of the three proposed corridors, the following measures should be adopted whenever possible:

- The implementation of NPark's Nature Ways planting within the estate; facilitating the creation of layered (e.g. understory shrubs, mid-level trees, larger tall trees), continuous paths of greenery that allow wildlife to pass through the area. For practicality, design teams can consider keeping (where feasible) present location of large trees within Keppel Club's golf course (Figure 7-27), for example the *Tamarindus indicus* heritage tree and plan green paths along the locations of trees that will be retained.
    - Explore the use of a native plant palette, e.g. butterfly attracting shrubs or coastal forest species, for the creation of these nature ways. Native plant species are highly recommended as they can potentially attract native fauna via the provision of food and shelter, promoting local biodiversity.
    - Select a diversity of flowering and fruiting plant species to include butterfly- and bird-attracting plant species. The planting palette should be planned for continuous flowering and fruiting throughout the year to provide food and improve ecological processes. However, planting location of bird attracting species should take into consideration bird collisions recommendations.
    - A layered planting approach (i.e., ground cover, shrub, understorey and canopy layers) and that include different plant habits (e.g., epiphytes, shrubs, ferns, trees) to mimic forest conditions
    - Prioritise intensive greening along streets or in areas with low disturbances (e.g., low traffic volumes and speeds, low human activities).

- Explore other methods to facilitate connectivity, for both undergrowth and large range species of organisms
    - Include “rooftop” gardens, sections of greenery planted on buildings, as part of the building design, preferably at varying heights to maximise usage by various type of fauna.
    - Creation of small parks within the estate, potentially around the present ponds of higher fish biodiversity in the Keppel Club golf course area. These parks can then be connected to other green areas within or outside of the estate using Nature Way.

Berlayer Corridor

The recommended width of the Berlayer Creek Corridor is 30 m and should be planted densely to form a transition between the sensitive mangrove environment and the new park. This transition layer will help to buffer the high value habitat from an expected increase in light and noise [P-90, P-91].

Additionally, with careful and deliberate selection of the planting palette, the linear park can become additional habitat (e.g. back mangrove) and also function as a corridor for birds connecting Bukit Chermin, Berlayer Creek up, along Alexandra Road towards the Southern Ridges (Figure 7-52).

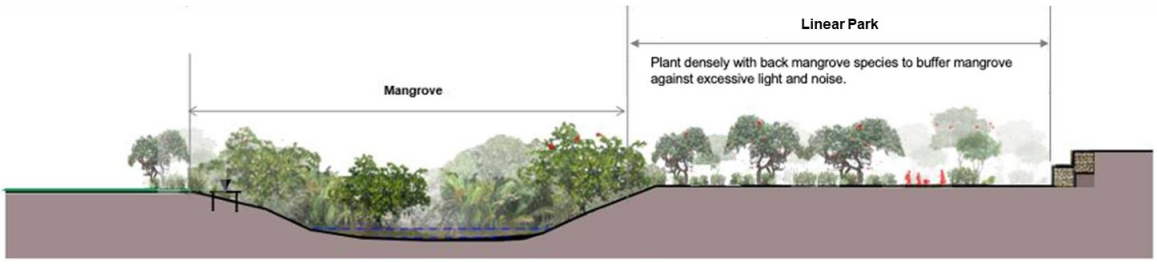


Figure 7-52 Conceptual cross-section showing proposed linear park in relation to Berlayer mangrove. Dense planting should be employed beside the mangrove edge against increase in lighting and noise infiltration and potentially create a new back mangrove habitat that can also serve as a corridor function for an increase range of biodiversity.

Central Green Corridor

Habitat creation together with ecological connectivity are the primary objectives of the Central Green Corridor. The Central Green Corridor is recommended to have a minimum width of 60 m (new habitat with two forest edges, see previous section on Considerations for Connectivity). Taking advantage of the topology at the “valley” or the lowest point of the site where existing waterbodies are present, the mangroves of Berlayer Creek can expand towards the new development if the new waterway is connected and exposed to intertidal fluctuations. Such mangrove habitat creation efforts are not new in Singapore and has been proven to be successful in Pasir Ris (Sungei Api Api, Pasir Ris Park etc) albeit over a period of 10-15 years. To ensure continuity of this new habitat, the new proposed road that will cut the Central Green Corridor should also be grade separated.

Subsequently, by slightly modifying the topology, a gradual transition into different habitats can be achieved. The mangrove habitat can transition to back mangrove vegetation and then into a freshwater habitat environment (Figure 7-53). Furthermore, enhancement planting of a specific of planting palette (i.e. salt tolerant species and/or mangrove species) can help to establish the desired habitats faster.

By doing so, the range of habitats can be increased thereby potentially attracting a larger range of biodiversity that will eventually utilise the site. The details of how this can be accomplished will require detail engineering and hydrological studies and take into account future drainage planning, available water catchment areas and possibly the use of the existing freshwater pond itself as a detention system to meet PUB requirements (Figure 7-53). A detailed study should be carried out during detailed design stage, when more information or design specifications of the park is available. This study should include the assessment of potential erosion impacts to Berlayer Creek due to the introduction of the new waterway, and to propose relevant mitigation measures to reduce flow velocity of stormwater discharged into Berlayer Creek after storm events, if required.

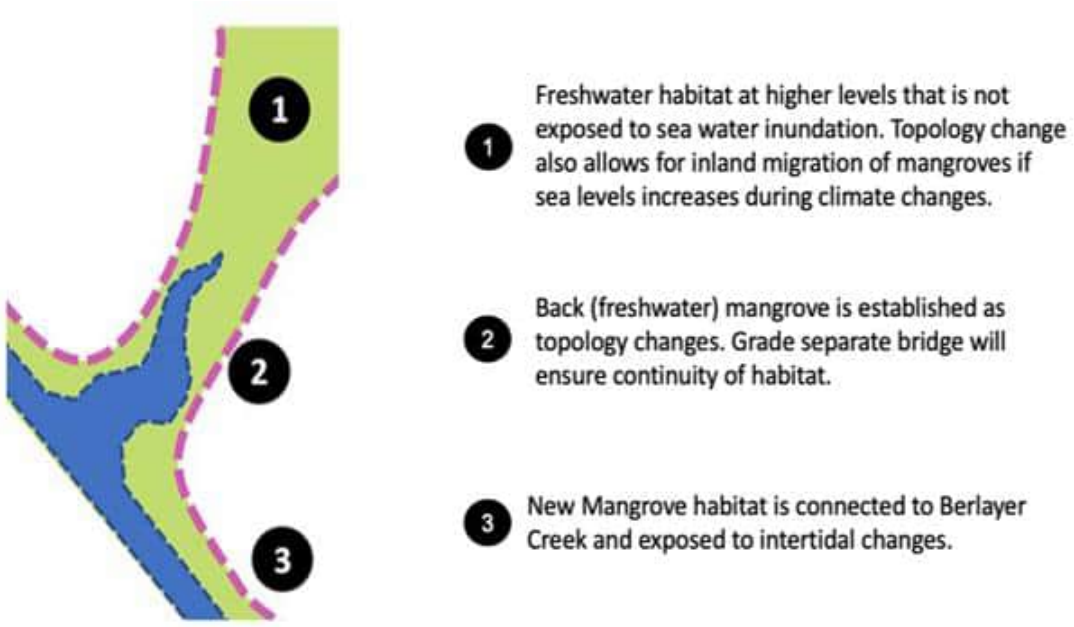


Figure 7-53 Conceptual diagram showing potential transition of habitats from mangroves to back mangroves and to freshwater habitat

A terraced design is proposed to match the levels between the mangroves to the upper levels where the development will happen. This approach offers a few advantages:

1) Delimits the mangrove areas and allows the flora and fauna biodiversity to persist with minimal disturbance.

2) Reduces land take on the development side compared with natural grading to achieve a 1:2.5 gradient.

3) Allows for grade separation of spaces for different functions including the integration of higher usage park activities from uses that will result in lower disturbance to the future habitats (e.g. jogging tracks).

4) This grade separation combined with deliberate planting strategies can also serve to reduce the risk of light and noise intrusion into the future mangrove habitats (Figure 7-54).

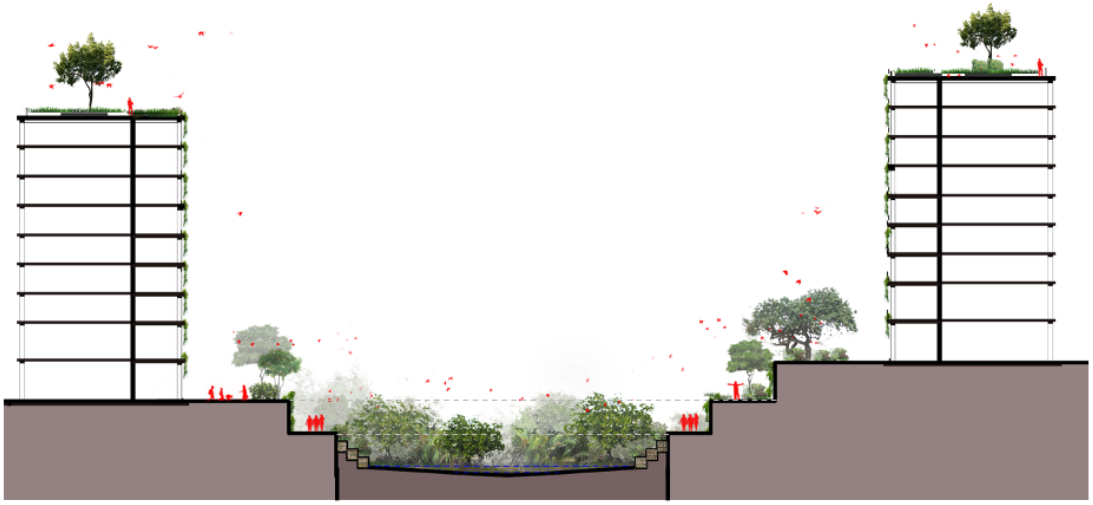


Figure 7-54 Conceptual cross-section of Central Green Corridor. To mitigate for light and noise from the development, planting scheme at the top tier on both sides of mangrove should deploy intense planting of tall trees. ***To note that building form, height and rooftop features are subject to further studies.***

Henderson Road Corridor

Henderson Road Corridor main purpose is to provide a connection between Labrador Nature Reserve, Bukit Chermin and the Southern Ridges (via Henderson Road) for birds and potentially small mammals (Figure 7-51 and Figure 7-55). A 60 m width is recommended for reasons previously highlighted. It will be a new habitat with two edges, it will also be surrounded largely by an urban matrix and will need to function in a timescale measured in decades. A forest habitat will be recreated with tiered planting to establish an adequate forest structure to mainly passerines, above canopy birds and small arboreal mammals.

The Henderson Road Corridor also has a key constraint. The new proposed internal road will disrupt the continuity of the corridor. To mitigate for this, trees with wide spreading canopies (e.g. Rain trees or Yellow Flames) will need to be planted at the road conjunction and through time, a merging canopy will hopefully form to facilitate the conduit of birds and small arboreal mammals. Culverts can also be constructed below the road to minimise road kills and facilitate movement of terrestrial animals across the corridor.

Buildings flanking the Henderson Road Corridor should preferably be low rise and not exceed the canopy of the trees, this will allow for a wider flight path for above canopy birds and reduce risk of bird strikes. Green roofs on these low-rise blocks will supplement the green corridor and will serve as additional habitats for butterflies and smaller urban bird species.

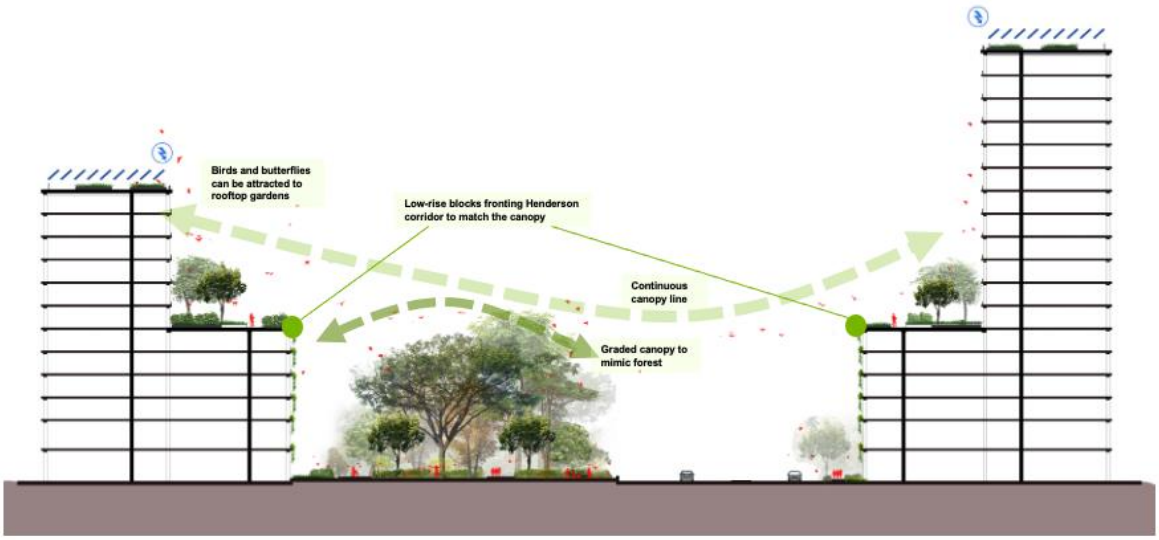


Figure 7-55 Conceptual cross-sectional view of Henderson corridor in relation to the future development.
To note that building form, height and rooftop features are subject to further studies.

7.10.2 Construction Phase

Keppel club's proximity to important, sensitive nature areas such as Labrador Nature Reserve, Berlayer Creek and rocky shores and seagrass meadows means that there are potential risks posed to these areas by the construction works. The recommended mitigation measures will be separated in flora and fauna groups due to the different general mobilities of the two groups.

7.10.2.1 Avoid

Flora

- Ensure there are no works and disturbances to areas outside of work site, especially into areas of high conservation value (Figure 7-48).
- Ensure any associated slope stabilisation and grading works will not impact topography of areas outside work site and, water quality and hydrology of the waterbodies within the Study Area. Care should be taken to prevent siltation into ecologically sensitive areas such as Berlayer Creek and Bukit Chermin. Works should not encroach on these areas, not should there be clearance, trampling or vegetation damage to these areas. Overall, these areas should have no or minimal impacts.
- Consider engaging arborists and flora specialists to clearly mark out areas and plants with conservation value before the start of works. This would avoid clearing unnecessary working space, eliminate the need of removing specimens of value and plants of conservation significance as much as possible.

7.10.2.2 Minimise

Flora

- Transplant or harvest trees/saplings of conservation significance instead if they are to be cleared.
- Erect Tree Protections Zones (TPZs) to prevent encroachment of construction activities and excessive vegetation clearance around retained trees or areas (if any).
- Conduct regular inspections to ensure contractor compliance and identify any impacts to the adjacent forest areas.

Fauna

- Minimise felling trees and clearing vegetation during the peak bird breeding season (March to July)
- Wildlife shepherding via directional clearing should be adopted over the usual site clearance. This entails clearing the site from Keppel Club towards Berlayer Creek so as to avoid trapping ground-dwelling mammals within the site. This should be planned and overseen by an ecologist.
- Quieter construction machinery/equipment should be used over loud and noisy machinery/equipment whenever possible.
- Night-time works should be avoided to prevent disturbance to nocturnal fauna; recommended to restrict working hours to 0700–1800h. Animals perceive light differently from humans
- Retain ground cover for as long as possible before removal. When ground cover is removed, earth control measures (ECM) are to be in place. Use only fully biodegradable erosion control blankets (ECB) to avoid trapping fossorial fauna such as snakes.
- Adopt road calming measures such as speed bumps, and other mitigation measures such as restriction on speed of vehicles and working time, to minimise roadkill accidents.
- Train site personnel on biodiversity awareness and actions to take when encountering wildlife.
- Ensure good housekeeping controls such as provision of wildlife proof bins and eating areas.
- Execute fauna response and rescue protocol when fauna is found on-site.
- Monitor the water quality and aquatic faunal community in retained streams and streams adjacent to the construction areas.
- Ensure silt fences or other silt control measures along the site hoarding are installed and maintained properly.
- Practise due diligence in proper storage and handling of machinery to prevent leaching of oil or harmful materials such as bentonite slurry. Store and handle harmful materials well away from water bodies.
- Engage a Qualified Erosion Control Professional (QECP) to formulate and implement ECM plan in accordance with PUB requirements.
- Implement dust control measures such as dust screens and water suppression systems.
- Implement acoustic barriers to reduce noise pollution outside worksites.

- Conduct regular site inspections to ensure contractor compliance and to identify potential fauna entrapments.

7.10.3 Operational Phase

Mitigation measures stated here should be relevant for the Study Area and enforced if applicable. However, most of the strategies for enhancement should have been considered during the design phase. Avoidance, restoration and compensation measures would be the most applicable at the operational phase.

Soil that was dug up should be returned to the ground and replanted if possible. The planting scheme should be as similar in forest species composition to the adjacent forest patches and include as many native species as possible. Other than minimising edge effects, these replanted areas can serve as a natural barrier to light, noise and dust to reduce disturbance. Subsequently, barriers can be places to prevent entry into more sensitive area such as Berlayer Creek (mangrove considered a high ecological value habitat).

In continuity with the educational sign boards created to educate the public on how to interact with wildlife that could be passing through the area, active outreach can also be carried out by local interest groups or relevant authorities. This active outreach is also recommended to be incorporated as part of the “sales” pitch when the residential units are for sale to the public. This will help manage the residents’ expectations and hopefully help with managing the human-wildlife interactions.

A final concern for the proposed development works in Keppel Club golf course is the issue of human-wildlife conflict. Due to the proximity and ecological role played by this area, wildlife such as macaques, otters and wild boars can potentially pass through this area. Some of the suggestions can include:

- Placing educational signboards within or near green areas across the entire estate, particularly along the green corridors. The content of these signboards can include:
    a. General advisories on what to do when the public encounters wildlife
    b. Advising/cautioning against feeding wildlife
    c. Hotlines to call in the event of an emergency/injury as a result of human-wildlife interactions
- Mitigation measures related to the design and landscaping of the estate such as
    a. Using specific rubbish bins to prevent wildlife access to rubbish;
    b. Avoiding construction of amenities facing Berlayer Creek or Bukit Chermin;
    c. Planting tall trees facing Berlayer Creek and Bukit Chermin to encourage bird roosting away from the estates;
    d. Planting shorter native shrubs in estate to avoid attracting bird roosting;
    e. Ensure the window grills resistant to monkey entry; and
    f. Planting fruit trees away from the residential areas.
- Measures to notify future residents on staying in close proximity to nature and likelihood of encountering wildlife.

Finally, regular site inspections in the initial few months of the operational phase is recommended to be conducted to ensure that the proposed flora and fauna mitigating measures are effective. These site inspections also serve to identify any impacts to the adjacent forest areas. Key species such as the straw-headed bulbul, spotted wood owl, and crested goshawk should be monitored for their distribution, abundance, food resource use, and breeding behaviour. This information will contribute to evaluating the actual impact of the developments.

7.10.4 Mitigation Measures for Specific Fauna

Several threatened faunal species were recorded at multiple sites in the Study Area. These included the straw-headed bulbul (*Pycnonotus zeylanicus*) and smooth-coated otter (*Lutrogale perspicillata*). Broadly, mitigation measures that target these threatened faunal species include retaining habitats and food sources, maintenance/enhancement of ecological connectivity and the adoption of wildlife-friendly building designs. The mitigation measures for specific faunal species are listed below and should be applied at areas where they were recorded on top of the mitigation measures stated at design phase (Section 7.10.1), construction phase (Section 7.10.2) and operational phase (Section 7.10.3).

Straw-headed Bulbul

- Retain fruit and fig trees, which are known food sources. Some examples are *Leea indica*, *Bridelia tomentosa*, *Clausena excavata*, *Dillenia suffruticosa* and *Ficus* sp.

- Include fruit and fig trees, which are their known food sources, as part of the native planting palette when replanting the area in the operational phase.
- Avoid felling trees and clearing vegetation during the bird breeding season for this species (January to September).

Smooth-coated Otter

- Implement traffic calming measures to help minimise roadkill accidents.
- Culverts and road calming measures proposed here would also mitigate for mortality and/or injury roadkill impacts as smooth-coated otters are ground-dwelling.

Long-tailed Macaques

The long-tailed macaques (*Macaca fascicularis*) are edge species and are highly adaptable in urban environments. The chance of human-macaque encounters, and therefore, human-macaque conflict in the proposed development is high. Minimising human-macaque conflict requires site-specific recommendations. However, the general guidelines below can be considered:

1) The landscaping and infrastructure should keep in mind the capabilities and behaviour of the macaques. For instance:
   - Macaques are primarily arboreal and have a mean leaping distance of 2.2 m [P-87] and a maximum leaping distance of 5 m [P-88]. Thus, there should be a 6m buffer between the building façade and the tree line as well as any potential climbing structures (e.g., lamppost).
   - To prevent scaling, the walls and pillars should be smooth and any projections that could potentially be used as handholds should be spaced greater than 1.5 m apart (i.e., larger than the arm span of an adult male long-tailed macaque) [P-89].
   - There should also be a canti-levered section of the building to prevent them from scaling to the higher residential levels of the building.
   - Addition of invisible grills to balconies will prevent macaques from entering and if these grills are spaced less than 10 cm apart (vertically), they will also prevent birds from entering the residential areas.
   - Macaques are avid swimmers and would enter outdoor swimming pools accessible to them. Thus, the swimming pools should be placed indoors or at a height that is beyond reach to them.
2) Proper waste-management techniques are extremely crucial within the residential districts. Key features include:
   - Macaque-proof bins, i.e., inaccessible to macaques either through being enclosed, with secured ropes or ties, or complex opening/closing mechanisms [P-89].
   - Waste management centres should be enclosed and inaccessible to macaques, including vents.
3) Education—reducing human-macaque conflict also involves behavioural change on the public's part. It is important to educate the public to not feed the macaques, and indicate proper behaviours to avoid conflict with macaques (e.g., Dos and Don't; [P-89]). Educational signages are cost-effective methods that can be implemented.
4) Others [P-89]
   - Enclosed carparks; owners can cover cars if concerned with damage.
   - Walkways/bridges: wide enough for people to pass a macaque at >1 m.
   - Gardens: enclosed; motion-triggered water spurts.

7.11 Residual Impacts

7.11.1 Construction Phase

7.11.1.1 Habitats

In the assessment of ecological impacts for the construction phase, the most substantive impact was **Major** due to the loss of urban vegetation arising from site clearance. While **Moderate** impacts are expected from the clearing of man-made freshwater bodies within Keppel Club. These impacts were assessed before mitigation measures were theoretically implemented.

The **Major** impact arising from loss of vegetation cannot be mitigated due to the extensive land use change that will bring about permanent and irreversible impacts. However, following the mitigation hierarchy, restoration and compensation measures can be adopted instead to help mitigate this major loss of vegetation (see Section 7.10.1.3).

Subsequently though habitat degradation and changes in species composition, impacts were assessed to be **Minor** and **Negligible** respectively, the implementation of other mitigation measures proposed in Section 7.10.2.2 should

still be implemented. This would further reduce the amount of waste discharge and changes in temperature and light into the surrounding habitats within 30 m of the worksite.

7.11.1.2 Flora

Out of the 145 plant species selected for ecological impact assessment, 28 and 47 species are assessed to have **Major** and **Moderate** impacts respectively, before mitigation measures were theoretically implemented.

Following the implementation of mitigation measures, the impacts on 11 plant species would, theoretically, be reduced Negligible. While the remaining 64 species will still experience **Major** and **Moderate** impacts.

Prior to the implementation of mitigation measures, the 11 species likely to experience **Moderate** to **Major** impacts owing to mortality are *Bridelia stipularis*, *Ficus globosa*, *Neolitsea cassia* (**Major**), *Ardisia elliptica*, *Ficus vasculosa, Olea brachiata, Oncosperma tigilaria, Oxyceros longiflorus*, *Palaquium obovatum, Syzygium syzygioides* and *Planchonella obovata* (**Moderate**). With the appropriate mitigation measures discussed above for the Study Area, i.e., set up TPZs (for trees) or transplant where suitable, the impact intensity would be reduced to **Negligible** and likelihood to **Less Likely**. This results in a **Negligible** impact significance for all 11 species.

The remaining species will experience complete clearance from the construction work. Hence, the impact significance, mostly as a result of mortality, cannot be reduced.

7.11.1.3 Fauna

Faunal species receptor (highlighted in Section 7.8.1.3) with **Major** and **Moderate** impact significance were assessed for residual impacts. These impacts were namely loss of/reduction in habitats and food source, injury and mortality and loss of ecological connectivity for faunal movement. The assessment took into account mitigation measures for fauna as well as habitats which directly influence how fauna will response to the measures.

Birds

Ground dwelling, forest-dependent, short distance or low flying species can potentially benefit from the creation or retention of vegetation connectivity through the Study Area for faunal movement during the construction phase. This is especially so if the connecting vegetation is landscaped to replicate the vegetation structure of a forest corridor. Retention of the native-dominated secondary forest in Bukit Chermin that birds are currently using for connectivity to the Southern Ridges would aid in forest and ecological connectivity. In this regard, the residual impact from loss of ecological connectivity could be mitigated to **Minor** for all species that were experiencing **Moderate** and **Major** impacts.

Subsequently, residual impact for loss of/reduction in habitats and food sources can also be mitigated largely with measures recommended to restore and enhance connectivity, reducing impacts to **Minor**. However, more importantly, these measures must be in place before the construction begins or at the very least before the whole Study Area is cleared.

Though injury or mortality impacts for birds were mostly Minor, it is still necessary to conduct pre-felling fauna inspection to further minimise injuring or mortality whenever possible.

Mammals (non-volant)

Residual impact from the loss of habitat and food sources for both mammal species would remain as **Major** given the site clearance and massive construction expected within Keppel Club. Mitigation measures that involve wildlife shepherding (via directional vegetation clearance), regular monthly inspections and wildlife training would help to minimise injuring/mortality and lower likelihood from **Possible** to **Less Likely** and thus lower impact significance from **Moderate** to **Minor**.

7.11.2 Operational Phase

7.11.2.1 Habitats

At the operational phase, **Major** and **Moderate** impacts are expected to arise from habitat degradation and changes in species composition respectively in the various surrounding habitats due to the installation of permanent heat- and light-emitting urban infrastructure in the Keppel Club. This impact can likely be mitigated through the planting of forest corridors and buffers as recommended in Section 7.10.1.3. Subsequently, implementation of mitigation measures such as educational signs and installation of barriers to entry into the more sensitive habitats as

mentioned in Section 7.10.3 would also help reduce habitat degradation and changes in species composition. Recommended mitigation measures reduced both the intensity and likelihood of impact occurring, thereby reducing **Major** and **Moderate** impacts to **Minor**.

7.11.2.2 Flora

For the 145 plant species recorded from Study Area and selected for the assessment of ecological impacts, the most severe impacts during the operational phase before mitigation measures were theoretically implemented are **Major** for 60 species and **Moderate** for six species.

Following the implementation of mitigation measures, the impacts on these 66 plant species would, theoretically, be reduced **Minor** for all 66 species.

Prior to the implementation of mitigation measures, the 66 species likely to experience **Moderate** to **Major** impacts owing to mortality are *Bambusa vulgaris*, *Ficus benghalensis, Ficus elastica, Ficus lyrata, Samanea saman*, and *Thyrosrachys siamensis* (**Moderate**) and 60 native species (**Major**). With the appropriate mitigation measures discussed above for the Study Area, i.e., plant native species instead of exotic or cryptogenic species in the Study Area, the likelihood will be reduced to **Less Likely**. This results in a **Minor** impact significance for all 66 species.

7.11.2.3 Fauna

During operational phase, disturbances to fauna are expected in the form of noise, light and human presence from the surrounding residential areas. For diurnal species, higher noise levels from human activities may affect their rhythmic patterns and may reduce the suitability of habitats. Similarly, the higher noise and light levels may reduce the suitability of habitats for nocturnal species resulting in less-than-optimal condition for nocturnal species to move and forage. Buffers together with the implementation of shielded lighting and other street lighting strategies throughout the residential development during the operational phase as a mitigation measure might reduce the likelihood of light disturbances from **Likely** to **Less Likely**; this reduced the impact significance from **Moderate** to **Minor**.

Ground dwelling, forest-dependent, short distance or low flying species can potentially benefit from the creation or retention of vegetation connectivity through the Study Area for faunal movement during the construction phase. This is especially so if the connecting vegetation is landscaped to replicate the vegetation structure of a forest corridor. Retention of the native-dominated secondary forest in Bukit Chermin that birds are currently using for connectivity to the Southern Ridges would aid in forest and ecological connectivity. In this regard, the residual impact from loss of ecological connectivity could be mitigated to **Minor** for all species that were experiencing **Moderate** and **Major** impacts.

With bird-friendly designs in place, the impact significance from injury and mortality from bird collisions can be reduced from **Moderate** to **Minor**. The installation of traffic calming measures and culverts to slow traffic down within the residential area would also help to reduce the incidence of injury and mortality of mammal species through roadkill, thus reducing the impact from **Major** to **Minor**. In addition, human-wildlife management mitigating measures mention in Section 7.10.3 and Section 7.10.4 can also help reduce injury or mortality impacts.

The ease of accessibility to intertidal zones in Berlayer Creek and Labrador Park during the operation phase of the development is likely to lead to **Major** and **Moderate** impacts arising from human disturbance and from the risk of injury and mortality respectively for many of the marine fauna identified during the baseline surveys. These impacts, when mitigated through the use of educational posters throughout the residential area and through the creation of barriers to access these intertidal areas, could reduce the likelihood of occurrence from **Possible** to **Less Likely**; therefore impacts of human disturbance were reduced from **Moderate** to **Minor**.

7.12 Summary of Key Findings

Table 7-30 Summary of biodiversity impact assessment

Potential Source of Impact	Impact Significance with Minimum Control	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase		
Habitats	Negligible – Major	Negligible – Major
Flora	Negligible – Major	Negligible – Major
Fauna	Negligible – Major	Negligible – Minor
Operational Phase		
Habitats	Negligible – Major	Minor
Flora	Negligible – Major	Minor
Fauna	Negligible – Major	Minor

8 Hydrology, Hydrodynamic and Water Quality

8.1 Introduction

This section includes the assessment of baseline conditions of hydrology, hydrodynamic and water quality within the Assessment Area (as defined in Section 6.2.1), as well as the evaluation of the potential impacts on them, arising from activities during Project's construction and operational phases. Based on the analysis of primary (e.g. visual observations during site reconnaissance and surveys, hydrological surveys [i.e. dry and wet weather conditions] and surface water quality sampling, etc.) and secondary data (e.g. publicly-available secondary data and data provided by the Client) baseline conditions have been established and presented. These findings were subsequently used to analyse the changes that might occur due to the impacts associated with assumed activities during construction and operational phases of the Project (refer to Section 3 of this report). Sensitive receptors were identified and classified according to the sensitivity categorization as defined in Section 6.2.2 of this Report. As part of impact prediction, potential sources of impact from the Project that could affect the identified sensitive receptors and the minimum controls put in place to reduce them were also described. Based on the baseline survey, an impact evaluation (refer to Section 8.7) and EMMP development (refer to section 12) were carried out.

The scope of work of the hydrological and surface water quality impact assessment consisted of:

- Review of data provided by the Client and desktop research of publicly available data to understand the topographic characteristics of the Assessment Area;
- Site reconnaissance survey for a better understanding of the Assessment Area's topography, hydrology, land cover and existing watercourses with their properties (i.e. locations, water flow conditions and bank characteristics);
- Identification of sampling locations for in-situ and ex-situ surface water quality analysis of existing watercourses located within the Assessment Area;
- Hydrological and surface water quality impact analysis to assess the potential impacts of the Project during construction and operational phases;
- Proposal of mitigation measures to mitigate the potential impacts; and
- Proposal of EMMP to manage and monitor potential impacts of the Project during construction and operational phases

8.2 Methodology and Assumptions

This section details the methodology used on hydrology and surface water quality for

- Baseline study; and
- Impact assessment.

8.2.1 Hydrology and Surface Water Quality Baseline Study

Hydrology and surface water quality baseline study was carried out by the combination of desktop research (i.e. review of publicly available secondary data, data provided by the Client, previous studies carried out within the Study Area or its vicinity) and field surveys (including the collection and analysis of primary data such as surface water quality and visual observations during site surveys). Subsequently, this data was collated, analysed and compared to the selected criteria, where applicable (refer to the section 8.4.2.2). Following sub-sections detail the methodologies used for data collection and analysis of the collected baseline data.

8.2.1.1 Data Collection Methodology

8.2.1.1.1 Desktop Research

Desktop research consisted of a review of secondary data (including existing topographic data, vegetation cover, existing land use and development activities, satellite images, etc.) which aided in determining the location of

existing watercourses within the Assessment Area. The topographic survey data provided by the Client and surveyor, as well as catchment map (i.e. the source of water flow to existing reservoirs) from PUB website [W-1] were used to support the findings of the hydrological survey. The information, retrieved during the desktop research, comprised of publicly available data from government and technical agencies, existing available data (e.g. online satellite images), as well as published books, relevant articles, and other online sources.

8.2.1.1.2 Field Survey and Sampling Events

The activities performed as part of the field assessment included the following:

- Evaluate the accessibility of the watercourses through existing tracks;
- Verify the information collected from the available topographic surveys and satellite images;
- Identify and map out the location of existing watercourses within the Assessment Area;
- Determine the flow conditions and bank characteristics of the identified watercourses during dry and wet weather conditions; and
- Observe water quality indicators in existing watercourses within the Assessment Area (e.g. physical parameters such as colour, turbidity, odour, etc).

8.2.1.1.2.1 Hydrological Survey Methodology

The hydrological survey was conducted by casual exploration methods to identify and outline existing watercourses within the Assessment Area. The watercourse conditions, such as stream bank characteristics (e.g. natural bank or artificial bank), and flow velocity were identified based on visual observations and professional experience. A Global Positioning System (GPS) device was used to track the hydrological survey route. The GPS data was then synchronised with the photos taken on-site to identify the exact location of identified watercourses.

8.2.1.1.2.2 Surface Water Quality Sampling Methodology

As mentioned in the sub-section above, the watercourses present in the Assessment Area were identified during hydrological site surveys. Subsequently, sampling locations were selected at identified watercourses to collect surface water samples that would accurately represent the baseline surface water quality.

In order to get comprehensive data that is representative of baseline conditions of surface water quality and to capture the possible changes in water quality parameters over time and different events, identified watercourses were sampled during both dry weather and wet weather conditions. Dry weather conditions are defined as conditions after a continuous 48-hour period of no-rain, while wet-weather conditions are defined as a rainfall event having more than 10mm of rainfall, with samples to be collected within three (3) hours after the rain stops. Two (2) dry weather (“normal conditions”) and one (1) wet weather samples were collected from majority of water quality stations.

Surface water samples were collected and were tested in-situ and ex-situ for a range of physical and chemical parameters.

In-situ water quality parameters assessed in this study were all measured using a calibrated multi-parameter digital sensor (YSI ProDSS) with United States Environmental Protection Agency (USEPA) approved testing methods for water quality parameters and included:

- Temperature;
- pH;
- Salinity/Conductivity; and
- Dissolved oxygen (DO).

The ex-situ parameters that were analysed by Marchwood Laboratory Services Pte Ltd (MLS) are listed below:

- Total Nitrogen (TN);
- Total Dissolved Solids (TDS);
- Total Phosphorus (TP);
- Ammoniacal Nitrogen (NH_4-N);
- Nitrates (NO_3-N);
- Orthophosphate (PO_4).
- Total Suspended Solids (TSS);
- Turbidity;

- Total Organic Carbon (TOC);
- Enterococcus; and
- Lead (Pb).

8.2.2 Baseline Data Analysis and Assessment Methodology

The activities performed as part of the analysis and assessment of baseline data included the following:

- Analysis and manipulation of collected data by using various specialized software programmes;
- Evaluation of the accuracy of collected primary data and comparison and coupling with relevant available secondary data;
- Development of maps and figures for better understanding and comparison of data; and
- Comparison of data to selected criteria.

8.2.2.1 Topography and Hydrology Baseline Data Assessment

The elevation and slope maps of the Assessment Area were developed based on surveyed topographic survey data using GIS technique. In order to determine the exact locations of each of the identified watercourses, GPS data from surveys was synchronised with the photos taken on site. Catchment analysis was conducted based on surveyed topographic data, publicly available catchment map of Singapore developed by PUB [W-1], previously developed elevation and slope maps. Catchment delineation is considered to be very important information in order to identify the main sources of water that feed each of the watercourses within the Assessment Area and also to understand how the runoff flows within the site.

8.2.2.2 Water Quality Baseline Assessment Criteria

The baseline water quality of the watercourses located within the Assessment Area was determined by comparing the selected parameters against the NEA Trade Effluent Discharge Limits for uncontrolled watercourses [R-26]. This comparison could be used to determine whether the existing baseline water quality of the watercourses within the Assessment Area compiles with NEA limits or already exceeds these limits. However, the NEA Trade Effluent Discharge limits does not provide criteria for the preservation and growth of aquatic life locally. To assess the water quality for few beneficial uses such as recreational water, coastal habitats of coral reefs, seagrass and mangroves in the coastal waters, the baseline water quality was compared to ASEAN Marine Water Quality Criteria (AMWQC) [R-25]. This ambient water quality criteria provide a benchmark for evaluation of marine environments for aquatic life protection and human health protection. To assess whether the surface water quality within the Assessment Area is suitable for aquatic life, selected parameters were compared to water quality criteria for aquatic life from other countries (i.e. United States (USEPA) [R-20], Australia & New Zealand [R-21], Canada [R-22], Philippines [R-23], and Malaysia [R-24], as well as criteria set up by international organisations including United Nations Economic Commission for Europe [R-18] and World Health Organization [R-19]. The relevant limits and guidelines for water quality parameters were summarised in Table 8-1; however, where no guidelines exist, the monitored results would be considered as the baseline.

Table 8-1 Water quality guidelines and criteria

Parameter	NEA Trade Effluent Discharge Limits[1]	ASEAN Marine Water Quality Criteria [2]	Criteria for Aquatic life[3]
pH	6 - 9	-	6.5 – 8.5
Temperature (˚C)	≤ 45	≤ 2°C above the maximum ambient temperature	-
Salinity (PSU)	-	-	-
Conductivity (µS/cm)	-	-	-
Dissolved Oxygen, DO (mg/L)	-	≥ 4.0	-
Turbidity (NTU)	-	-	≤ 10
Total Dissolved Solids, TDS (mg/L)	-	-	-

Parameter	NEA Trade Effluent Discharge Limits[1]	ASEAN Marine Water Quality Criteria [2]	Criteria for Aquatic life[3]
Total Suspended Solids, TSS (mg/L)	≤ 50	≤ 10 % increase over seasonal average	-
Total Organic Carbon, TOC (mg/L)	-	-	-
Total Phosphorous, TP (mg/L)	-	-	Marine inshore: ≤ 0.015 Marine offshore: ≤ 0.010
Orthophosphate, PO_4-P (mg/L)	≤ 1.625 (equivalent to 5 as PO_4)	Coastal water: ≤ 0.015 (equivalent to 0.045 as PO_4)	-
Total Nitrogen, TN (mg/L)	-	-	≤ 0.1
Ammonium Nitrogen, NH_4-N (mg/L)	-	≤ 0.07	-
Nitrate, NO_3-N (mg/L)	-	≤ 0.06	-
Enterococcus[4]	-	≤ 35	≤ 200
Lead, Pb (µg/L)	≤ 100	≤ 8.5	-

Note:

(1). NEA Trade Effluent Discharge Limits for discharge into an uncontrolled watercourse.

(2). ASEAN Marine Water Quality Criteria – for aquatic life protection and for human health protection.

(3). The sources of international water quality criteria for aquatic life include United Nations Economic Commission for Europe [R-18], World Health Organization [R-19], USEPA [R-20], Australian & New Zealand [R-21], Canada [R-22], Philippines [R-23], and Malaysia [R-24].

(4). Singapore's Water Quality Guidelines for Recreational Beaches [W-14] requires that the Enterococcus count should be less than or equal to 200 counts per 100 millilitres of water at 95% of the time for public safe access to the water.

8.2.3 Methodology for Impact Assessment

The detailed prediction and evaluation methodologies for Project impacts on hydrology and surface water quality during construction and operational phases have been described in following sections.

8.2.3.1 Qualitative Impact Assessment

The potential impacts from Project on hydrology and surface water quality will be assessed through qualitative approach based on primary and secondary data, technical experiences on previous projects and the understanding of the Project's activities of construction and operational phases. The potential sources of Project impacts and the potential environmental parameter affected, and associated Impacts will be identified accordingly based on planned Project's activities. To collect primary and secondary data, the baseline condition of Assessment Area will be studied through site reconnaissance and surveys as well as existing information provided by the Client. Subsequently, potential sensitive receptors will be identified based on the baseline study. Each sensitive receptor will be assessed, and each impact will be evaluated its significance based on assessment criteria as provided in Section 6.4.

8.2.3.2 Quantitative Impact Assessment

8.2.3.2.1 Numerical Modelling Approach

MIKE 21 FM is a software used for 2D modelling of hydrodynamics, waves, sediment dynamics, water quality and ecology. It is a modular product and includes simulation engines that are aimed at a very wide range of applications. These include modelling of tidal flows, storm surge, advection-dispersion, oil spills, water quality, mud transport, sand transport, harbour disturbance and wave propagation.

Model Setup

Flexible mesh was created for the whole model grid using MIKE Zero Mesh Generator. Coarse grid cell size is applied at the further offshore area while a finer grid cell size is used for the area of Study Area and its surroundings as illustrated in Figure 8-1. The bathymetry data along the Berlayer Creek and offshore area which obtained from surveys and AECOM's internal resource were incorporated in the model. The boundary of the grid was generated from Global Tide Model (GTM). GTM utilised the latest 17 years' multi-mission measurements from

TOPEX/Poseidon, Jason-1 and Jason-2 satellite altimetry for sea level residual analysis. Based on these measurements, harmonic constituents have been calculated. The major constituents in the tidal spectra were extracted as boundary. The provided constituents consider the semidiurnal M2, S2, K2, N2, the diurnal S1, K1, O1, P1, Q1 and the shallow water constituent M4. The flow discharges from upstream and Berlayer Creek have been incorporated in the model setup.

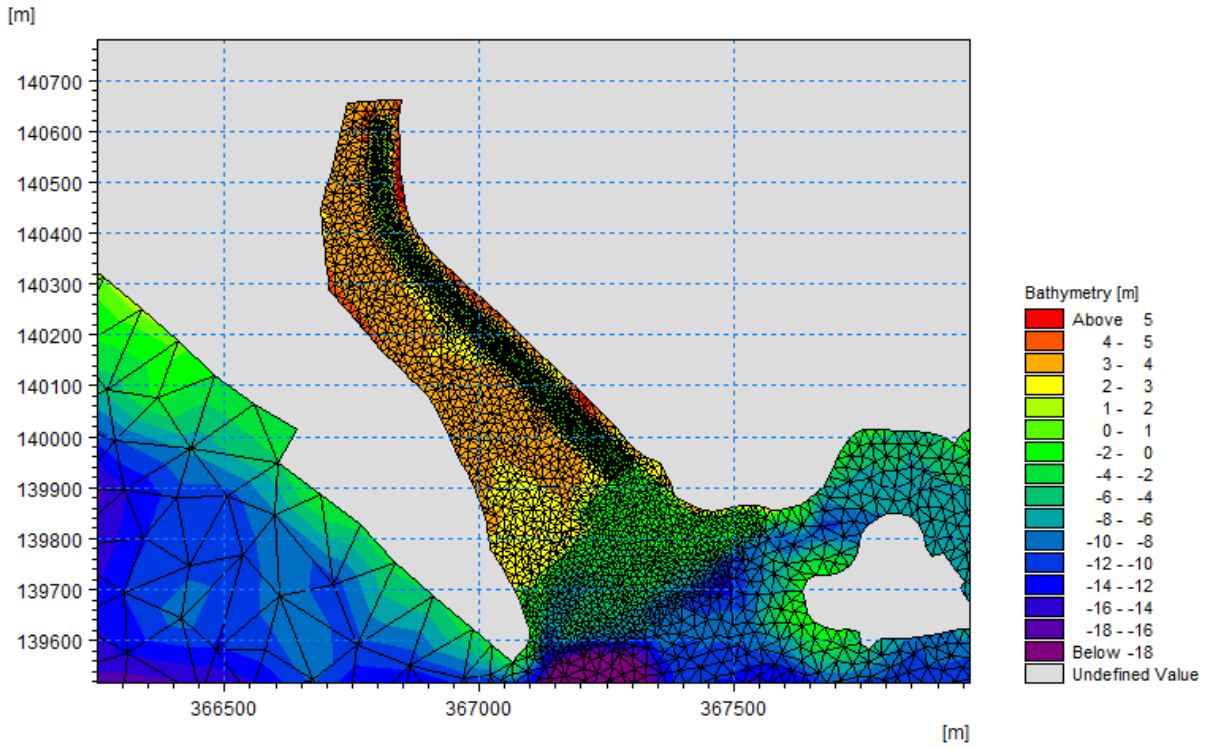


Figure 8-1 Model Grid with its Bathymetry at the Assessment Area

8.2.3.2.2 Model Validation

The model had been calibrated and validated in AECOM's other projects. In this Project, the performance of model has been verified through model validation with the tidal measurements at the tidal stations where are near the Assessment Area. The purpose of model validation is to identify the numerical expression of discrepancy between model and monitoring data. The hydrodynamic model has been calibrated with the tidal measurements as summarised in Table 8-2. The indicative location of tidal measurement stations near the Assessment Area are shown in Figure 8-2.

Table 8-2 Tidal Information Applied for Model Calibration

Measurement Station	Calibrated Parameter	Calibrated Duration	Data Source
Bukom	Tidal Level	10 December 2020 – 24 December 2020	MPA
West Coast	Tidal Level	10 December 2020 – 24 December 2020	MPA



Figure 8-2 Indicative Locations for Bukom and West Coast Tidal Stations

By referring to UK Foundation for Water Research Publication Ref FR0374 'A framework for marine and estuarine model specification in the UK', the performance criteria for the current forecast model can be described as in Table 8-3.

Table 8-3 RMS Criteria Applied for Model Validation

Parameter	Criteria for RMS	Criteria for RMS (error)
Tidal Level	Root Mean Square (RMS) (error) < 15% on spring tide and < 20% on neap tide ranges	< 0.33 m

The model validation result for tidal level is shown in Figure 8-3 and Figure 8-4. Based on the comparison of the time-series data, the simulation results matched with the measurements data of the tidal stations. Based onTable 8-4, the RMS errors were within the criteria for tidal level parameter. Therefore, it is concluded that the hydrodynamic model is valid to be applied in the hydrodynamic and subsequent impact assessment.

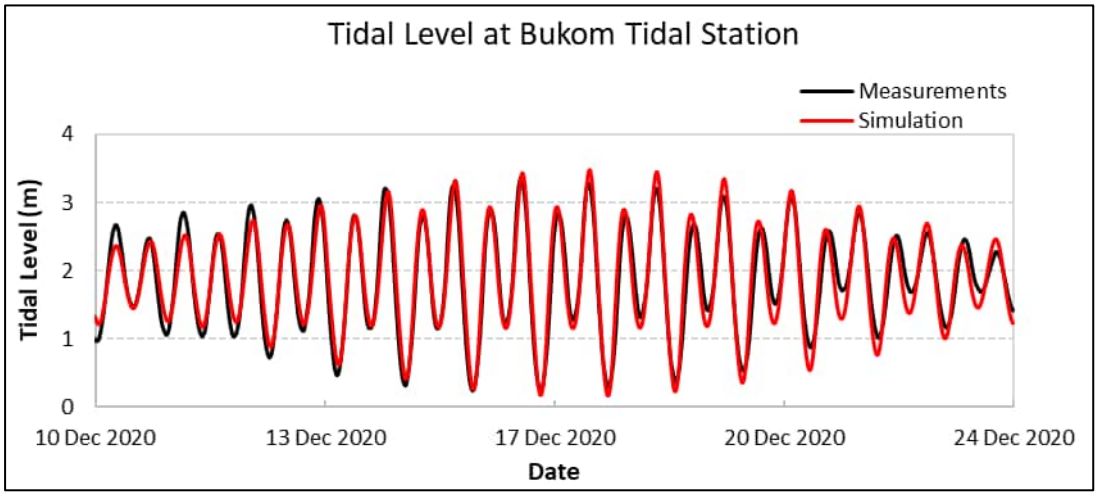


Figure 8-3 Comparison of Measured and Simulated Water Levels at Bukom Tidal Station

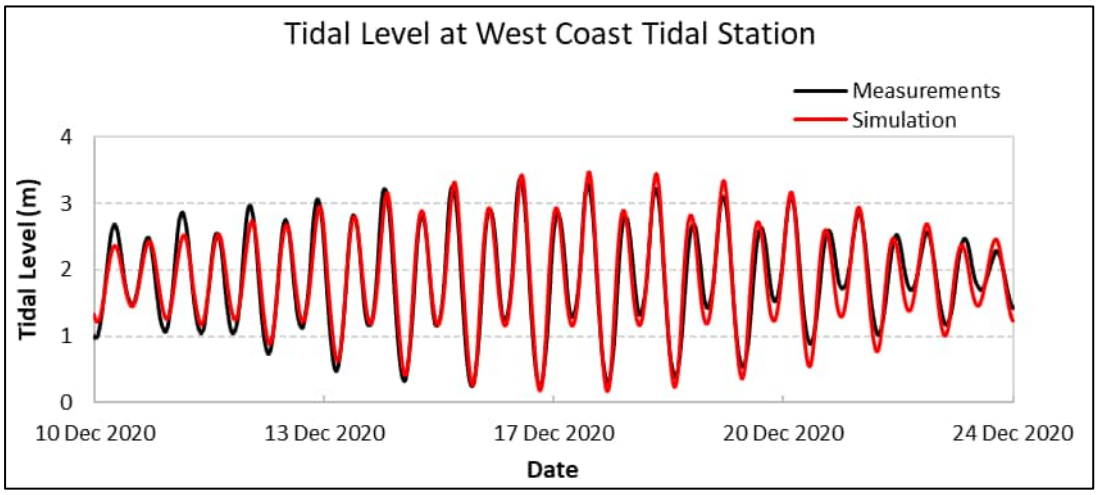


Figure 8-4 Comparison of Measured and Simulated Water Levels at West Coast Tidal Station

Table 8-4 RMS Results for Model Validation

Calibrated Parameter	Measurement Station	RMS (error)	Criteria for RMS (error)
Tidal Elevation	Bukom	0.21m	0.33m
	West Coast	0.21m	0.33m

8.2.3.2.3 Storm Water Management Model (SWMM)

In this study, a Storm Water Management Model (SWMM) was used to model hydrological processes that are occurring within the Assessment Area. SWMM is a dynamic rainfall-runoff software developed by the USEPA that contains the necessary complex algorithms for runoff routing and can be used for a single event or long-term continuous simulation of stormwater runoff.

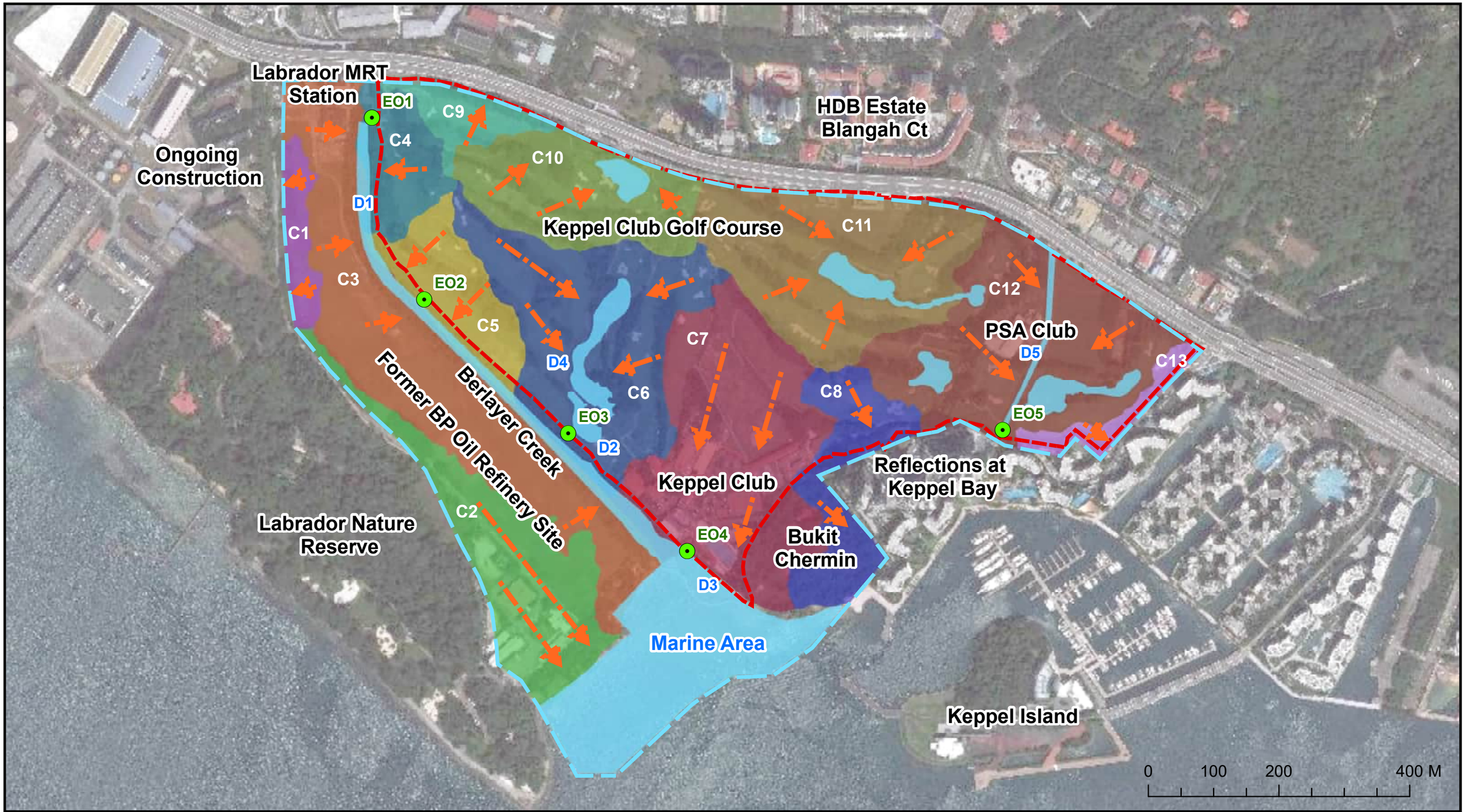
For the purposes of flooding analysis, SWMM simulation was carried out for 25-year return period design rainfall events with climate change impact with different length. Design rainfall event was provided by PUB. For the rest of the quantitative analyses (i.e. hydrodynamic, sediment plume and salinity) typical rainfall event of the area (based on measured data) was simulated.

Two separate models have been developed to simulate the hydrological processes for existing conditions and for future conditions (based on proposed future land use plan provided by the Client).

For simulation of the existing hydrological conditions, 13 catchments and 5 main outlets were identified in the Assessment Area. The SWMM modelling method was applied to calculate the runoff from these catchments. The ratio between impervious and pervious areas within each of the formed sub-catchments was based on the observed site conditions (i.e. during site visits) and collected secondary data, while the other relevant parameters (e.g. Manning's roughness coefficient, n) were based on the previous experience on similar projects, international practices and guidelines. Other catchment characteristics, such as slopes and lengths were determined using GIS analysis. GIS analysis was also used to estimate lengths, slopes and dimensions of receiving drains. The simulated discharges from the existing sub-catchments are provided as shown in Figure 8-5.

For simulation of future conditions, the Assessment Area has been divided into sub-catchments that correspond to the proposed land use and drainage plan as provided by the Client.

The Dynamic Wave routing model and Horton infiltration method were selected for rainfall- runoff simulations and baseflow estimation for all SWMM models. Resulting discharges from sub-catchments were subsequently used as inputs for more complex hydrodynamic, sediment plume and salinity models that simulated the processes occurring along Berlayer Creek and the Marine Area (refer to the Section 8.2.3.2.4 and Section 8.2.3.2.5 of this Report).



Legend

- Existing Main Discharge Outlets
- Overall EIS Study Area
- Development Area
- Watercourses
- Water Flow Direction

Catchment

C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD, URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

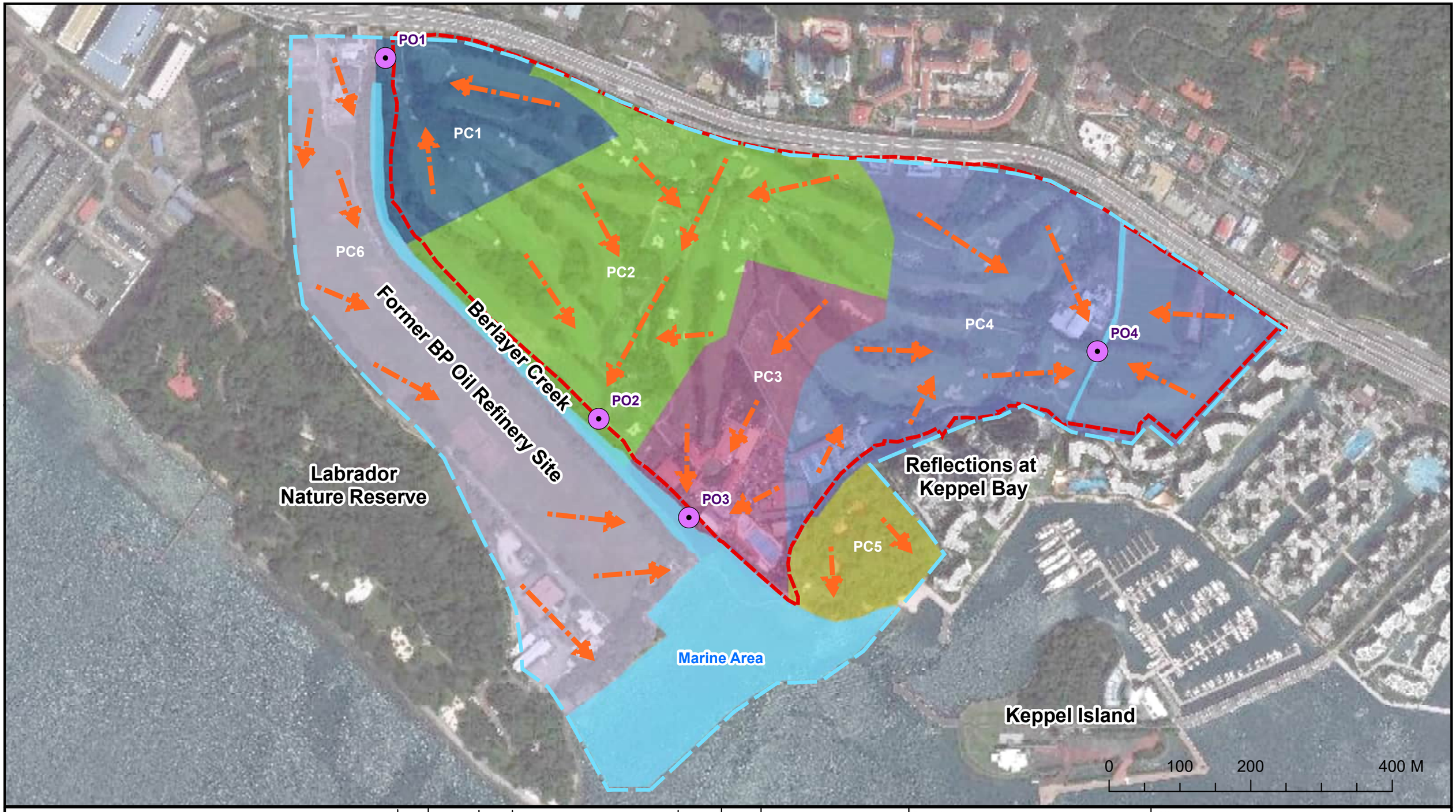
Figure Title :

Catchment map with existing main discharge outlets in the EIS Study Area

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JAC	NHT	JAG	8-5	-	1 of 1
	Drawn JAC	Date APR 2022	CAD File Name : NA		A3

Note: Source of basemap - Google Earth Map

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Legend

- Proposed Discharge Outlets
- Overall EIS Study Area
- Development Area
- Watercourses
- Water Flow Direction

Proposed Catchment

- PC1
- PC2
- PC3
- PC4
- PC5
- PC6

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Proposed catchment map with proposed outlets in Development Area

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JAC	NHT	JAG	8-6	-	1 of 1
	Drawn JAC	Date APR 2022	CAD File Name : NA		A3

Note: Source of basemap - Google Earth Map

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8.2.3.2.4 Hydrological Flooding Impact Assessment

The land use change from the proposed development may potentially affect the existing hydrological condition of Assessment Area, Berlayer Creek and coastal area. For instance, flooding issue due to an increase of peak flow discharge during the operational phase. Therefore, the flooding impact assessment was carried out using MIKE 21 Flow Model FM modelling software. The flooding impacts will be assessed through scenario of baseline condition and operational phase of proposed development as described in Table 8-5. The catchment discharges from the rainfall-runoff were generated from SWMM model and acted as inputs to the hydrological model. The catchment discharges include:

- The flows from the upstream catchment of the Berlayer Creek, which were provided by PUB; and
- The flows from the development area.

Climate change has been considered in the worst-case scenario of 25 years storm event in 4 hours duration simulation.

Table 8-5 Scenarios for hydrological flooding impact assessment

No.	Scenario	Simulation Period	Description
1	Baseline	9 hours duration	▪ Land use: Pre-construction stage ▪ Hydrological event: 25-year return period rainfall event with climate change consideration
3	Operational phase	9 hours duration	• Land use: Final profile after construction with proposed drainage master plan or proposed main stormwater outlets from the development will be used. • Hydrological event: 25-year return period rainfall event with climate change consideration

8.2.3.2.5 Hydrodynamic Impact Assessment

Hydrodynamic modelling to be used to assess the hydrodynamics impacts due to the discharge from construction sites into marine environment, such as flow current and direction of the coastal area surrounding the Study Area during the construction period. The MIKE 21 Flow Model FM modelling software will be used to develop the hydrodynamic model, which AECOM will then use to assess the existing hydrodynamic conditions and the impacts from the construction and post- construction phases on the local hydrodynamics.

The production periods were SW and NE monsoon seasons in 2021, and each monsoon season covered a 14-day spring-neap tidal cycle. Typical 14-day rainfall-runoff catchment discharges generated from SWMM model had been included in the hydrodynamic model. The catchment discharges include:

- The flows from the upstream catchment of the Berlayer Creek, which were provided by PUB; and
- The flows from the development area.

The model scenarios are tabulated in Table 8-6.

Table 8-6 Scenarios for hydrodynamic impact assessment

No.	Scenario	Simulation Period	Description
1	Baseline	• SW monsoon • NE monsoon	▪ Land use: Pre-construction stage ▪ Hydrological event: Typical 14-day rainfall record.
2	Operational phase	• SW monsoon • NE monsoon	• Land use: Final profile after construction with proposed drainage master plan or proposed main stormwater outlets from the development will be used.

No.	Scenario	Simulation Period	Description
			• Hydrological event: Typical 14-day rainfall record.

Based on the model simulation results, quantitative methods to evaluate the impacts on the hydrodynamics include:

- Current field at peak flood and peak ebb tides;

  One of the most important assessment of changes in current condition is the changes in current fields. The changes in the form of shear zones and eddies are the key indicator of potential impacts. Therefore, current vector plots showing current field at both flood and ebb tides will be presented to assess potential impacts on current field.

- Statistical 2D maps of mean flow current for the conditions for the baseline scenario, construction phase and operational phase, and the differences between the construction phase and the baseline scenario, and the differences between the operational phase and the baseline scenario.

  Mean current speed is the numerical statistical mean of the current speeds at any given point over the 14-day simulation period.

  The differences in mean current speed are defined as:

  Differences in mean current (m/s) = Mean current speed in construction/operational phase (m/s) - Mean current speed in baseline (m/s)

- Statistical 2D maps of maximum flow current for the conditions for the baseline scenario, construction phase and operational phase, and the differences between the construction phase and the baseline scenario, and the differences between the operational phase and the baseline scenario; and

  Maximum current speed is the numerical statistical maximum of the current speed at any given point over the 14-day simulation period.

  The differences in maximum current speed are defined as:

  Differences in max current (m/s) = Max current speed in construction/operational phase (m/s) - Max current speed in baseline (m/s)

- Statistical 2D maps of the representative current speeds of 0.5 knot (slack water), 2.5 knot and 3.5 knot for the baseline scenario, construction phase and operational phase, and the differences between the construction phase and the baseline scenario, and the differences between the operational phase and the baseline scenario.

  The changes in the representative current speeds will be presented in the exceedance approach as it indicates the important information of the duration. This is a useful way for interpreting current impacts on navigation and berthing activities.

  The exceedance in general was defined as the percentage of the time over the assessment period (14 days in this study) that the current speed was greater than the defined representative value. For example, in the event that the current is stronger than 2.5 knots for 6 hours per day, the percentage of exceed on this event will be 25%.

  Three representative current speeds were chosen for the impact assessment in this study: 0.25 m/s, 2.5 knot and 3.5 knot.

- The current speed of 0.25 m/s is based on MPA's standard definition of slack water (0.5knots), which is an important measure (restriction) for certain marine operations in the area;
- The current speed of 2.5 knot represents MPA berthing limit; and
- The current speed of 3.5 knot represents MPA fairway limit.

The impact of percentage exceedance in the above each representative current speed is defined as below:

Difference in exceedance (%) = Percentage of exceedance in Construction/Operational phase (%) - Percentage of exceedance in base case (%)

8.2.3.2.6 Sediment Plume Impact Assessment

Sediment plume modelling was used to assess the sediment plume impacts due to the discharges into marine environment originating from proposed activities during construction phase of the Project. The MIKE 21 Flow Model FM- Mud Transport module was used to develop the sediment plume model, which AECOM then used to assess the impacts of the Project's discharge on the formation of sediment plume, if any.

The production period will be same as the period used in the hydrodynamic impact assessment, covering a 14-day spring-neap tidal cycle for both SW and NE monsoons. The model will assess the impacts of suspended sediment concentrations (SSC) released from the construction site. The model scenario is tabulated in Table 8-7.

Table 8-7 Scenarios for sediment plume impact assessment

No.	Scenario	Simulation Period	Description
1	Baseline	• SW monsoon • NE monsoon	• Land use: Pre-construction stage • Hydrological event: Typical 14-day rainfall record
2	Construction - Phase	• SW monsoon • NE monsoon	Assume the Contactor would discharge the site construction water with: • TSS = 50mg/L (NEA benchmark for construction site discharge)

To assess the sediment plume impacts, the model simulation results will be processed and presented as below:

- 2D plots of mean excess SSC
- 2D plots of percentage of exceedance plots of incremental SSC greater than 5 mg/L, 10 mg/L and 25 mg/L
- Discussion of the significance of the identified changes on various environmental receptors

8.2.3.2.7 Morphological Impact Assessment

The same sediment plume modelling which is used to assess the sediment plume impacts to be used to assess the morphological impacts. The production period will be same as the period used in the hydrodynamic impact assessment, cover a 14-day spring-neap tidal cycle within a particular month.

The sediment plume model will be used to simulate the scenarios for baseline, the construction phase and, on which AECOM will assess the morphological impacts raising from the construction works. The morphological analysis will also be performed for the post construction phase, to assess the morphological impacts arising from the final profile of the Assessment Area. The model scenarios are tabulated in Table 8-8.

Table 8-8 Scenarios for morphological impact assessment

No.	Scenario	Simulation Period	Description
1	Baseline	• SW monsoon • NE monsoon	• Land use: Pre-construction stage • Hydrological event: Typical 14-day rainfall record
2	Operational phase	• SW monsoon • NE monsoon	Proposed Land Use Plan and proposed Drainage Catchment Plan

To assess the morphological impacts, the model simulation results will be processed and presented as below:

- 2D plots of the increase in sedimentation thickness

8.2.3.2.8 Quantitative Salinity Impact Assessment

Salinity modelling is to be used to assess the salinity impacts due to the changes in rainfall runoff flows altered from the land use changes at construction sites. The salinity model will be setup based on the MIKE 21FM modelling software together with using findings from hydrological analysis. AECOM applied the salinity model to assess the impacts from the Operational phases on the salinity conditions in Belayer Creek.

The production period will be consistent with the hydrodynamic impact assessment, covering a 14-day spring-neap tidal cycle in SW and NE monsoons, which has been chosen as representative of a typical 14-day rainfall record which may contain more than one (1) rainfall event. The model scenarios are tabulated in Table 8-9.

Table 8-9 Scenarios for salinity impact assessment

No.	Scenario	Simulation Period	Description
1	Baseline	• SW monsoon • NE monsoon	Land use: Pre-construction stage Hydrological event: Typical 14-day rainfall record.
3	Operational phase	• SW monsoon • NE monsoon	Land use: Final profile after construction with proposed drainage master plan or proposed main stormwater outlets from the development will be used. Hydrological event: Typical 14-day rainfall record.

To assess the salinity impacts, the model simulation results will be processed and presented as below:

- 2D plots of changes in salinity within Belayer Creek and Marine Area in the vicinity.

8.3 Potential Sources of Hydrology and Surface Water Quality Impacts

This section discusses the potential environmental impacts arising from the construction and operational phases of the Project.

8.3.1 Construction Phase

Nearby watercourses could be potentially exposed to hydrological flow change and surface water contamination due to the activities taking place during the Project's construction phase. The sources that could potentially impact on the watercourses' quality and quantity include, but are not limited to, those listed in Table 8-10.

Table 8-10 Potential hydrology and water quality impacts during the construction phase

Activity	Potential Source of Impacts	Potential Environmental Parameter Affected and Associated Impacts
Land clearing, earthworks and excavation, building construction (e.g. road widening, holding areas and site office) activities	• Run-off from exposed soil surface, earth work areas, soil stockpiles; • Stormwater/groundwater pumped out from excavated areas; • Run-off from dust suppression sprays; • Heavy rain during construction; • Altering existing drainage system within the Study Area; and • Change in land use due to proposed development (increase impervious surface and reduce seepage to soil).	Hydrology: • Increased stormwater peak flow contributions to the channel can lead to increased water level and subsequent flooding of surrounding areas adjacent to the watercourses due to the land use change from land clearing; • Altered dry weather flow which can lead to impact on downstream aquatic habitats and communities; • Stormwater run-off from exposed and unstable slopes may cause soil erosion and accretion; • Increased water flow velocity and water level of watercourses due to changed land use, leading to erosion along the watercourses; and • Flooding risk due to alteration of existing drainage system.
	• Run-off from exposed soil surface, earth work areas, soil stockpiles; • Stormwater/groundwater pumped out from excavated areas; • Release of grouting and cement materials; • Run-off from dust suppression sprays; • Elevated suspended solids (e.g. silt and sediment) in site run-off due to heavy rain; • Spoil generation, handling and transport; • Heavy rain during construction; • Altering existing drainage system within the Study Area; and • Change in land use due to proposed development (increase impervious surface and reduce seepage to soil).	Surface Water Quality: • Elevated levels of suspended solids leading to increased turbidity and sedimentation rates, solid waste, toxic material, etc; and • Increase in the levels of oil, grease, and other chemical substances. • Potential change in salinity in Berlayer Creek if there is increased surface run-off or significant change in dry weather flow contributing to the creek from upstream catchment and tributaries.
Storage and disposal of liquid and solid wastes	• Improper handling, transfer, storage, and disposal of spoil and solid waste (e.g. excavated earth, construction debris); • Improper management of sewage effluents from on-site; and • Inappropriate discharge of domestic sewage and poor maintenance of the	Surface Water Quality: • Stormwater contamination; • Elevated levels of suspended solids entering watercourses. The waste can also block the temporary drains leading to contamination of receiving watercourses; • Toxic waste generated at temporary work areas can lead to surface water quality contamination of nearby watercourses; and • Run-off increase in nearby watercourses and potentially contaminate the watercourses located adjacent to the construction sites.

Activity	Potential Source of Impacts	Potential Environmental Parameter Affected and Associated Impacts
	portable chemical toilet, storage tanks and septic tanks (e.g. overflow or overload).	
Use and storage of chemical substances, and refuelling activities	• Improper handling, transfer, and storage of chemical substances; • Accidental spill and leaks; and • Fuel and lubricants spillage from maintenance of construction vehicles and mechanical equipment.	Surface Water Quality (Improper management of chemical substances): • Stormwater contamination; • Elevated levels of oil, grease and other chemical substances in the nearby watercourses; and

8.3.2 Operational Phase

Watercourses can potentially be exposed to hydrological flow change and surface water contamination due to the activities taking place during the Project's operational phase. The sources that could potentially impact on watercourses' quality and quantity include but are not limited to those listed in Table 8-11.

Table 8-11 Potential hydrology and water quality impacts during the operational phase

Activity	Potential Source of Impacts	Potential Associated Impacts
Permanent land use change	• Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to the surrounding watercourses; • Increase of runoff peak flow draining to the stream or drain during storm events due to the increase in urbanized area; and • Reduce the baseflow (sub-surface water discharge) due to the change in land use of the new development	Hydrology: • Increased stormwater peak flow contributions to the channel can lead to increased water level and subsequent flooding of surrounding areas adjacent to the stream/drain; • Stormwater run-off from exposed and unstable slopes may cause soil erosion and accretion; and • Increased flow velocity due to changed land use leading to erosion along the waterway. Surface Water Quality: • Elevated suspended solids (e.g. silt and sediment) and pollutants (e.g. heavy metals and nutrients from human activities) in site run-off; and • Potential change in salinity in Berlayer Creek if there is significant change in dry weather flow contributing to the Creek from upstream catchment and tributaries.

Activity	Potential Source of Impacts	Potential Associated Impacts
Improper management of liquid and solid wastes	• Accidental spill and leaks (e.g. during storm event); and • Improper handling, transfer, and storage of solid and liquid wastes (e.g. rubbish collection and sewage disposal);	Surface Water Quality: • Solid wastes generated from human activities can lead to elevated levels of suspended solids entering watercourses. The wastes can also block the watercourse and leading to contamination of receiving watercourses; and • Inappropriate discharge of liquid wastes to the watercourse results in contamination of nearby or downstream watercourses.

8.4 Baseline Hydrology and Surface Water Quality

This report is based on the site surveys and surface water samples collected until June 2021 (for detailed site visit programme refer to Table 6-3).

8.4.1 Baseline Monitoring Personnel

The assessment and site surveys were conducted by the following AECOM personnel:

- Dr. Thanh Nguyen (Technical Reviewer of Hydrology and Surface Water Quality);
- Dr. Liang Liang (Hydrology and Surface Water Quality Technical Lead);
- Ms. Jacquelynn Chia (Hydrology and Surface Water Quality Specialist); and
- Mr. Grujica Sarenac (Hydrology and Surface Water Quality Specialist).

8.4.2 Baseline Findings

8.4.2.1 Topographical and Hydrological Conditions in the Study Area

During the site reconnaissance, the team has identified multiple watercourses within Assessment Area, such as Berlayer Creek, concrete culverts, concrete drain and man-made ponds. For the purposes of this study, Berlayer Creek (denoted as D1 watercourse), two (2) concrete culverts (i.e. D2 and D3), one (1) man-made pond (D4) within Keppel Club golf course, concrete drain D5, and Marine Area were selected for sampling and are considered to be representative of baseline conditions. Their locations are shown in Figure 8-7. The baseline hydrological conditions in the Study Area were analysed based on site observations (refer to Table 8-12) and recent surveyed topographic data. For the hydrological survey at Keppel Club during wet weather, the site observation was carried out after notification of lightning alert cancellation from NEA Meteorological Service Singapore [W-17]. Photographic record (refer to Table 8-12) of each drain, culvert, pond and the Creek was made during every site survey. Subsequently, elevation and slope maps of the site were developed based on topographic data using GIS technique. They were then overlaid with hydrological network as shown in Figure 8-8 and Figure 8-9.

As shown in Figure 8-8, the elevation of the Keppel Club golf course and PSA Club ranges from 0.9 mRL to 31.0 mRL, with undulating terrain condition. In Keppel Club golf course, higher elevations could be observed at the northwest, central part and small northeast area of the Assessment Area. The low-lying areas in the centre and east of Keppel Club golf course are mostly watercourses such as man-made ponds and concrete drain. Besides, small hill of Bukit Chermin located at the southeast of the Study Area has elevation up to 31.7 mRL. The Former BP Oil Refinery Site has a relatively flat terrain with an elevation range of 2.5 mRL to 3.7 mRL. Along the Berlayer Creek D1, the depth from upstream to its downstream ranges from -0.1 mRL to 3.5 mRL. For the Marine Area of the Study Area, the depth level ranges from -0.1 mCD to -6.0 mCD from nearshore to deep sea area (refer to Figure 8-8). The significant steep slopes (more than 30%) could be observed in the northwest, central, southeast and northeast of the Study Area as shown in Figure 8-9. Mild slopes (15 - 30%) are also observed within the golf course and clubhouse of Keppel Club and PSA Club. The overall area of the Former BP Oil Refinery Site almost has no slope (less than 15%).

Based on the developed elevation map, the catchment delineation was carried out (refer to Figure 8-10). Catchment analysis shows that the water generally flows within thirteen (13) identified catchments of the Study Area. Small catchment of C1 at northwest of Study Area will flow to the drains along the boundary of the Study Area while the surface runoff of catchment C2 will flow to the Marine Area. The Berlayer Creek D1 receives surface runoff from its upstream catchment area, the Former BP Oil Refinery site (i.e. catchment C3), Keppel Club golf course (i.e. catchments of C4, C5, C6 and C7). Due to undulating terrain in the Keppel Club golf course, the direction of surface water flow varies and tends to flow to low-lying ponds (i.e. C6, C10 and C11) as shown in Figure 8-10. Concrete drain D5 collects the water from surroundings of PSA Club (i.e. catchment C12). A small catchment of C13 at east of Study Area and the runoff from the Bukit Chermin tends to flow to the drains which are along the boundary of Study Area. All the water flow along Berlayer Creek, concrete drain D5 and other drains along the boundary of Study Area will discharge to Marine Area eventually.

The baseline hydrological conditions in the Study Area were analysed based on site observations (refer to Table 8-12). Berlayer Creek D1 has slow perennial flow (i.e. ranging between 0.04 – 0.20 m/s) during dry and wet weather

conditions and the flow pattern (i.e. flow direction, flow rate and water level) is significantly influenced by the tidal flow. During flood tide, the flow along the Berlayer Creek is towards upstream and whereas during ebb tide, the flow of Berlayer Creek is observed flowing downstream. The concrete culvert of D2 is flowing perennially during dry and wet weather conditions (i.e. 0.03 – 1 m/s of flow velocity). The concrete culvert D3 has ephemeral flow and the measured flow velocity during dry and wet weather was below 0.06 – 1 m/s. The man-made pond D4 within Keppel Club golf course have earth bank with almost stagnant conditions and hence is equipped with aeration system. The concrete drain D5 which receives runoff from residential area north of the Study Area has a slow perennial flow with estimated observed velocities less than 0.3 m/s during both dry and wet weather (i.e. 0.27 and 0.04 m/s respectively). The runoff from Berlayer Creek D1, concrete culverts D2 and D3, man-made pond D4 within Keppel Club golf course and concrete drain D5 eventually drain into to the Marine Area near Berlayer Creek. The Marine Area near the mouth of Berlayer Creek is a mixing zone of freshwater, brackish water and sea water. The flow direction, flow rate and water level in the Marine Area (i.e. near the mouth of Berlayer Creek and Labrador Nature Reserve) varies, depending on the flood and ebb tides during spring and neap tidal periods.



Legend

- Overall EIS Study Area
- Development Area
- Watercourses

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Watercourses in EIS Study Area for the hydrology and surface water quality impact assessment

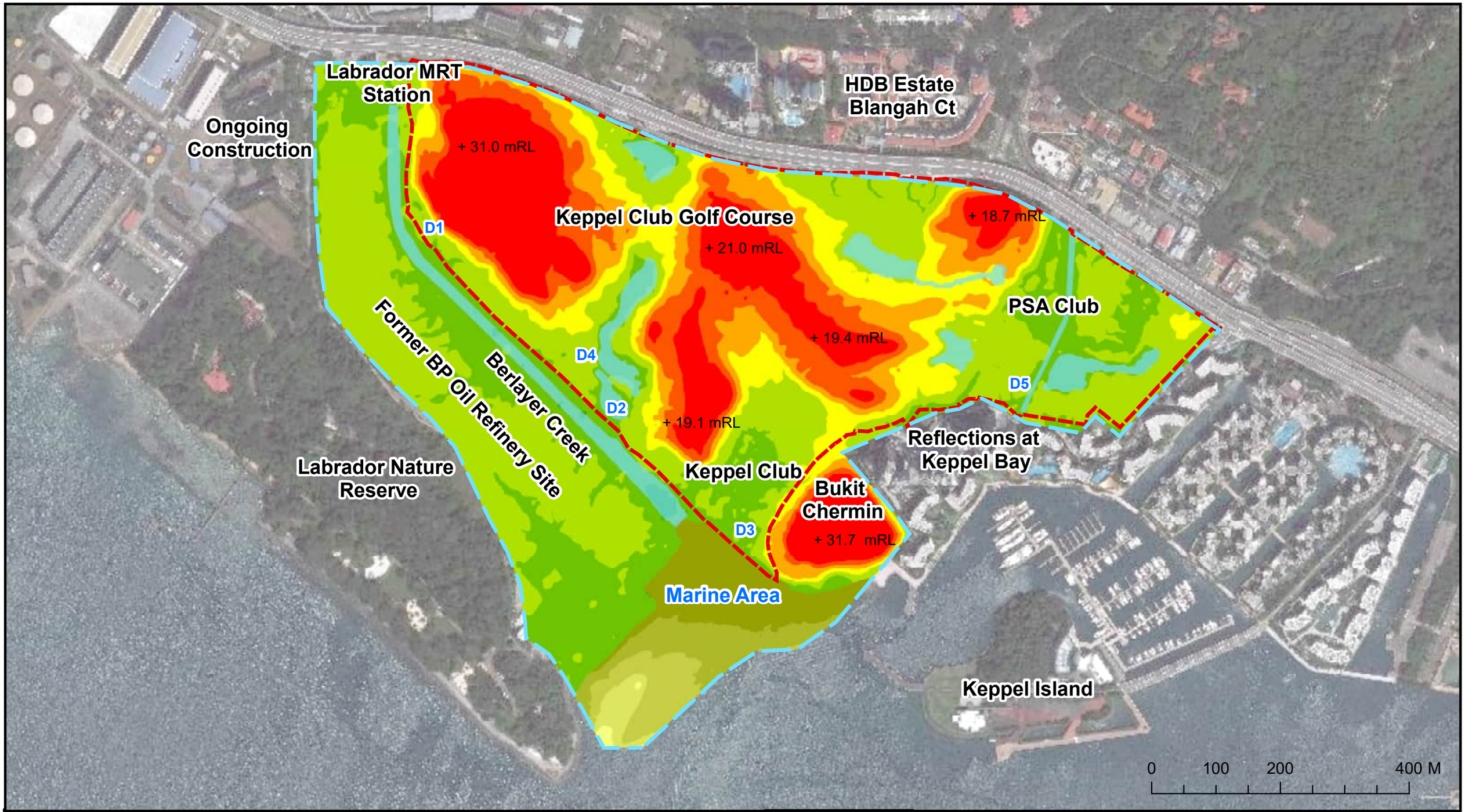
Designed	Checked	Approved
JAC	NHT	JAG
	Drawn: JAC	Date: APR 2022

Figure No. : **8-7** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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Legend

- Overall EIS Study Area
- Development Area
- Watercourses

Depth (mCD)	Elevation (mRL)
<-6	<0
-6 - -4	0-3
-4 - -2	3-6
-2 - 0	6-9
>0	9-12
	12-15
	>15

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Elevation and bathymetry map with watercourses of the EIS Study Area

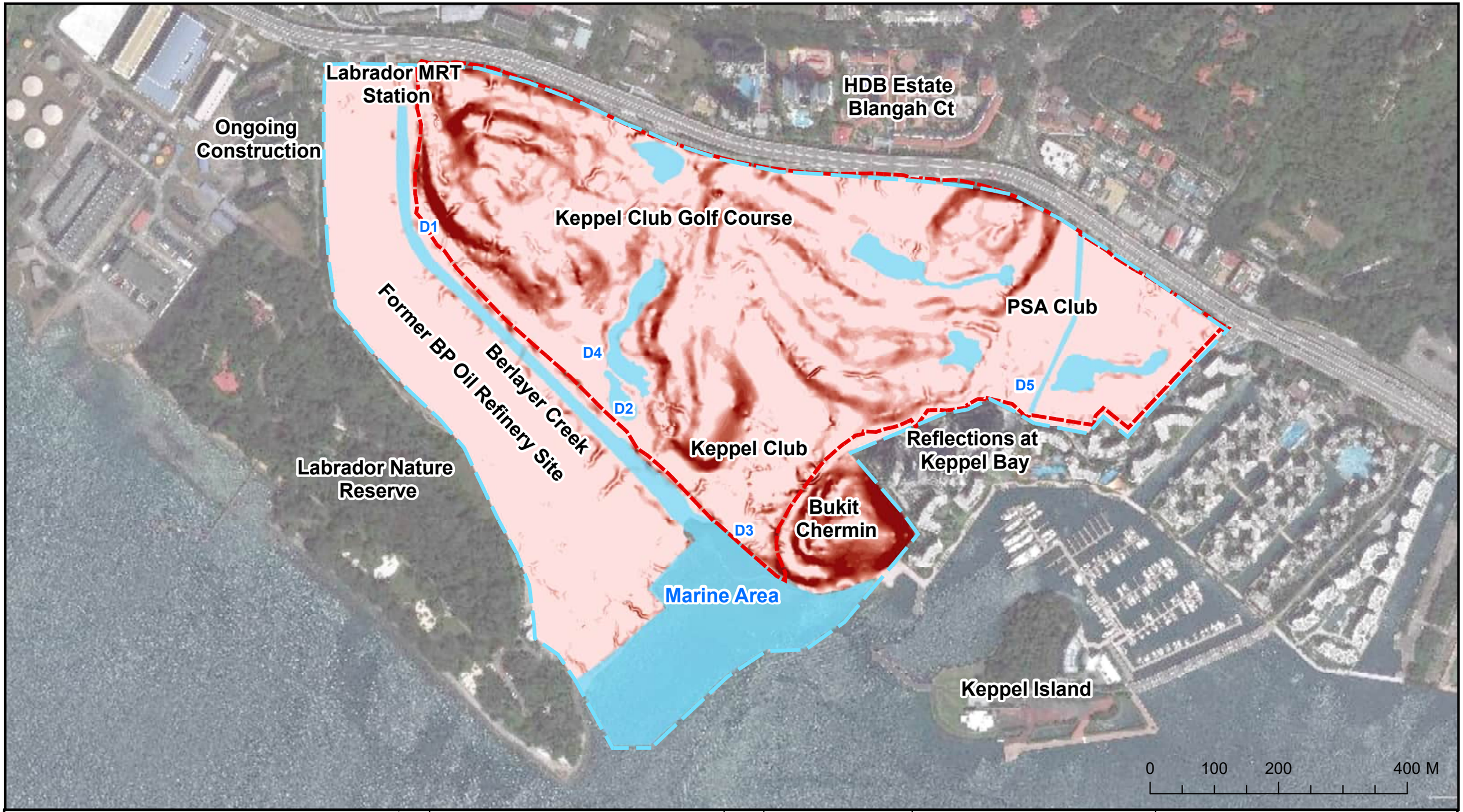
Designed	Checked	Approved
JAC	NHT	JAG
	Drawn: JAC	Date: APR 2022

Figure No. : **8-8** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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Legend

- Overall EIS Study Area
- Development Area
- Watercourses

Slope (%)

- <15
- 15-20
- 20-25
- 25-30
- 30-35
- 35-40
- 40-45
- 45-50
- 50-55

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD, URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Slope Map with watercourses of the EIS Study Area

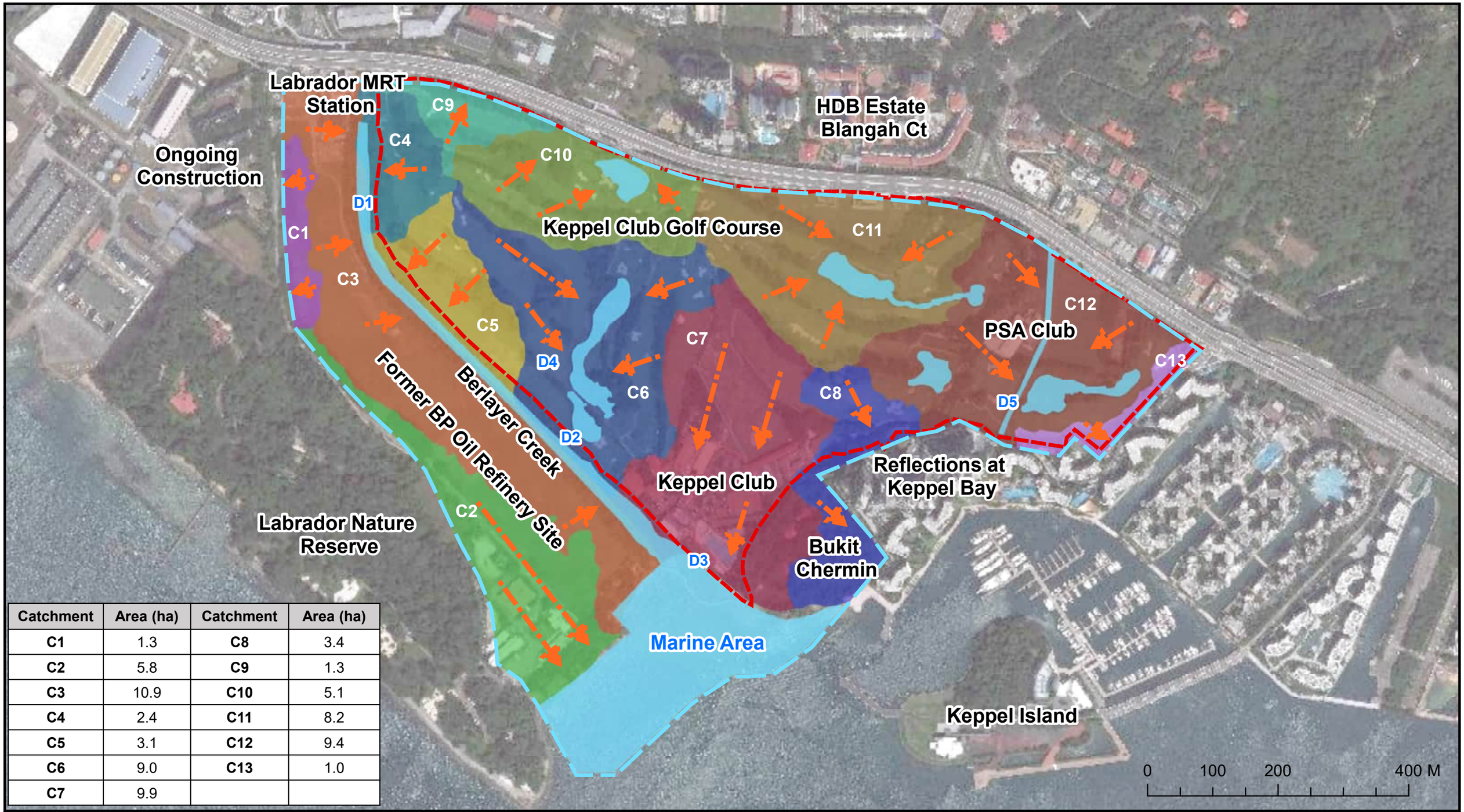
Designed	Checked	Approved
JAC	NHT	JAG
	Drawn: JAC	Date: APR 2022

Figure No. : **8-9** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

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Catchment	Area (ha)	Catchment	Area (ha)
C1	1.3	C8	3.4
C2	5.8	C9	1.3
C3	10.9	C10	5.1
C4	2.4	C11	8.2
C5	3.1	C12	9.4
C6	9.0	C13	1.0
C7	9.9		

Legend

- Overall EIS Study Area
- Development Area
- Watercourses
- Water Flow Direction

Catchment

C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD, URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Catchment map with watercourses of the EIS Study Area

Designed	Checked	Approved
JAC	NHT	JAG
	Drawn: JAC	Date: APR 2022

Figure No. : **8-10** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

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Table 8-12 Description of water quality sampling points within the Study Area

Watercourses	Bank Characteristics	Water Flow Conditions	Photos
Belayer Creek D1	Berlayer Creek has dense mangroves lined along both left and right banks of the Creek. 850 m of estimated length of the Creek	• Tidal-influenced flow • Originated from runoff surroundings of Keppel Club golf course and Former BP Oil Refinery site, and marine tides • Flowing perennially **During dry weather condition:** Upstream (Water Quality Station WQ 1): • Slow water flow (estimated at 0.12 m/s) • The flow depth was approximately 0.2 m with an approximate width of 3.5 m, at time of survey • Water flowing downstream • Observed water was turbid and had no smell Midstream (Water Quality Station Q2): • Slow water flow (estimate at 0.17 - 0.19 m/s) • Approximate width was 7-8 m, at time of survey • Water flowing downstream • Observed water had low transparency and no smell Downstream (Water Quality Station WQ3):	Water Quality Station WQ1 (1°16'17.72"N, 103°48'10.51"E) During Dry Weather  During Wet Weather  Water Quality Station WQ2 (1°16'5.94"N, 103°48'16.36"E) During Dry Weather  During Wet Weather 

Watercourses	Bank Characteristics	Water Flow Conditions	Photos
		• Slow water flow (estimate at 0.07 - 0.09 m/s) • Approximate width was 8-10 m, at time of survey. • Water flowing downstream • Observed water had low transparency and no smell **During wet weather condition:** <u>Upstream</u> (Water Quality Station WQ1): • Slow water flow (estimated at 0.21 m/s) • The flow depth was approximately 0.25 m with an approximate width of 5 m, at time of survey • Water flow downstream • Observed water was turbid and had no smell <u>Midstream</u> (Water Quality Station WQ2): • Slow water flow (estimate at 0.16 m/s) • Approximate width was 4 - 5 m, at time of survey. • Water flow downstream • Observed water was turbid and had no smell <u>Downstream</u> (Water Quality Station WQ3) • Slow water flow (estimate at 0.09 m/s)	Water Quality Station WQ3 (1°15'58.82"N, 103°48'23.40"E) During Dry Weather  During Wet Weather 

Watercourses	Bank Characteristics	Water Flow Conditions	Photos	
		• Approximate flow depth was 0.5 m with an approximate width of 3-4 m, at time of survey. • Water flow downstream • Observed water was turbid and had no smell		
Concrete Culvert D2	Circular concrete canal with artificial bank	• Originated from Keppel Club golf course's runoff • Flowing perennially **During dry weather condition:** • Slow water flow (estimate at 1 m/s). • Approximate depth was 0.01 m with an approximate width of 0.5 m, at time of survey • Observed water was clear and had no smell **During wet weather condition[1]:** • Slow water flow (estimate at 0.03 m/s) • Approximate depth was 0.005 m with an approximate width of 0.3 m, at time of survey • Observed water was clear and had no smell	Water Quality Station WQ7A (1°16'2.94"N, 103°48'20.52"E) During Dry Weather 	During Wet Weather[1] 
Concrete Culvert D3	Circular concrete canal with artificial bank	• Tidal-influenced flow • Originated from main facilities of Keppel Club • Flowing perennially **During dry weather condition:** • Slow water flow (estimate at 1 m/s).	Water Quality Station WQ5 (1°15'57.03"N, 103°48'26.46"E) During Dry Weather	During Wet Weather[1]

<table>
<tr><th>Watercourses</th><th>Bank Characteristics</th><th>Water Flow Conditions</th><th colspan="2">Photos</th></tr>
<tr><td></td><td></td><td>• Approximate depth was 0.01 m with an approximate width of 1.2 m, at time of survey
• Water flowing out from the culvert
• Observed water was clear and had no smell

During wet weather condition[1]:
• Slow water flow (estimate at 0.06 m/s).
• Approximate depth was 0.02 m with an approximate width of 1.2 m, at time of survey
• Water flowing out from the culvert
• Observed water was clear and had no smell</td><td>  </td><td>  </td></tr>
<tr><td rowspan="3">Man-made Pond D4</td><td rowspan="3">Man-made pond with rock riprap bank</td><td rowspan="3">Originated from Keppel Club golf course's runoff

During dry weather condition:
<u>Upstream of pond D4</u> (Water Quality Station WQ8):
• Very low water circulation
• Observed water was greenish and had no smell

<u>Downstream of pond D4</u> (Water Quality Station WQ7):
• Very low water circulation
• Observed water was greenish and had no smell

During wet weather condition[1]:</td><td colspan="2">Water Quality Station WQ8 (1°16'9.71"N, 103°48'22.63"E)</td></tr>
<tr><td>During Dry Weather
  </td><td>During Wet Weather[1]
  </td></tr>
<tr><td colspan="2">Water Quality Station WQ7 (1°16'4.65"N, 103°48'21.67"E)</td></tr>
</table>

<table>
<tr><th>Watercourses</th><th>Bank Characteristics</th><th>Water Flow Conditions</th><th colspan="2">Photos</th></tr>
<tr><td></td><td></td><td><u>Upstream of pond D4</u> (Water Quality Station WQ8):
• Low water circulation
• Observed water was greenish and had no smell

<u>Downstream of pond D4</u> (Water Quality Station WQ7):
• Low water circulation
• Observed water was greenish and had no smell</td><td>During Dry Weather
  </td><td>During Wet Weather[1]
  </td></tr>
<tr><td rowspan="2">Concrete Drain D5</td><td rowspan="2">Concrete drain with artificial banks

300 m of estimated drain length</td><td rowspan="2">• Tidal-influenced flow
• Originated from runoff of upstream residential areas and from surrounding catchment within the Study Area
• Flowing perennially

During dry weather condition:
• Slow water flow (estimated at 0.27 m/s)
• Approximately 0.2 m in depth with width of 1.4 m, at time of survey
• Observed water was clear and had no smell

During wet weather condition[1]:
• Slow water flow (estimated at 0.04 m/s)</td><td colspan="2">Water Quality Station WQ6 (1°16'3.50"N, 103°48'42.17"E)</td></tr>
<tr><td>During Dry Weather
  </td><td>During Wet Weather[1]
  </td></tr>
</table>

<table>
<tr><th>Watercourses</th><th>Bank Characteristics</th><th>Water Flow Conditions</th><th colspan="2">Photos</th></tr>
<tr><td></td><td></td><td>• Approximately 0.5 m in depth with width of 6.7 m, at time of survey
• Observed water was slightly turbid and had no smell</td><td colspan="2"></td></tr>
<tr><td>Marine Area near the mouth of Berlayer Creek</td><td>Open sea with sand bed</td><td>• Originated from runoff of Berlayer Creek, Keppel Club and concrete drain D5
• Flow direction varies depend on flood and ebb tides during spring and neap tidal periods.

During dry weather condition:
• Water flow and direction varied, depend on current propagation.
• Observed water was clear and had no smell

During wet weather condition:
• Water flow and direction varied, depend on current propagation.
• Observed water was slightly turbid and had no smell</td><td colspan="2">Water Quality Station WQ4 (1°15'54.20"N, 103°48'27.50"E)</td></tr>
<tr><td></td><td></td><td></td><td>During Dry Weather
  </td><td>During Wet Weather
  </td></tr>
<tr><td>Marine Area near Labrador Nature Reserve</td><td>Open sea with sand bed</td><td>Flow direction varies depend on flood and ebb tides during spring and neap tidal periods.

During dry weather condition:
• Water flow and direction varied, depend on current propagation.
• Observed water was slightly turbid and had no smell</td><td colspan="2">Water Quality Station WQ9 (1°15'44.33"N, 103°48'18.88"E)</td></tr>
<tr><td></td><td></td><td></td><td colspan="2">During Dry Weather</td></tr>
</table>

Watercourses	Bank Characteristics	Water Flow Conditions	Photos
			

Note:

1. The hydrological condition was recorded after notification of cancellation of lightning alert from Meteorological Service Singapore of NEA [W-17] during survey time.

8.4.2.2 Water Quality Conditions in the Study Area

Surface water samples were collected at ten (10) water quality stations strategically located along Berlayer Creek, concrete culverts, ponds, concrete drain at Keppel Club, and Marine Area as detailed in Figure 8-11 and Table 8-14.

Figure 8-11 shows the exact location of water quality stations within the Study Area, while Table 8-14 summarizes the rationale for the selection of each of the water quality sampling stations. Three (3) water quality stations were located at the upstream (i.e. WQ1), midstream (i.e. WQ2) and downstream (i.e. WQ3) of Berlayer Creek D1. The location of station WQ1 was selected to capture the water quality at the upstream of Berlayer Creek which receives water from upstream drains and residential area north of Berlayer Creek. Station WQ2 was selected to capture the water quality of the midstream which receives runoff from the Former BP Oil Refinery site, Keppel Club golf course and is also influenced by marine water. Station WQ3 was selected to capture the water quality of downstream of Berlayer Creek, where the influenced of marine water on the creek's water is the highest. The findings from these three (3) samplings stations were also used to support the biodiversity analysis. The location of WQ4 was selected to capture the water quality at the mixing zone of the runoff from Berlayer Creek D1, Keppel Club and Marine Area. Sampling stations WQ5 and WQ7A were selected to capture the discharge from Keppel Club golf course to the Berlayer Creek and Marine Area. Sampling station WQ6 captured the water quality of concrete drain D5 which mostly receives water originating north of the Study Area (mostly residential area). Stations WQ7 and WQ8 captured the water quality of man-made ponds located within Keppel Club golf course.

For all the sampling stations, surface water samples were collected during both dry and wet weather conditions, except WQ9 of Marine Area near Labrador Nature Reserve. As the offshore marine water quality is influenced more by tidal cycles than by weather conditions, WQ9 was only sampled during high and low tidal period during dry weather conditions. A total of thirty-eight (38) surface water samples were collected from March 2021 to June 2021. Table 8-13 shows the dates of each of the sampling events.

The surface water quality results were summarised and presented in Table 8-15 and the ex-situ measurement result are tabulated in Appendix M. Photos showing dry and wet weather conditions at each of the sampling stations were presented in Table 8-16. Surface water quality results were assessed against NEA Trade Effluent Discharge limits, ASEAN Marine Water Quality Criteria (AMWQC) and multiple international water quality criteria for aquatic life (as shown in section 8.2.2.2). The relevant limits and guidelines for water quality parameters were summarised in Table 8-1; however, where no guidelines exist, the monitored results would be considered as the baseline. It should be noted that the surface water quality of any runoff generated from the Project's activities during both construction and operational phases should comply with the NEA allowable limits for discharge into an uncontrolled watercourse.

Table 8-13 Water quality monitoring schedule

Sampling Event / Sampling Location	Dry Weather		Wet weather	
	1 March 2021	19 April 2021	31 May 2021	4 June 2021
WQ1 (Berlayer Creek Upstream)	Sampled	Sampled	S.C.	Sampled
WQ2 (Berlayer Creek Midstream)	Sampled	Sampled	S.C.	Sampled
WQ3 (Berlayer Creek Downstream)	Sampled	Sampled	S.C.	Sampled
WQ4 (Marine Area near the mouth of Berlayer Creek)	Sampled	Sampled	S.C.	Sampled
WQ5 (Concrete Culvert D3)	Sampled	Sampled	Sampled	N.S.
WQ6 (Concrete Drain D5)	Sampled	Sampled	Sampled	N.S.
WQ7	Sampled	Sampled	Sampled	N.S.

Sampling Event / Sampling Location	Dry Weather		Wet weather	
	1 March 2021	19 April 2021	31 May 2021	4 June 2021
(Downstream of Man-made Pond D4)				
WQ7A Concrete Culvert D2)	S.C.	Sampled	Sampled	N.S.
WQ8 (Upstream of Man-made Pond D4)	Sampled	Sampled	Sampled	N.S.
WQ9 (Marine Area near Labrador Nature Reserve)	Sampled	Sampled	N.S.	N.S.

Note:
S.C. – Suboptimum Conditions: The sampling was not carried out due to restricting/ unfavourable conditions such as weather, timing, altered flow, etc.
N.S. - Not Sampled: The sampling was not carried out because the required sample(s) were already collected previously



Legend

- Water Quality Sampling Locations
- Overall EIS Study Area
- Development Area
- Watercourses

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Proposed water quality sampling location within/surrounding the EIS Study Area

Designed	Checked	Approved
JAC	NHT	JAG
	Drawn: JAC	Date: APR 2022

Figure No. : **8-11** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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Table 8-14 Rationale for the selection of water quality sampling locations with photos

S/N	Sampling Location	Justification	Photo of Sampling Location
WQ1	Upstream of Berlayer Creek D1	To capture the water quality at upstream of Berlayer Creek (possible receiving water from upstream drains and nearby residential area).	
WQ2	Midstream of Berlayer Creek D1	To capture the water quality at midstream of Berlayer Creek (receiving water from Former BP Oil Refinery site and Keppel Club golf course).	
WQ3	Downstream of Berlayer Creek D1	To capture the water quality at downstream of Berlayer Creek.	
WQ4	Marine Area near the mouth of Berlayer Creek	To capture the water quality at water mixing zone (water from Berlayer Creek, Keppel Club and Marine Area).	
WQ5	Keppel Club culvert D3 towards Marine Area near the mouth of Berlayer Creek	To capture the water quality of the main drain within Keppel Club golf course.	
WQ6	Concrete drain D5 along PSA Club and Keppel Club golf course	To capture the water quality along the concrete drain before it discharges into Keppel Bay.	

S/N	Sampling Location	Justification	Photo of Sampling Location
WQ7A	Keppel Club golf course culvert D2 towards Berlayer Creek	To capture the water quality of the runoff within Keppel Club golf course before it discharges into Berlayer Creek.	
WQ7	Downstream of Man-made Pond D4 in Keppel Club golf course	To capture the water quality of the main waterbody within Keppel Club golf course.	
WQ8	Upstream of Man-made Pond D4 in Keppel Club golf course	To capture the water quality of the stagnant waterbody within Keppel Club golf course.	
WQ9	Marine Area near Labrador Nature Reserve	To capture the water quality of Marine Area.	

Table 8-15 Surface water quality results

Parameters		WQ1 (Berlayer Creek upstream, Freshwater - Brackish water)	WQ2 (Berlayer Creek midstream, Freshwater - Brackish water)	WQ3 (Berlayer Creek downstream, Brackish water)	WQ4 (Marine Area near the mouth of Berlayer Creek, Seawater)	WQ5 (Concrete culvert D3, Freshwater)	WQ6 (Concrete drain D5, Brackish water)	WQ7 (Downstream of Pond D4, Freshwater)	WQ7A (Concrete culvert D2, Freshwater)	WQ8 (Upstream of Pond D4, Freshwater)	WQ9 (Marine Area near Labrador Nature Reserve, Seawater)	Average	NEA Trade Effluent Discharge Limits[1]	ASEAN Marine Water Quality Criteria	Water Quality Criteria for Aquatic Life[2]
pH	Dry Average	7.94	7.88	7.89	8.34	8.34	8.12	8.60	8.03	8.32	8.28	8.17	6 - 9	-	6.5 – 8.5
	Wet Average	7.59	8.14	8.14	8.19	8.32	8.17	8.56	8.30	8.35	-	8.20			
Temperature (˚C)	Dry Average	28.53	29.16	29.17	30.53	28.20	29.42	28.95	28.91	28.81	30.11	29.18	45	⩽ 2°C above the maximum ambient temperature	-
	Wet Average	28.22	28.78	30.67	31.17	28.39	30.17	29.83	29.00	29.83	-	29.56			
Salinity (PSU)	Dry Average	13.60	15.96	15.93	29.03	2.65	14.83	0.13	0.12	0.12	31.46	12.38	-	-	-
	Wet Average	0.37	1.24	30.21	30.36	0.23	29.17	0.13	0.13	0.12	-	10.22			
Conductivity (µS/cm)	Dry Average	23,389	27,615	27,504	49,870	5,136	25,589	295	277	271	53,179	21,312	-	-	-
	Wet Average	809	2,608	51,796	52,511	478	44,797	272	285	264	-	17,091			
Total Dissolved Solids, TDS (mg/L)	Dry Average	14,036	16,470	16,413	29,320	3,127	15,039	179	167	164	31,496	12,641	-	-	-
	Wet Average	495	1,582	30,390	30,541	313	29,439	178	187	173	-	10,366			
Dissolved Oxygen, DO (mg/L)	Dry Average	5.64	5.46	5.61	7.22	7.71	7.09	7.60	6.57	7.38	7.03	6.73	-	⩾ 4.0	-
	Wet Average	7.26	7.09	5.23	5.21	7.79	6.09	8.29	6.73	7.80	-	6.83			
Turbidity (NTU)	Dry Average	15.41	12.12	11.21	9.51	15.62	12.83	26.92	20.24	13.28	2.06	13.92	-	-	⩽ 10
	Wet Average	60.11	91.20	9.04	25.46	6.29	4.21	6.68	10.19	10.55	-	24.86			
Total Suspended Solids, TSS (mg/L)	Dry Average	23.54	11.20	10.75	17.60	8.45	7.15	31.35	28.30	26.90	5.90	17.11	⩽ 50	⩽ 10 % increase over seasonal average	-
	Wet Average	45.00	91.50	68.40	48.40	5.00	60.30	10.00	15.00	18.70	-	40.26			
Total Organic Carbon, TOC (mg/L)	Dry Average	2.21	2.26	1.74	0.83	2.74	1.35	8.49	4.71	5.72	0.84	3.09	-	-	-
	Wet Average	3.84	3.02	2.63	2.48	4.62	2.75	4.34	4.65	5.08	-	3.71			

Parameters		WQ1 (Berlayer Creek upstream, Freshwater - Brackish water)	WQ2 (Berlayer Creek midstream, Freshwater - Brackish water)	WQ3 (Berlayer Creek downstream, Brackish water)	WQ4 (Marine Area near the mouth of Berlayer Creek, Seawater)	WQ5 (Concrete culvert D3, Freshwater)	WQ6 (Concrete drain D5, Brackish water)	WQ7 (Downstream of Pond D4, Freshwater)	WQ7A (Concrete culvert D2, Freshwater)	WQ8 (Upstream of Pond D4, Freshwater)	WQ9 (Marine Area near Labrador Nature Reserve, Seawater)	Average	NEA Trade Effluent Discharge Limits[1]	ASEAN Marine Water Quality Criteria	Water Quality Criteria for Aquatic Life[2]
Total Phosphorous, TP (mg/L)	Dry Average	0.065	0.060	0.041	0.025	0.062	0.050	0.155	0.210	0.170	0.016	0.085	-	-	Marine inshore: ≤ 0.015 Marine offshore: ≤ 0.010
	Wet Average	0.032	0.033	0.028	0.031	0.098	0.047	0.025	0.019	0.031	-	0.038			
Orthophosphate as PO_4-P (mg/L)	Dry Average	0.033	0.046	0.032	0.010	0.033	0.030	0.007	0.007	0.029	0.008	0.023	⩽ 1.625 (equivalent to 5 as PO_4)	Coastal water: ≤ 0.015 (equivalent to 0.045 as PO_4)	-
	Wet Average	0.024	0.023	0.021	0.027	0.059	0.032	<0.005	0.005	0.006	-	0.025			
Total Nitrogen, TN (mg/L)	Dry Average	0.80	0.74	0.69	0.41	1.19	0.65	1.75	0.86	1.81	0.60	0.95	-	-	⩽ 0.1
	Wet Average	1.41	1.27	0.99	0.95	1.59	0.75	1.33	1.32	1.56	-	1.24			
Ammonium Nitrogen, NH_4-N (mg/L)	Dry Average	0.08	0.13	0.11	0.02	0.12	0.07	0.17	0.39	0.24	0.02	0.13	-	⩽ 0.07	-
	Wet Average	0.07	0.10	0.08	0.11	0.12	0.02	<0.01	0.12	<0.01	-	0.09			
Nitrate as NO_3-N (mg/L)	Dry Average	0.41	0.33	0.26	0.03	0.74	0.31	0.20	0.42	0.32	0.03	0.31	-	≤ 0.06	-
	Wet Average	0.70	0.56	0.39	0.30	0.85	0.36	0.24	0.10	0.06	-	0.40			
Enterococcus[5], (cfu/100ml)	Dry Average	1,855	1,203	651	100	424	337	54	37	41	14	471	-	⩽ 35	⩽ 200
	Wet Average	25,000	24,000	26,000	19,000	1,700	1,200	570	30	1,100	-	10,956			
Lead, Pb (µg/L)	Dry Average	0.28	<0.5	<0.5	<0.5	<0.5	<0.5	0.27	<0.5	<0.5	<0.5	0.28	100	⩽ 8.5	-
	Wet Average	1.07	1.1	0.9	0.83	<0.5	0.64	<0.5	<0.5	<0.5	-	0.91			

Note:

1. NEA Trade Effluent Discharge Limits are for uncontrolled watercourses
2. The sources of water quality criteria for aquatic life include United Nations Economic Commission for Europe, World Health Organization, United States Environmental Protection Agency, Australian & New Zealand, Canada, Philippines, and Malaysia
3. Red values mean data exceeding the NEA limits; Pink values mean data exceeding ASEAN Marine Water Quality Criteria; Blue values mean data exceeding aquatic life criteria; Orange values mean data exceeding the limits of ASEAN Marine Water Quality Criteria and Water Quality Criteria for Aquatic LIfe.
4. '<0.5' means lower than 0.5 µg/L of detection limit level; '<0.005' means lower than 0.0005 mg/L of detection limit level; '<0.01' means lower than 0.01 mg/L of detection limit level
5. Singapore's Water Quality Guidelines for Recreational Beaches and Fresh Water Bodies requires that the Enterococcus count should be less than or equal to 200 counts per 100 millilitres of water at 95% of the time.

Table 8-16 Water quality photos at each sampling station

Water Quality Sampling Station	During Dry weather	During Wet Weather
WQ1 (Berlayer Creek upstream)		
WQ2 (Berlayer Creek midstream)		
WQ3 (Berlayer Creek downstream)		
WQ4 (Marine Area near river mouth of Berlayer Creek)		

Water Quality Sampling Station	During Dry weather	During Wet Weather
WQ5 (Concrete Culvert D3)		
WQ6 (Concrete Drain D5)		
WQ7 (Downstream of Pond D4)		
WQ7A (Concrete Culvert D2)		

Water Quality Sampling Station	During Dry weather	During Wet Weather
WQ8 (Upstream of Pond D4)		
WQ9 (Marine Area near Labrador Park Reserve)		Not available due to sampling conducted during dry weather only.

As shown in Figure 8-12, temperature of watercourse has no significant variation across all water quality stations during dry and wet weather conditions and it ranged from 28.20 ˚C to 31.17 ˚C, which is below the NEA limit of 45˚C.

Besides the NEA limits for trade effluent regulations, the surface water quality of watercourses in a natural ecosystem was compared to international water quality criteria for aquatic life in order to assess its appropriateness to support aquatic life. The average pH of the watercourses sampled within the Study Area did not vary significantly, ranging from 7.59 to 8.60 during dry and wet weather conditions. Based on water quality results shown in Table 8-15, The pH values of water samples collected downstream of pond D4 at Keppel Club golf course (i.e. WQ7) were elevated during both dry and wet weather conditions and slightly exceeded the upper limit of the international water quality criteria for aquatic life (i.e. 8.5).

The conductivity of water is strongly dependent on the number of ions available to participate in the conduction process. This parameter is positively correlated to TDS, which measures the total amount of organic and inorganics present in the watercourse, and salinity, which measures the amounts of salts dissolved in water. As shown in Figure 8-12, the average salinity, conductivity and TDS measured along Berlayer Creek D1 (i.e. WQ1 to WQ3) and concrete drain D5 (i.e. WQ6) were significantly higher than the watercourses located within Keppel Club (i.e. WQ5, WQ7, WQ7A and WQ8) during dry and wet weather conditions. This implies that the water along the Berlayer Creek D1 and concrete drain D5 is brackish (heavily impacted by marine water and its tidal cycles), while the only watercourses presented within Keppel Club consist of freshwater and are not under the influence of marine water. The elevated average conductivity, TDS and salinity for Berlayer Creek and concrete drain D5 during dry and/or wet weather is due to the tidal-influenced flow from Marine Area. Furthermore, it can be observed that the salinity, conductivity and TDS vary significantly between dry and wet weather conditions at upstream and midstream of Berlayer Creek. More specifically, the beforementioned parameters are noticeably during wet weather conditions. This implies that Berlayer Creek receiving significant amount of surface water runoff from upstream urbanised areas as well as from surrounding Study Area (i.e. Keppel Club golf course and Former BP Oi Refinery Site), which dilutes naturally brackish water during rainfall events. It should also be noted that during dry weather, water samples collected at the concrete culvert D3 (i.e. WQ5) had elevated salinity, conductivity and TDS compared to the samples collected at other freshwater sampling locations (i.e. WQ7, WQ7A and WQ8). This might be because the discharge culvert is located in the low-lying marine area where it could be influenced by tidal flow.

The average DO at all water quality stations during dry and wet weathers were 6.73 mg/L and 6.83 mg/L respectively, which is above 4.0 mg/L of the ASEAN Marine Water Quality Criteria. In general, decomposition of organic matter from vegetation resulted by the low flowing rate of natural watercourses surrounded by vegetation, can usually result in depletion of DO in the natural watercourses. This seems to be valid for slightly lower DO observed along the Berlayer Creek D1 during dry weather (i.e. 5.44 mg/L, 5.19 mg/L and 5.44 mg/L at upstream, midstream and downstream respectively). Slightly decreased DO was also found at Berlayer Creek downstream and Marine Area during wet weather. It might be due to the flushing of decomposed organic matters from the Creek's banks during the storm event and therefore leading to a lower DO level recorded.

The average turbidity of all the water quality stations during dry weather conditions was 13.92 NTU. During wet weather, the average turbidity of all the water quality stations was 24.86 NTU. During dry weather, the turbidity of all sampling stations exceeded the aquatic life criteria (i.e. 10 NTU) except WQ9 of the Marine Area near Labrador reserve and WQ4 of Marine Area near the mouth of Berlayer Creek. During wet weather, the turbidity of Berlayer Creek upstream and midstream, Marine Area near the mouth of Berlayer Creek, concrete culvert D2 and man-made pond D4 exceeded the water quality criteria for aquatic life.

The average TSS at all the water quality stations during dry weather conditions was 17.11 mg/L. The measured TSS of all stations was within 50 mg/L of NEA guideline limit. Higher TSS level (above 26 mg/L) was observed in the man-made ponds (i.e. WQ7 and WQ8) and concrete culvert D2 of Keppel Club. This might be due to the aeration within the ponds which resuspended the sediment and the overflow subsequently discharged through concrete culvert D2 during dry weather. During wet weather, the average TSS of all the water quality stations was 40.26 mg/L. The TSS at midstream and downstream of Berlayer Creek D1 and concrete drain D5 during wet weather exceeded the NEA trade effluent discharge limit (i.e. 50 mg/L). It shows the general trend of high TSS found in watercourses that comprised of seawater such as Berlayer Creek, concrete drain D5 and Marine Area (i.e. near the mouth of Berlayer Creek and Labrador Nature Reserve) during wet weather. The elevated TSS during wet weather conditions might be due to resuspension of sediments as a result of stormwater runoff discharge from upstream catchments.

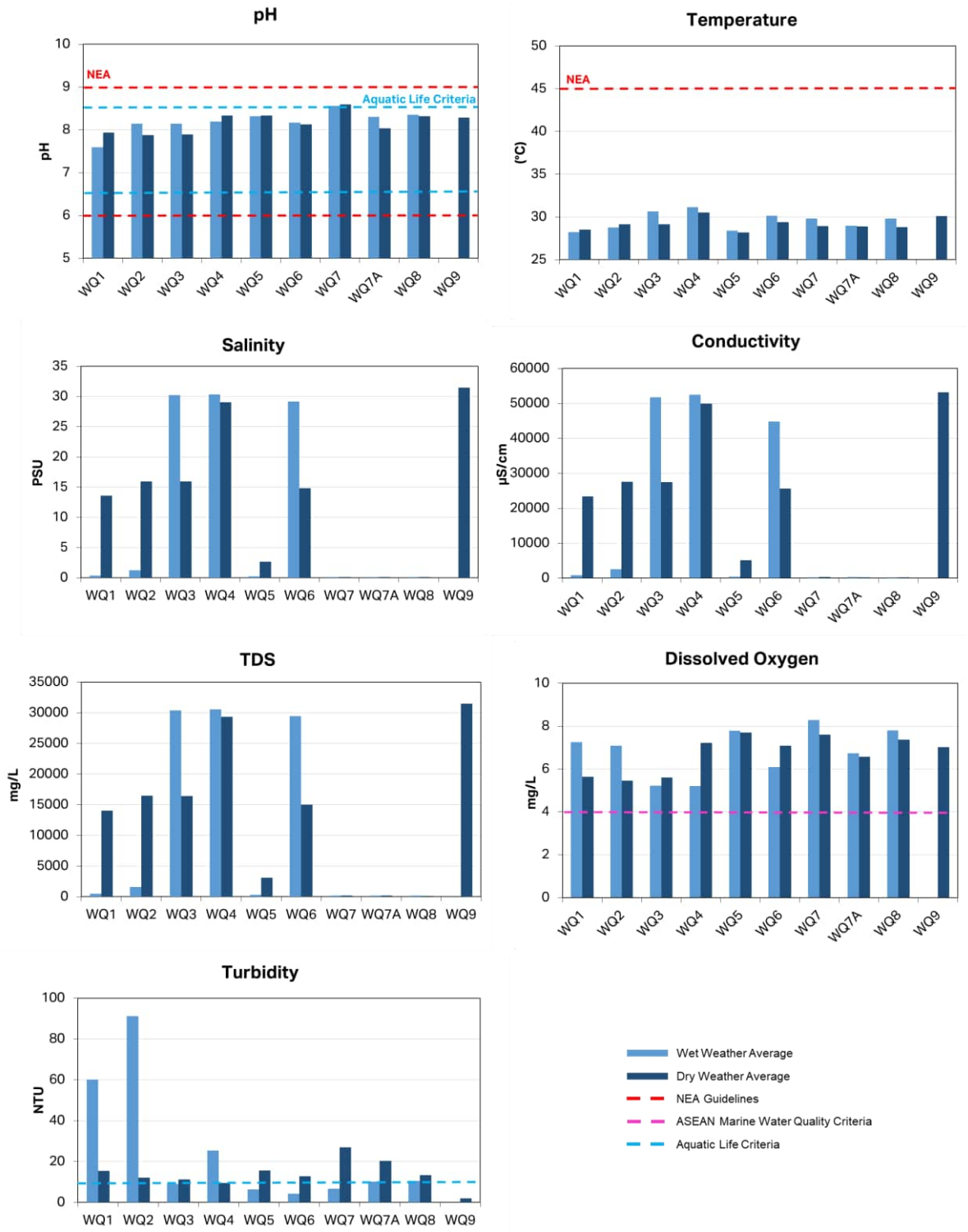


Figure 8-12 Average monitoring results of in-situ parameters for dry and wet weather conditions

The mean TOC of dry weather samples was 3.09 mg/L, ranging from 0.83 mg/L to 8.49 mg/L, while the mean TOC of wet-weather samples was 3.71 mg/L, ranging from 2.48 mg/L to 5.08 mg/L. Since there are no available TOC guidelines for aquatic life, the results were compared with the criteria for drinking source water from Canada (i.e. 4 mg/L, [R-41]). Higher TOC level was observed at most of watercourses of Keppel Club during dry and/or wet weather conditions (e.g downstream of pond D4, concrete culverts D2 and D3). The elevated TOC level within the pond D4 might be due to the runoff comprised of high concentration of organic carbon in the soil organic matters which generated from surrounding turf-covered soils. Similarly, the runoff from Keppel Club golf course that get discharged into Berlayer Creek (i.e. via concrete culverts D2 and D3) also has elevated TOC.

As shown in Table 8-15, the average concentration of Total Phosphorus (TP) in water samples collected across all the sampling locations during dry weather conditions was 0.085 mg/L, ranging from 0.016 mg/L to 0.210 mg/L. The average TP concentration during wet weather conditions was lower at 0.038 mg/L and ranging from 0.019 mg/L to 0.098 mg/L. When compared to the water quality criteria for aquatic life (i.e. 0.015 mg/L for marine inshore and 0.010 mg/L for marine outshore), it can be observed that the limit has been exceeded at all the sampling stations, during both dry and wet weather conditions. Elevated TP in manmade watercourses, could have possibly originated from fertilizers used for maintenance of golf course's turf, which gets washed away and eventually discharged into ponds.

The average concentration of PO_4-P (Orthophosphate) during dry weather conditions was 0.023 mg/L, ranging from 0.007 mg/L (at WQ7 and WQ7A) to 0.046 mg/L (at WQ2). During wet weather conditions, average concentration of PO_4-P was slightly higher at 0.025 mg/L, ranging from <0.005 mg/L (at WQ7) to 0.059 mg/L. Concentrations of PO_4-P measured along Berlayer Creek (i.e. WQ1, WQ2, WQ3), concrete culvert D3, (i.e. WQ5) and concrete drain D5 (i.e. WQ6) exceeded the limits of ASEAN Marine Water Quality Criteria, during both dry and wet weather conditions. Water samples collected at Marine Area near the mouth of Berlayer Creek (i.e. WQ4) reported exceedances of the ASEAN Marine Water Quality Criteria only during wet weather. The source of phosphorous compounds in Berlayer Creek might originate from upstream urbanised area as the flow from these areas are discharged into the Creek as well as from naturally occurring processes of decomposition of plants and other organic material that could be found in the creek. Elevated concentrations of phosphorous compounds concrete drain D5 also might originate from surface water discharge from upstream urbanised area into the drain. Another potential source of phosphorous in identified watercourses could be detergents, fertilizers (e.g. fertilizers for tree plantations, grass patches, etc.) and other chemicals used in the recreational area of the club.

During dry weather, the average concentration of Total Nitrogen (TN) was 0.95 mg/L, ranging from 0.41 mg/L to 1.81 mg/L among all the sampling stations while during wet weather, the average concentration was 1.24 mg/L, ranging from 0.75 mg/L to 1.59 mg/L. Comparing with the water quality criteria for aquatic life, all sampling stations have exceeded the limit of 0.1 mg/L. For NH_4-N (Ammonium Nitrogen), the average concentration of 0.13 mg/L and 0.09 mg/L were found during dry and wet weather, respectively. Water quality along midstream and downstream of Berlayer Creek (i.e. WQ2, WQ3), concrete culvert D3 (i.e. WQ5) and concrete culvert D2 (i.e. WQ7A) during both dry and wet weather exceeded the ASEAN Marine Water Quality Criteria (i.e. 0.07 mg/L), while stations at upstream of Berlayer Creek (i.e. WQ1) and man-made pond D4 (i.e. WQ7 and WQ8) only exceeded the criteria during dry weather and Marine Area near the mouth of Berlayer Creek (i.e. WQ4) only exceeded during wet weather. The average concentration of NO_3-N (Nitrate) found during dry and wet weather were 0.31 mg/L and 0.40 mg/L respectively. All sampling stations exceeded the ASEAN Marine Water Quality Criteria (i.e. 0.07 mg/L) except waters at the Marine Area near the mouth of Berlayer Creek and Labrador Nature Reserve during dry weather and upstream of man-made pond D4 (i.e. WQ8) during wet weather. Excess nutrient concentration might come from wastewater generated from upstream urbanized areas, fertilizers (e.g. fertilizers from tree plantation and grass patch, etc.) used within Keppel Club and from the decomposition of organic matters of vegetated areas.

Enterococcus counts ranged from 14 to 1,855 Colony Forming Units (cfu)/100ml with average value of 471 cfu/100ml during dry weather. This parameter was much higher during wet weather conditions, with an average Enterococcus count of 10,956 cfu/100ml, and ranging from 30 cfu/100ml to 26,000 cfu/100ml. All sampling stations exceeded the ASEAN Marine Water Quality Criteria (i.e. 35 cfu/100ml) during dry weather, except for Marine Area near Labrador Nature Reserve. With the exception of concrete culvert D2 (i.e. WQ7A), all stations sampled during wet weather had exceeded the ASEAN Marine Water Quality Criteria (i.e. 35 cfu/100ml). Berlayer Creek D1 has relatively higher counts of enterococcus (i.e. could be up to 26,000 cfu/100ml) compared to the other sampling stations during both dry and wet weather conditions. The elevated enterococcus might be due to the presence of fauna along the Creek (as detailed in biodiversity findings of Section 7.4), runoff from upstream urbanized area and Keppel Club. The enterococcus counts at the Marine Area near the mouth of Berlayer Creek (i.e. WQ4) during wet weather (i.e. 19,000 cfu/100ml) was significantly higher compared to enterococcus counts during dry weather (100 cfu/100ml), indicating the possible of flushing runoff consists of high enterococcus compounds from the Creek to its downstream towards the Marine Area during storm events. The NEA Recreational Water Quality Guidelines [W-14] requires enterococcus to be below 200 cfu/100ml, and the exceedance of this guidelines indicate possible human or animal faecal pollution in the watercourses. However, it should be noted that none of the watercourses within the Study Area are expected to hold any recreational activities that involved direct human contact.

The mean concentration of Lead (Pb) found at all sampling stations were very low, which around 0.28 µg/L and 0.91 µg/L during dry and wet weather conditions respectively. For all sampling stations, Pb concentration measured during wet weather were comparatively higher than the Pb concentration measured during dry weather. It might be due to flushing effect occurred during storm event in the Study Area and its surroundings. The Pb concentration of

all sampling stations during dry and wet weather are within the NEA discharge trade effluent limits (i.e. 100 µg/L) and ASEAN Marine Water Quality Criteria (i.e. 8.5 µg/L).

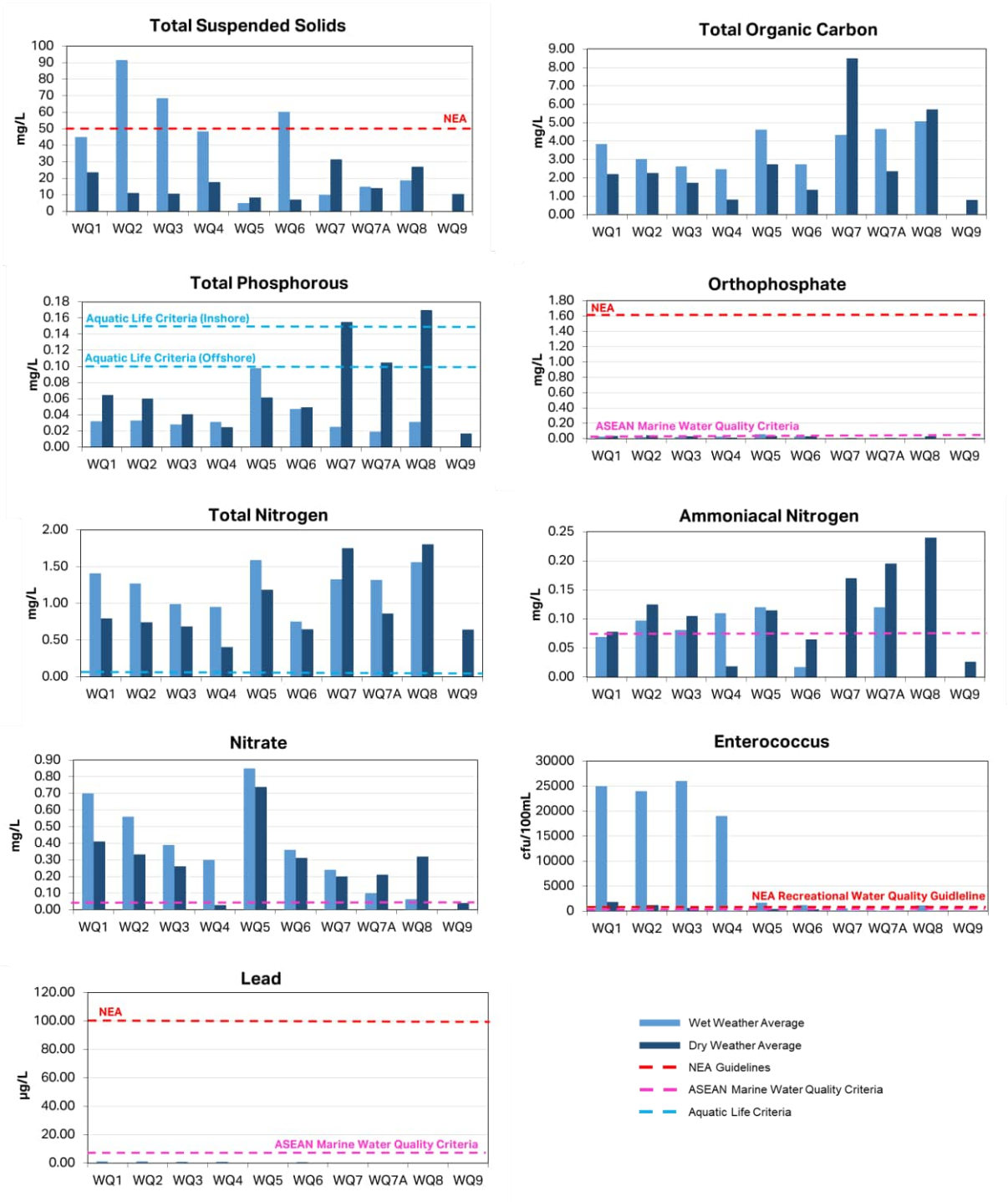


Figure 8-13 Average monitoring results of ex-situ parameters for dry and wet weather conditions

8.5 Identification of Hydrology and Surface Water Quality Sensitive Receptors

Receptor screening for hydrology and surface water quality was conducted for the Assessment Area for both construction and operational phases. The criteria detailed in Table 6-2 was used to determine the sensitivity of the hydrology and surface water quality receptors presented in Table 8-17 and Table 8-18.

8.5.1 Construction Phase

During construction phase, the human, ecological and water-dependent socio-economic receptors are identified and classified based on sensitivity classification (Table 6-2) as shown in Table 8-17.

Table 8-17 Classification of hydrology and surface water quality sensitive receptors identified within the Assessment Area for construction phase

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
Human Receptors				
On-site construction workers	• Hydrology	• Regular activities of on-site workers may be disrupted due to localised flooding within the Study Area	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).
	• Surface Water Quality	• Construction workers will not use surface water within Study Area for any beneficial purpose (i.e. drinking and industrial purposes, irrigation) • Construction workers may come in direct contact with surface water during various pre-construction and construction activities (e.g. washing, cleaning, etc.) • Baseline surface water quality data (refers to Section 8.4.2.2) does not show signs of contamination with respect to human health	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).
Permanent off-site residents and visitors in the vicinity of the Study Area	• Hydrology	• Changes in baseline hydrology of the Study Area may cause changes in hydrological cycle in the surrounding area which can obstruct regular activities of the permanent residents and visitors outside of Study Area	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).
	• Surface Water Quality	• Surface water within Study Area drains into the sea (as described in Section 4.4) and hence is not expected to be eventually used for drinking purposes by the permanent off-site residents • Off-site permanent residents and visitors may be exposed to surface water from the Study Area indirectly, by coming in contact (e.g. dermal contact, inhalation of water particles) with downstream waterbody (i.e. sea) • Baseline surface water quality data (refers to Section 8.4.2.2) does not show signs of contamination with respect to human health	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
Ecological Receptors				
Habitats and biocenosis of Berlayer Creek	• Hydrology • Surface Water Quality	• Based on the biodiversity baseline study findings (Section 7.3 of this Report), habitats and biocenosis of Berlayer Creek are identified to be of high ecological value. • Habitats and biocenosis of Berlayer Creek are highly dependent of the quantity and quality of surface water and would most likely be disturbed due to the changes in hydrology and surface water quality	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Habitat and biocenosis of Bukit Chermin	• Hydrology • Surface Water Quality	• Based on the biodiversity baseline study findings (Section 7.4 of this Report), habitats and biocenosis of Bukit Chermin are identified to be of high ecological value. • Habitats and biocenosis of Bukit Chermin are highly dependent of the quantity and quality of surface water and would most likely be disturbed by changes in hydrology and surface water quality	Priority 1	Assessed in qualitative impact assessment (refer to Section 8.7.1).
Seagrass meadow along the seawall and Labrador Slipway	• Hydrology • Surface Water Quality	• Based on the biodiversity baseline study findings (Section 7.3 of this Report), habitats and biocenosis of marine areas are identified to be of high ecological value. • Seagrass presented along the seawall area are highly dependent of the quantity and quality of surface water and would most likely be disturbed by changes in hydrology and surface water quality	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Coral reefs at Keppel Marina	• Hydrology • Surface Water Quality	• The artificial reefs are grown on the man-made buoyant pontoons which installed at Keppel Marina. The reefs also support the habitat of other marine life such as clownfish, damsel fish, etc [W-15]. • The coral reefs are highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Seagrass and fringing reefs at west coast of Sentosa Island	• Hydrology • Surface Water Quality	• Seagrass and fringing reefs found along the west coast area of the Sentosa Island [W-16;P-34]. • The seagrass and fringing reefs are highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Seagrass and rocky shores near Labrador Jetty	• Hydrology • Surface Water Quality	• The fringing reef habitat for seagrass is highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
		• Natural rocky shores on southern coastline of mainland Singapore [P-34] and would most likely be disturbed by changes in hydrology and water quality		
Water Dependent Socio-Economic Receptors				
Navigation channel of at Keppel Marina	• Hydrology	• Navigation channel for the yachts at the Keppel Marina. • The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.	Priority 2	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Navigation channel in Cruise Bay Area	• Hydrology	• The navigation channel used for passenger ferry route from/to Harbourfront Cruise and Ferry Terminal. • The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Navigation channel in West Keppel Fairway	• Hydrology	• The navigation channel used for passenger ferry route from/to Harbourfront Cruise and Ferry Terminal. • The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
International Boundary of Singapore and Indonesia	• Hydrology • Surface Water Quality	• Maritime boundary between the countries of Singapore and Indonesia. • Possible to have transboundary impact, which disturbed by changes in hydrodynamic and surface water quality from the proposed development.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).





Legend

- Overall EIS Study Area
- Development Area
- Seagrass and fringing reefs (indicative)
- Seawall
- Seagrass meadow
- Seagrass and rocky shores near Labrador Jetty (indicative area)

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Potential sensitive receptor locations within/surrounding the Assessment Area during construction phase

Designed	Checked	Approved
JAC	NHT	JAG
	Drawn JAC	Date APR 2022

Figure No. : **8-14** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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8.5.2 Operational Phase

During operational phase, the human, ecology and water-dependent socio-economic receptors are identified and classified based on sensitivity classification (Table 6-2) as shown in Table 8-18.

Table 8-18 Classification of hydrology sensitive receptors identified within the Assessment Area for operational phase

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
Human Receptors				
Maintenance workers, future residents and visitors of the proposed development	• Hydrology • Surface Water Quality	• The permanent land use change may cause flooding risk to the urbanized area such as residential areas or other development. • Possible pathways for exposure of the receptors to surface water quality contamination which derived from accidental leakages/spill of solid and liquid wastes from human activities such as maintenance works.	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).
Visitors and permanent residents in the vicinity of the proposed development	• Hydrology • Surface Water Quality	• The permanent land use change may cause flooding risk to the urbanized area such as residential areas or other development. • Off-site permanent residents and visitors may be exposed to surface water from the Study Area indirectly, by coming in contact (e.g. dermal contact, inhalation of water particles) with downstream waterbody (i.e. sea)	Priority 2	Assessed in qualitative impact assessment (refer to Section 8.7.1).
Ecological Receptors				
Habitats and biocenosis of Berlayer Creek (including the proposed future park)	• Hydrology • Surface Water Quality	• Based on the biodiversity baseline study findings (Section 7.3 of this Report), habitats and biocenosis of Berlayer Creek are identified to be of high ecological value. • Habitats and biocenosis of Berlayer Creek are highly dependent of the quantity and quality of surface water and would most likely be disturbed do to the changes in hydrology and surface water quality	Priority 2	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Habitat and biocenosis of Bukit Chermin	• Hydrology	• Based on the biodiversity baseline study findings (Section 7.3 of this Report), habitats and biocenosis of Bukit Chermin are identified to be of high ecological value. • Habitats and biocenosis of Bukit Chermin are highly dependent of the quantity and quality of surface water and would most likely be disturbed by changes in hydrology.	Priority 3	Assessed in qualitative impact assessment (refer to Section 8.7.1).
Seagrass meadow along the seawall and Labrador Slipway	• Hydrology • Surface Water Quality	• Based on the biodiversity baseline study findings (Section 7.3 of this Report), habitats and biocenosis of Marine Area are identified to be of high ecological value. • Seagrass presented along the seawall area are highly dependent	Priority 1	Assessed in quantitative impact assessment (refer to

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
		of the quantity and quality of surface water and would most likely be disturbed by changes in hydrology and surface water quality		Section 8.7.2).
Coral reefs at Keppel Marina	• Hydrology • Surface Water Quality	• The artificial reefs are grown on the man-made buoyant pontoons which installed at Keppel Marina. The reefs also support the habitat of other marine life such as clownfish, damsel fish, etc.[W-15]. • The coral reefs are highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Seagrass and fringing reefs at west coast of Sentosa Island	• Hydrology • Surface Water Quality	• Seagrass and fringing reefs found along the west coast area of the Sentosa Island which important for marine ecosystem [W-16;P-34]. • The seagrass and fringing reefs are highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Seagrass and rocky shores near Labrador Jetty	• Hydrology • Surface Water Quality	• The fringing reef habitat for seagrass is highly dependent of the quantity and quality of the surface water and would most likely be disturbed by changes in hydrology and surface water quality. • Natural rocky shores on southern coastline of mainland Singapore [P-34] and would most likely be disturbed by changes in hydrology and water quality	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Water-Dependent Socio-Economic Receptors				
Navigation channel of yachts at Keppel Marina	• Hydrology	• Navigation channel for the yachts at the Keppel Marina. • The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.	Priority 2	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Navigation channel in Cruise Bay Area	• Hydrology	• The navigation channel used for passenger ferry route from/to Harbourfront Cruise and Ferry Terminal. • The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).
Navigation channel in West Keppel Fairway	• Hydrology	• The navigation channel used for passenger ferry route from/to Harbourfront Cruise and Ferry Terminal.	Priority 1	Assessed in quantitative impact assessment

Sensitive Receptor	Environmental Parameter	Receptor Description	Receptor Classification	Impact Assessment Type
		• The navigation channel would most likely be disturbed by changes in hydrodynamic from the proposed development.		(refer to Section 8.7.2).
International Boundary of Singapore and Indonesia	• Hydrology	• Maritime boundary between the countries of Singapore and Indonesia. • Most likely have transboundary impact, which disturbed by changes in hydrodynamic and surface water quality from the proposed development.	Priority 1	Assessed in quantitative impact assessment (refer to Section 8.7.2).





Legend

- Overall EIS Study Area
- Development Area
- Seagrass and fringing reefs (indicative)
- Seawall
- Seagrass meadow
- Seagrass and rocky shores near Labrador Jetty (indicative area)

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	JAC	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client : HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Potential sensitive receptor locations within/surrounding the Assessment Area during operational phase

Designed	Checked	Approved
JAC	NHT	JAG
	Drawn JAC	Date APR 2022

Figure No. : **8-15** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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8.5.3 Criteria for Marine Impact Assessment

Impact assessment criteria for marine sensitive receptors are summarized in this section, which are adapted from published guidelines (e.g. Biodiversity Impact Assessment [BIA] Guidelines published by NParks, ASEAN Marine Water Quality Criteria [AMWQC], etc.) and/or developed based on scientific literature reviews.

8.5.3.1 Hydrodynamics

The criteria for hydrodynamic impact assessment are based on generally accepted practices in Singapore. The details are as following:

- Changes in mean current speed in navigation areas of less than 0.05 m/s are considered as 'No Impact';
- Changes in maximum current speed in navigation areas of less than 0.1 m/s are considered as 'No Impact'; and
- Changes in exceedance of the representative current statistics of less than 2-4% are considered as 'No Impact.

8.5.3.2 Seagrass

Construction works may bring in more sediments into the water body, and hence result in higher SSC, increasing water turbidity and lower light intensity. Light is one of the most important factors in the regulation of seagrass distribution as seagrass required light to drive photosynthesis. NParks' BIA has established tolerance limits for seagrass. Tolerance limits related to seagrass receptors including its tolerance to suspended sediment and sedimentation as listed in Table 8-19 and Table 8-20.

Table 8-19 Impact severity matrix for SSC impact to seagrass

Impact Significance	Definitions
No Impact	• Excess SSC > 5mg/L for less than 20% of the time OR • Excess SSC < 5mg/L
Slight impact	• Excess SSC > 5mg/L for more than 20% of the time OR • Excess SSC > 10mg/L for less than 20% of the time
Minor impact	• Excess SSC > 25mg/L for less than 5% of the time OR • Excess SSC > 10mg/L for more than 20% of the time
Moderate impact	• Excess SSC > 25mg/L for more than 20% of the time OR • Excess SSC > 75mg/L for less than 1% of the time
Major impact	• Excess SSC > 75mg/L for more than 20% of the time

Table 8-20 Impact severity matrix for sedimentation to seagrass

Impact Significance	Definitions
No Impact	Sedimentation < 3.5 mm/14-day
Slight impact	Sedimentation 3.5 – 8.82 mm/14-day
Minor impact	Sedimentation 8.82-17.5 mm/14-day
Moderate impact	Sedimentation 17.5-35 mm/14-day
Major impact	Sedimentation > 35 mm/14-day

8.5.3.3 Coral

NParks' BIA has established tolerance limits for corals. Tolerance limits related to corals receptors including its tolerance to suspended sediment and sedimentation as specified in Table 8-21 and Table 8-22 .

Table 8-21 Impact severity matrix for SSC impact to corals

Impact Significance	Definitions
No Impact	• Excess SSC > 5mg/L for less than 5% of the time
Slight impact	• Excess SSC > 10mg/L for more than 5% of the time; or • Excess SSC > 5mg/L for less than 20% of the time
Minor impact	• Excess SSC > 10mg/L for less than 20% of the time; or • Excess SSC > 5mg/L for more than 20% of the time
Moderate impact	• Excess SSC > 25mg/L for more than 5% of the time; or • Excess SSC > 10mg/L for more than 20% of the time
Major impact	• Excess SSC > 100mg/L for more than 1% of the time; or • Excess SSC > 25mg/L for more than 20% of the time

Table 8-22 Impact severity matrix for sedimentation impact to corals

Impact Significance	Definitions
No Impact	Sedimentation < 1.7 mm/ 14-day
Slight impact	Sedimentation < 3.5 mm/ 14-day
Minor impact	Sedimentation < 7.0 mm/14-day
Moderate impact	Sedimentation < 17.5 mm/14-day
Major impact	Sedimentation > 17.5 mm/ 14-day

8.5.3.4 Mangrove

Tolerance limits related to mangrove receptors include its tolerance to suspended sediments and sedimentation.

As mentioned in Furukawa and Wolanski's study, the sediment particles carried in suspension into the forest during tidal inundation will form large flocs, which remain in suspension as a result of the turbulence created by flow around the vegetation. Such flocs settle in the forest around slack high tide.

During ebb tides the water currents are too small to re-entrain this sediment. Hence the inundation of coastal mangrove forests at tidal frequency works as a pump preferentially transporting sediment from coastal waters to the mangroves. Mangroves are thus not just opportunistic tree colonising mud banks but actively contribute to the creation of mud banks. Therefore, mangroves can be considered fully tolerant to the range of suspended sediment concentration which may be induced by the construction activities. This is also aligned with the conclusion from a previous report from Doorn-Groen (2007).

Ellison (1998) stated that mangroves thrive on sedimentary shorelines, and concluded that mangroves naturally accrete at rates of < 0.5 cm/year (0.014 mm/day), with a maximum around 1 cm/year (0.027 mm/day), taking average of studies done at various mangroves. Sediment burial in mangrove environments is therefore defined as sedimentation in excess of these rates, related to a disturbance. The effects on mangroves of root burial are summarised as below (Ellison, 1998):

- No adverse effects: short-term natural sedimentation rates in mangrove swamps = 0.003 to 0.03 mm/day (mangroves thrive on sedimentary shoreline)

- Stressed: sediment burial on mangroves > 5 cm (1.7 mm/day for 30 days)
- Some death: sediment burial on mangroves > 8 cm (2.7 mm/day for 30 days)
- Dying/Death: sediment burial on mangroves > 10 cm (3.3 mm/day for 30 days)

The severity matrix for sedimentation impact on mangroves is shown in Table 8-23.

Table 8-23 Impact severity matrix for sedimentation impact to mangrove

Impact Significance	Definitions
No Impact	Sedimentation 0.003 to 0.03 mm/day
Slight impact	Sediment burial on mangroves > 5 cm (1.7 mm/day for 30 days)
Minor impact	
Moderate impact	Sediment burial on mangroves > 8 cm (2.7 mm/day for 30 days)
Major impact	Sediment burial on mangroves > 10 cm (3.3 mm/day for 30 days)
Note: In this Study, “No” negative impacts were categorized as “Negligible” impacts, while “Slight” and “Minor” negative impacts were categorized as “Minor” impacts from sedimentation rates.	

8.5.3.5 Aquatic Fauna

As a general guideline in Canada, it is recommended that, for waters having background levels of total suspended solids less than 100 mg/L, values not increase by more than 10 mg/L. For waters where suspended solids exceed 100 mg/L, increases should not exceed 10% of the background levels.

Manitoba Department of Environment suggests that the maximum acceptable concentration for nonfilterable residue is 25 mg/L. Lloyd (1985) concluded that an increase in turbidity of 25 NTU in shallow, clearwater systems may potentially reduce stream primary productivity by 13-50% or more, and be associated with an increase in suspended sediment concentration of approximately 25 – 100 mg/L. A 5 NTU increase in turbidity in clear water systems may reduce the primary productivity by 3 – 13% or more and be associated with an increase in suspended sediment concentration of approximately 5 – 25 mg/L.

Based on literature review as above, the suspended sediment thresholds for aquatic fauna were listed in Table 8-24.

Table 8-24 Impact severity matrix for SSC impact to Aquatic Fauna

Impact Significance	Definitions
No Impact	• Excess SSC < 5mg/L for 95% of the time
Slight impact	• 5mg/L < Excess SSC < 10mg/L for 95% of the time
Minor impact	• 10 mg/L < Excess SSC < 25 mg/L for 95% of the time
Moderate impact	• 25 mg/L < Excess SSC < 400 mg/L for 95% of the time
Major impact	• Excess SSC > 400mg/L for 95% of the time

8.5.3.6 Marine Infrastructure

Navigation channels, berthing areas and jetties are susceptible to incremental sedimentation, which may result in increased maintenance costs associated with maintenance dredging. The severity matrix for sedimentation impact on marine infrastructure is shown in Table 8-25.

Table 8-25 Severity matrix for sedimentation impact on marine infrastructure

Impact Significance	Definitions
No Impact	Sedimentation < 1.0 cm/ year
Slight negative impact	Sedimentation 1.0 -3.0 cm/ year
Minor negative impact	Sedimentation 3.0- 6.0 cm/ year
Moderate negative impact	Sedimentation 6.0-10.0 cm/ year
Major negative impact	Sedimentation > 10.0 cm/ year

8.5.3.7 International Boundary

As per the ASEAN Marine Water Quality Guideline, SSC is allowed to have 10% maximum increase over seasonal average concentration for all the time, which was estimated as 3.3 mg/L at the Study Area (Palani and Tkalich, 2014). And the range of SSC can be from 2.8 mg/L to 57.3 mg/L (Gin et al. 2000). Besides, Doorn-Groen (2007) concluded 5 mg/L changes in SSC is not visible in the turbid environments that are found around Singapore. Hence, the SSC thresholds for international boundary Impacts are tabulated in Table 8-26.

Table 8-26 Severity matrix for excess SSC impact on international boundary

Impact Significance	Definitions
No Impact	Excess SSC < 3.3 mg/L for all the time
Slight negative impact	Excess SSC < 5 mg/L for 95% of the time
Minor negative impact	Excess SSC > 5 mg/L for more than 5% of the time; and Excess SSC > 25 mg/L for less than 1% of the time
Moderate to major negative impact	Excess SSC > 25 mg/L for more than 1% of the time

8.6 Minimum Control Measures

This section proposes minimum controls, or standard practices, commonly implemented in Singapore for similar construction and operational activities, that have been assumed to be implemented for the purposes of impact assessment.

8.6.1 Construction Phase

Table 8-27 has a non-exhaustive list of minimum controls for each potential impact identified in Section 8.3.1 for construction phase.

Table 8-27 Minimum controls during the construction phase applicable to hydrology and surface water quality impact assessment

Potential Source of Impacts	Environmental Parameter Potentially Affected	Minimum Control
Temporary Land Use Change	Hydrology	• Runoff within, upstream of, and adjacent to the work site shall be effectively drained away without causing flooding in the vicinity; • Potential increase of peak-flow due to the change in the land use at the worksite can be mitigated by providing detention tanks or ponds within the Study Area. Detention tanks or ponds can capture stormwater during heavy storm events to reduce the peak runoff; • Geotechnical aspect of site's slope stability (such as Earth Retaining and Stabilising structures (ERSS) to be included in detailed design engineering for the construction stage; and • The design engineers for detailed design may need to ensure that Earth Retaining Stabilisation structures (ERSS) are proposed when the site is cleared and excavated. Concurrently the ECO must ensure that these measures are implemented in the construction phase, as cutting of slopes may result in slope instability.
Solid & Toxic Wastes Generation **(During site clearing, earthworks and general construction activities)**	Surface Water Quality	• Development of a Standard Operation Procedure (SOP) for safe handling, transfer, storage and disposal of solid and toxic wastes; • Effective ECM and monitoring implemented as required in the Code of Practice on Surface Water Drainage to ensure that discharge into the stormwater drainage system does not contain TSS in concentrations greater than the prescribed limits under the Sewerage and Drainage (Surface Water Drainage) Regulations; • ECM measures include but are not limited to minimisation of formation of bare soil, coverage of all bare/erodible surfaces, slope stability, concrete cut-off drains, silt fences/traps along the perimeter cut-off drain, turbidity curtains for works adjacent to watercourses, etc.; • Implementation of CCTV including SIDS at the public drain to monitor the surface run-off discharges from the sites as per the Public Utilities Board of Singapore's (PUB) circular on Preventing Muddy Waters from the Construction Sites (October 2015); • Provision of enclosed bins and waste disposal facilities cleared up as often as necessary to prevent build-up. Housekeeping checks will be carried out once a day to ensure all litter is cleared from site; • All wastes will be disposed only in the designated waste disposal facilities and appropriately separated, i.e. by trained workers to properly sort and label the different types of waste (reusable and recyclable waste, toxic and non-toxic waste, etc.); and • Appropriate disposal of any waste listed in the Environmental Public Health (General Waste Collection) Regulations by licensed waste operator/collector.

Potential Source of Impacts	Environmental Parameter Potentially Affected	Minimum Control
Improper Management of Chemical Substances **(Use, storage and disposal of chemical substances; refuelling activities)**	Surface Water Quality	• Development of SOP for safe handling, transfer and storage of toxic waste; housekeeping checks once a day to ensure all toxic wastes cleared from site; • Appropriate tests to ascertain the presence/absence of contamination of the excavated earth and sand; • Appropriate storage area (enclosed on at least 3 sides, covered and with adequate ventilation); • Appropriate construction material for toxic waste storage containers with leak detection tests conducted periodically; • Provision of secondary containment for all toxic waste stored in bulk as per the requirements in the COPPC/SS593; • Preparation of an emergency response plan, training of the emergency response team (ERT) to be competent in the response mechanism and provision of response kits for any spillages; • Consignment notification/tracking system and transport emergency response plan for transport of toxic waste; and • Appropriate disposal of toxic waste as per required in the Environmental Public Health (Toxic Industrial Waste) Regulations by licensed waste operator/collector.
Liquid Effluent Generation and Stormwater Runoff **(Construction wastewater and stormwater runoff resulting from site clearance, excavation, etc.)**	Surface Water Quality	• A full inventory of all anticipated wastewater streams and volumes should be finalised before the onset of the construction works; • No unmanaged discharge of wastewater stream permitted; • Reduce, reuse, and recycle hierarchy principle to be applied to wastewater onsite; • Regular audits on environmental management procedures shall be carried out onsite; • No hazardous liquids to be sent to the detention pond; • Hazardous wastewater, such as oily water, thinners, solvents, or paints, are to be stored and removed for treatment and disposal off-site by an approved Waste Management Contractor. Hazardous liquids to be handled as Hazardous Waste; • Settling ponds will be of impervious material and be designed with sufficient capacity to hold volumes of wastewater produced on-site, as well as allowance for stormwater run-off and potential fire-fighting wastewater; • Temporary storage volumes should be provided for overflow situations. Temporary storage to be of sufficient capacity to capture any additional volumes that may be expected to ensure untreated wastewater is not released to watercourses unless it complies with Singapore NEA Guidelines on trade effluent discharge concentrations; • A responsible person (e.g. ECO) to be assigned to oversee the efficient operation of the detention ponds where 'Good Housekeeping' practices would be adhered to. Also, the area would be carefully managed to avoid spills, leaks, and odour issues, with the settling ponds checked at least daily to ensure proper functionality; • Daily record volume of wastewater, as well as volumes of sludge and other produced wastes; • The settling ponds, as well as wastewater generating areas on-site, to be equipped with spill clean-up kits;

Potential Source of Impacts	Environmental Parameter Potentially Affected	Minimum Control

		• Adequate drainage, cut-off drains sump pit, road kerb, piping and toe wall for channelling of construction process wastewater streams (e.g., wash water, etc.) and stormwater runoff separately to be assured through detailed design for capture and treatment in the settling ponds. Where applicable (e.g. in the vicinity of liquid storage or refuelling areas), this infrastructure shall include oil-water separators to capture inadvertent spills or leaked oils or greases;
		• Implement a construction EMMP and ensure full preparation of associated plans and procedures including the following:
		  • EMMP to include SOPs, an Emergency Response Plan (ERP), an inventory of wastewater streams, training of staff as well as an inspection, maintenance and audit schedule; and
		  • Full development of EMMP Wastewater Management Procedures to include dedicated management and monitoring procedures that covers all eventualities related to the proper operation of the settling ponds, or any other wastewater discharge location/equipment.
		• Regular and dedicated procedures for the inspection and maintenance of wastewater collection, storage, and treatment infrastructure, such as pipes, oil water separators, silt screens, etc.;
		  • Regular and dedicated procedures for the management of stormwater collection, settling, testing and eventual discharge of 'clean' water to watercourses. This should also include associated measures required (e.g. silt curtains) to prevent high sediment concentration stormwater drainage to watercourses; and
		  • A training programme for all on-site workers, including sub-contractors, in relation to their obligations for ensuring proper water quality management.
		• ECM measures include but are not limited to minimisation of formation of bare soil, coverage of all bare/erodible surfaces, concrete cut-off drains, silt fences/traps along the perimeter cut-off drain, turbidity curtains for works adjacent to watercourses (canals, drains, streams), etc.;
		• Adequate drainage and piping for channelling of stormwater run-off to be assured through detailed design for capture and treatment before discharge into surface watercourses;
		• Sizing of sediment/detention pond and its associate structures shall strictly comply with the criteria required in ECM, i.e. design to cater for at least 5-year return period storm event;
		• Regular and dedicated procedures for the inspection and maintenance of stormwater collection, storage, and treatment infrastructure, such as pipes, oil water separation, silt screens, etc.; and
		• Regular and dedicated procedures for the management of stormwater collection, settling, testing and eventual discharge of 'clean' water to surface waters. This should also include associated measures required to prevent high sediment concentration stormwater drainage to surface water.

Storage and Disposal of Domestic Liquid and	Surface Water Quality	• Provision of portable toilets and on-site septic tank;

Potential Source of Impacts	Environmental Parameter Potentially Affected	Minimum Control
Construction Solid Wastes		• Regular cleaning of the portable toilets and clearing of sewage waste; • Appropriate location of toilet facilities away from any nearby watercourses; • Inspections and audits to ascertain the hygienic conditions onsite; • Training of workers on the best practices to contribute in environmental protection; • Appropriate disposal of any waste listed in the Environmental Public Health (General Waste Collection) Regulations by licensed waste operator/collector. • Surface Water Drainage, to be endorsed by a QECP and submitted to PUB; • Implementation of the ECM plan before the start of any construction work; • Effective ECM and monitoring implemented as recommended in the Code of Practice on Surface Water Drainage to ensure that discharge into stormwater drainage system does not contain TSS in concentrations greater than the prescribed limits under the Sewerage and Drainage (Surface Water Drainage) Regulations; • ECM measures include but are not limited to minimisation of formation of bare soil, coverage of all bare/erodible surfaces, concrete cut-off drains, silt fences/traps along the perimeter cut-off drain, turbidity curtains for works adjacent to water bodies (canals, drains, streams), etc. • Implementation of CCTV including a SIDS at the public drain to monitor the surface run-off discharges from the sites as per the PUB circular on Preventing Muddy Waters from the Construction Sites (October 2015); • Runoff within, upstream of, and adjacent to the work site shall be effectively drained away without causing flooding in the vicinity; • Manholes should always be adequately covered and temporarily sealed; • Protection of stockpiles with erosion blanket coverage and proper scheduling of the demolition and earthworks to reduce the quantity of stockpiles to be stored onsite; • Coverage of temporary/open storage of excavated materials; • All vehicles should go through the wheel washing process before leaving the site to ensure no earth, mud, debris, etc., is deposited on roads; and the wastewater hence generated should be stored and removed for treatment and disposal off-site by an approved Waste Management Contractor; and • Appropriate permits for discharge to be obtained from relevant authority prior to discharge. No trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land.

8.6.2 Operational Phase

Table 8-28 has a non-exhaustive list of minimum controls for each potential impact identified in Section 8.3.2 for operational phase.

Table 8-28 Minimum controls during the operational phase applicable for hydrology and surface water quality impact assessment

Potential Source of Impact	Environmental Parameter Potentially Affected	Minimum Control
Stormwater run-off contamination	Surface Water Quality	• Regular and dedicated procedures for the inspection and maintenance of stormwater collection, storage, and treatment infrastructure, such as pipes, oil water separation, silt screens, etc.; and • Regular and dedicated procedures for the management of stormwater collection, settling, testing and eventual discharge of 'clean' water to surface waters. This should also include associated measures required to prevent high sediment concentration stormwater drainage to surface waters;
Permanent land use change (Altered Stormwater runoff)	Hydrology	• Potential increase of peak-flow due to the change in the land use at the new developments can be mitigated by providing detention tanks within the Study Area. Detention tanks can capture stormwater during heavy storm events to reduce the peak run-off. Stored water can then be discharged back to the system after the storm event. As required by PUB, the storage system needs to be in place to reduce the peak flow at the operational phase to be the same or less than that of the existing condition; • Geotechnical aspect of site's slope stability (such as ERSS) to be included in detailed design engineering for the operational stage; • Providing more softscape area should be considered in the design of the development to reduce the run-off coefficient which will help to reduce the peak flow and reduce flood risk at downstream area; and • Provide more pervious areas to increase the seepage of surface water into the soil.
Improper management of liquid and solid wastes	Surface Water Quality	• To prepare sufficient disposal bins surrounding of the Project to avoid improper disposal of waste; • To conduct regular inspection on wastes' storage system of the Project; • To monitor the proposed watercourses and its surroundings with CCTV surveillance regularly to ensure no contamination occurred; • To develop an emergency response plan and conduct adequate training to maintenance workers to cope the accidental water contamination; and • Raising awareness of various stakeholders with community/stakeholder engagement (e.g. signage boards, warning signs, etc.)

8.7 Prediction and Evaluation of Hydrology and Surface Water Quality Impacts

8.7.1 Qualitative Impact Assessment

During construction phase, potential hydrological and water quality impact on the sensitive receptors such as on-site construction workers, the permanent off-site residents and visitors at vicinity of the Study Area, and the habitat and biocenosis of Bukit Chermin were assessed qualitatively using the risk matrix method that has been presented in Section 6.4. For operational phase, the sensitive receptors such as maintenance workers, future resident and visitors of the proposed developments, nearby visitors and permanent residents of the proposed development as well as the habitat and biocenosis of Bukit Chermin are sensitive receptors. The detailed of sensitive receptors could be referred to Section 8.5. The rest of identified sensitive receptors as listed in Section 8.5 were conducted for quantitative impact assessment in subsequent Section 8.7.2.

8.7.1.1 Construction Phase

As described in Section 8.3, major sources of impacts on hydrology and surface water quality during construction phase are temporary land use change, solid & toxic waste generation, liquid effluent generation, stormwater runoff contamination and improper management of chemical substances. Temporary land use change (due to construction activities) will mostly impact the existing hydrological conditions of the site, while the rest of the impact sources will mostly have an impact on surface water quality. For other impacts due to construction activities such as elevated suspended solids, hydrodynamic change and erosion/accretion along the Berlayer Creek and Marine Area were assessed quantitatively in Section 8.7.2.

Following sub-sections present the impact prediction and evaluation on hydrology and surface water quality during construction phase.

8.7.1.1.1 Hydrology

8.7.1.1.1.1 Temporary Land Use Change

Land use modification due to land clearing during construction phase may affect existing hydrological conditions of the Study Area. Due to the proposed construction activities which will include site clearance and excavations, the quantity of the vegetation on the ground will reduce, exposing bare soil. Such changes may increase stormwater surface runoff and reduce the time of runoff propagation over the land. Subsequently this could lead to rapid and significant increase of water levels and possible flooding of surrounding areas (watercourses in Keppel Club) during the heavy storm events. Hence, catchment area and existing hydrological conditions could be affected significantly. It is assessed that the impact intensity on the human receptors such as on-site construction workers and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, impact consequence would be **Medium** (refer to the Table 6-7). Likelihood for this source of impact is determined as **Regular** and hence the impact significance would be **Moderate** (based on Impact Significance Matrix [Table 6-9]).

Ecology in the surroundings of the Project such as the habitat and biocenosis in the vicinity of Project might also potentially be affected by dry weather flow alteration and stormwater peak flow increase during construction phase. As the proposed land use change in the Keppel Club area might not significantly change the existing land use of Bukit Chermin, the impact intensity on the habitat and biocenosis at Bukit Chermin would be **Low.** Given that the habitat and biocenosis at Bukit Chermin is Priority 1 sensitive receptor, the impact consequence would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). The impact significance would be **Minor** with **Rare** likelihood of occurrence of the impact during construction phase.

8.7.1.1.2 Surface Water Quality

8.7.1.1.2.1 Solid & Toxic Wastes Generation

Activities that are planned for the construction phase of the Project (as described in the Section 3.3) could result in generation of various solid and toxic wastes. This could have significant adverse effects on the water quality of the identified watercourses. However, the quantity of the wastes stored on the site (e.g. chemical waste, construction debris, etc.) is expected to be limited and the wastes would be periodically removed by the licensed waste management contractors. It is expected that, after implementation of the minimum control measures, the impact intensity on the human receptors such as on-site construction workers and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the solid and toxic wastes generation impact from the construction activities for on-site construction workers, the impact significance is considered **Moderate**. As the wastes will be disposed only in the designated waste disposal facilities onsite, the likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

The ecology in the surroundings of the Project might also potentially be affected by the water quality contamination due to solid and toxic wastes generation from the construction activities. . As Bukit Chermin is located on a higher elevation compared to the surrounding Study Area, it is not expected that the potential contamination of water within future construction site would propagate upstream. Therefore, the impact intensity is assessed to be **Low**. The impact consequence for habitat and biocenosis at Bukit Chermin would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). With **Rare** likelihood of occurrence of the impact, the impact significance on habitat and biocenosis at Bukit Chermin would be **Minor**.

8.7.1.1.2.2 Improper Management of Chemical Substances

During maintenance of construction vehicles or mechanical equipment, the chemical substances such as fuel and lubricants may accidentally spill and leak to the surrounding streams or drains. Given the relatively small quantities of such potential spills, the impact intensity on the human receptors such as on-site construction workers and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the toxic waste generation impact from the construction activities for on-site construction workers, the impact significance is considered **Moderate**. As the wastes will be managed based on developed SOP and disposed by licensed waste operator based on Environmental Public Health (Toxic Industrial Waste) Regulations, the likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

The ecology in the surroundings of the Project might also potentially be affected by the water quality contamination due to improper management of chemical substances from the construction activities As Bukit Chermin is located on a higher elevation compared to the surrounding Study Area, it is not expected that the potential contamination of water within future construction site would propagate upstream. Therefore, the impact intensity of any spill of chemical substances on the watercourses used by the habitat and biocenosis of Bukit Chermin would be **Low.** The impact consequence for habitat and biocenosis at Bukit Chermin would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). With **Rare** likelihood of occurrence of the impact, the impact significance on habitat and biocenosis at Bukit Chermin would be **Minor**.

8.7.1.1.2.3 Liquid Effluent Generation and Stormwater Runoff

During construction phase, the liquid effluents generated from the construction activities commonly include extracted groundwater, sanitary discharges, and stormwater runoff from exposed and unstable slopes. The elevated suspended solids of liquid effluents will lead to increased turbidity and sedimentation rates. Potential change in runoff volume and salinity might lead to potential change in salinity in Berlayer Creek. It is expected that, after implementation of the minimum control measures, the impact intensity on the human receptors such as on-site construction workers and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the impact for on-site construction workers, the impact significance is considered as **Moderate**. Since the regular and dedicated procedures for the inspection and maintenance of wastewater management will be developed and put in place accordingly for construction activities, the likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

The water runoff generated from excavated areas or land clearing will potentially increase the levels of suspended solids, nutrients, oils and greases, change in runoff volume and salinity, etc. on the nearby watercourses of Project worksite if not properly managed during construction phase. The ecology in the surroundings of the Project might potentially be affected by the water quality contamination from the construction activities. As Bukit Chermin is located on a higher elevation compared to the surrounding Study Area, it is not expected that the potential contamination of water within future construction site would propagate upstream. Therefore, the impact intensity of water contamination on the watercourses which used by the habitat and biocenosis of Bukit Chermin would be **Low.** The impact consequence for habitat and biocenosis at Bukit Chermin would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). With **Rare** likelihood of occurrence of the impact, the impact significance on habitat and biocenosis at Bukit Chermin would be **Minor**.

8.7.1.1.2.4 Storage and Disposal of Domestic Liquid and Construction Solid Wastes

During construction phase, the domestic and construction wastes normally will be generated from construction activities. Surface water contamination may occur due to improper storage, handling, transfer and disposal of the wastes. Given the assumptions that the appropriate minimum control measures have been applied, the impact intensity on the human receptors such as on-site construction workers and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the improper storage and disposal of domestic liquid and construction solid wastes during construction phase for on-site construction workers, the impact significance is considered **Moderate**. With regular inspection and audit on hygienic conditions of construction worksite, the likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

The ecology in the surroundings of the Project might potentially be affected by the water quality contamination due to improper storage and disposal of domestic liquid and construction solid wastes. As Bukit Chermin is located on a higher elevation compared to the surrounding Study Area, it is not expected that the potential contamination of water within future construction site would propagate upstream. Therefore, the impact intensity of water contamination on the watercourses which used by the habitat and biocenosis of Bukit Chermin would be **Low.** The impact consequence for habitat and biocenosis at Bukit Chermin would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). With **Rare** likelihood of occurrence of the impact, the impact significance on habitat and biocenosis at Bukit Chermin would be **Minor**.

Table 8-29 Summary of Impact Evaluation during Construction Phase

Potential Source of Impact	Receptor Sensitivity[5]	Impact Intensity	Consequence	Likelihood	Significance
Temporary Land Use Change (Hydrology)	On-site construction workers (Priority 2)	Medium	Medium	Occasional	Moderate
	Permanent off-site residents and visitors in the vicinity of the Study Area (Priority 2)	Medium	Medium	Rare	Minor
	Habitat and biocenosis of Bukit Chermin (Priority 1)	Low	Low	Rare	Minor
Solid & Toxic Wastes Generation (Surface Water Quality)	On-site construction workers (Priority 2)	Medium	Medium	Regular	Moderate
	Permanent off-site residents and visitors in the vicinity of the Study Area (Priority 2)	Medium	Medium	Rare	Minor
	Habitat and biocenosis of Bukit Chermin (Priority 1)	Low	Low	Rare	Minor
Improper Management of Chemical Substances (Surface Water Quality)	On-site construction workers (Priority 2)	Medium	Medium	Regular	Moderate
	Permanent off-site residents and visitors in the vicinity of the Study Area (Priority 2)	Medium	Medium	Rare	Minor
	Habitat and biocenosis of Bukit Chermin (Priority 1)	Low	Low	Rare	Minor

[5] Receptor locations are shown in Figure 8-14.

Potential Source of Impact	Receptor Sensitivity[5]	Impact Intensity	Consequence	Likelihood	Significance
Liquid Effluent Generation and Stormwater Runoff (Surface Water Quality)	On-site construction workers (Priority 2)	Medium	Medium	Regular	Moderate
	Permanent off-site residents and visitors in the vicinity of the Study Area (Priority 2)	Medium	Medium	Rare	Minor
	Habitat and biocenosis of Bukit Chermin (Priority 1)	Low	Low	Rare	Minor
Storage and Disposal of Domestic Liquid and Construction Solid Wastes (Surface Water Quality)	On-site construction workers (Priority 2)	Medium	Medium	Regular	Moderate
	Permanent off-site residents and visitors in the vicinity of the Study Area (Priority 2)	Medium	Medium	Rare	Minor
	Habitat and biocenosis of Bukit Chermin (Priority 1)	Low	Low	Rare	Minor

8.7.1.2 Operational Phase

As described in Section 8.3, the major sources of impacts on hydrology and surface water quality during operational phase are altered stormwater runoff, stormwater runoff contamination and improper management of liquid and solid wastes. The potential source of altered stormwater runoff will mostly impact the existing hydrological conditions of the site, while the rest of the impact sources will mostly have an impact on surface water quality. The sources of impacts will be assessed qualitatively using the risk matrix method as presented in Section 6.4. For other impacts due to operational activities such as land use change, hydrodynamic change, salinity change at Berlayer Creek and erosion/accretion along the Berlayer Creek will be assessed quantitatively in Section 8.7.2.

Following sub-sections present the impact prediction and evaluation on hydrology and surface water quality during operational phase.

8.7.1.2.1 Hydrology

8.7.1.2.1.1 Altered Stormwater Runoff

Higher percentage of urbanized areas is known to have an impact on the surface water runoff, both in quantity and quality. Hence, it is expected that the proposed future land use which includes the residential developments will have an impact on the hydrology during operational phase of the Project, especially during storm events. Increased runoff flow peak is expected in such events which could consequently lead to elevated water depths in drainage system and potentially cause flooding to the surrounding areas. It is assessed that the impact intensity on the human receptors such as maintenance workers, future residents and visitors of the proposed development and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the impact for maintenance workers, future residents and visitors within the proposed development, the impact significance is considered as **Moderate**. Since the detention system will be provided as

required in PUB's COP on Surface Water Drainage, 2021 [R-16] to capture the stormwater during heavy storm events to reduce the peak runoff and to ensure zero increase in flood peak from the baseline condition, the nearby watercourses will not be significantly impacted. The likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

The ecology in the surroundings of the Project such as the habitat and biocenosis in the vicinity of Project might also potentially be affected by dry weather flow alteration and stormwater peak flow increase during operation of the Project. As the proposed land use change might not significantly change the existing land use of Bukit Chermin, the impact intensity on the habitat and biocenosis of Bukit Chermin would be **Low.** Given that the habitat and biocenosis at Bukit Chermin is Priority 1 sensitive receptor, the impact consequence would be **Low** based on the Impact Consequence Matrix (refer to the Table 6-7). The impact significance would be **Minor** with **Rare** likelihood of occurrence of the impact during construction phase.

8.7.1.2.2 Surface Water Quality

8.7.1.2.2.1 Stormwater Runoff Contamination

With the minimum controls such as regular and dedicated procedures for stormwater management, wastewater and solid waste management practice will be implemented, impact intensity of stormwater runoff contamination on the human receptors such as maintenance workers, future residents and visitors within the proposed development and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). Given **Regular** likelihood of the impact for maintenance workers, future residents and visitors within the proposed development, the impact significance is considered as **Moderate**. Since the regular and dedicated procedures for the inspection and maintenance of stormwater management will be implemented during Project's operation, the likelihood of the impact on nearby permanent off-site residents and visitors is considered **Rare**, and the impact significance would be **Minor** (based on Impact Significance Matrix of Table 6-9).

8.7.1.2.2.2 Improper Management of Liquid and Solid Wastes

During operation phase, the surface water in the Project and surroundings watercourses might easily be contaminated due to inappropriate disposal and storage of liquid and solid wastes. The impact intensity of improper management of liquid and solid wastes on the human receptors such as maintenance workers, future residents and visitors within the proposed development and nearby permanent off-site residents and visitors would be **Medium**. Since the human receptors have been categorized as Priority 2 sensitive receptors, the impact consequence would be **Medium** (refer to the Table 6-7). By providing regular inspection on wastes storage system and monitor the proposed watercourses of the operational footprint, **Rare** likelihood of the impact would be expected on human receptors such as the maintenance workers, future residents and visitors within the proposed development and nearby permanent off-site residents and visitors, the impact significance is considered as **Minor**.

Table 8-30 Summary of Impact Evaluation during Operational Phase

Potential Source of Impact	Receptor Sensitivity[6]	Impact Intensity	Consequence	Likelihood	Significance
Altered Stormwater Runoff (Hydrology)	Maintenance workers, future residents and visitors of the proposed development (Priority 2)	Medium	Medium	Regular	Moderate
	Visitors and permanent residents in the vicinity of the proposed development (Priority 2)	Medium	Medium	Rare	Minor

[6] Receptor locations are shown in Figure 8-15.

Potential Source of Impact	Receptor Sensitivity[6]	Impact Intensity	Consequence	Likelihood	Significance
	Habitat and biocenosis of Bukit Chermin (Priority 3)	Low	Low	Rare	Minor
Stormwater Runoff Contamination (Surface Water Quality)	Maintenance workers, future residents and visitors of the proposed development (Priority 2)	Medium	Medium	Regular	Moderate
	Visitors and permanent residents in the vicinity of the proposed development (Priority 2)	Medium	Medium	Rare	Minor
Improper Management of Liquid and Solid Wastes (Surface Water Quality)	Maintenance workers, future residents and visitors of the proposed development (Priority 2)	Medium	Medium	Rare	Minor
	Visitors and permanent residents in the vicinity of the proposed development (Priority 2)	Medium	Medium	Rare	Minor

8.7.2 Quantitative Impact Assessment

For quantitative impact assessment of both construction and operational phases, the ecological and water-dependent socio-economic sensitive receptors such as habitat and biocenosis of Berlayer Creek, seagrass meadow along the seawall and Labrador Slipway, coral reefs at Keppel Marina, seagrass and fringing reefs at west coast of Sentosa Island, seagrass and rocky shores near Labrador Jetty as well as the navigational channels of yachts at Keppel Marina, Cruise Bay area, West Keppel Fairway will be considered. Besides, the sensitive receptor of international boundary of Singapore and Indonesia will also be included in the quantitative impact assessment. The detailed of sensitive receptors could be referred to Section 8.5.

Table 8-31 Summary of parameter assessed in quantitative impact assessment

	Impact Assessment	Description
1.	**Sediment Plume Impact Assessment**	• To assess the Project's flow discharge impacts on the sediment plume during construction phase quantitatively. • MIKE 21 Flow Model FM- Mud Transport module to be used for the assessment.
2.	**Flooding Impact Assessment**	• To assess the flooding impact for 25 years storm event due to land use change impact from operational phase quantitatively. • MIKE 21 Flow Model FM modelling software together with findings from hydrological analysis to be used for the assessment.
3.	**Hydrodynamic Impact Assessment**	• To assess existing hydrodynamic conditions and the impacts from operational phases quantitatively. • MIKE 21 Flow Model FM modelling software together with findings from hydrological analysis to be used for the assessment.
4.	**Morphological Impact Assessment**	• To assess erosion and sedimentation conditions and the impacts from operational phases quantitatively. • The morphological analysis will also be performed for the operational phase, to assess the morphological impacts arising from the final profile of the study area
5.	**Salinity Impact Assessment**	• To assess the existing salinity condition and the impacts from the operational phases quantitatively. • MIKE 21 Flow Model FM modelling software together with findings from hydrological analysis to be used for the assessment.

8.7.2.1 Construction Phase

This section presents the quantitative assessment results for the sediment plume impact raising from the Construction Phase.

8.7.2.1.1 Sediment Plume Impacts

8.7.2.1.1.1 Mean Excess SSC

Figure 8-16 and Figure 8-17 present the mean excess SSC at the Assessment Area during the NE simulation period and SW simulation period respectively. The excess SSC in the waterbodies originates from turbid runoff, which carries sediments from the construction site, discharging from the outlets and into the waterbodies. From the simulation results, it could be observed that the excess suspended sediments are mainly confined within the Berlayer Creek. The mean excess SSC ranges between 1 mg/L to 8 mg/L in the Berlayer Creek, with the relative higher excess SSC at the upstream of the Berlayer Creek. The upstream of the Berlayer Creek receives significant flow from the catchments at the upstream of the Berlayer Creek, which brings in excess SSC into the Berlayer Creek. Meanwhile, the lower current speed and smaller tidal influence at the upstream of the Berlayer Creek results in a reduced flushing effect. Hence, the high SSC inputs coupled with a reduced flushing effect result in relatively higher excess SSC at the upstream of the Berlayer Creek. The above provides the explanation for the simulation results for both NE and SW monsoons.

According to the ASEAN Marine Water Quality Criteria (Table 8-1), the change in TSS shall not be greater than 10% of the background concentration. The background TSS in the model simulation was assumed as 33 mg/L. The defined limits as per the guidelines is 3.3 mg/L, where it is derived from 10% of the background TSS of 33 mg/L. Based on the simulation results, the excess SSC at the midstream and downstream of the Berlayer Creek are well within this criterion. Only the excess SSC at the upstream of the Berlayer Creek exceeds this criterion.

The sensitive receptors at the upstream of the Berlayer Creek consists of mainly mangrove trees, which has high tolerance to the high SSC. Therefore, it is concluded that the sediment plume impacts from the construction phase will have **Minor Impacts** on water quality.

The international boundary is located further south of the Study Area and has been considered as a sensitive receptor for this impact assessment. The modelled results showed that the sediment plume did not migrate from the Study Area to the waters near/along the international boundary, since the excess SSC at the international boundary was found to be less than 3.3 mg/l. Therefore, **No Impacts** is expected to arise during construction phase with respects to sediment plumes at the international boundary.

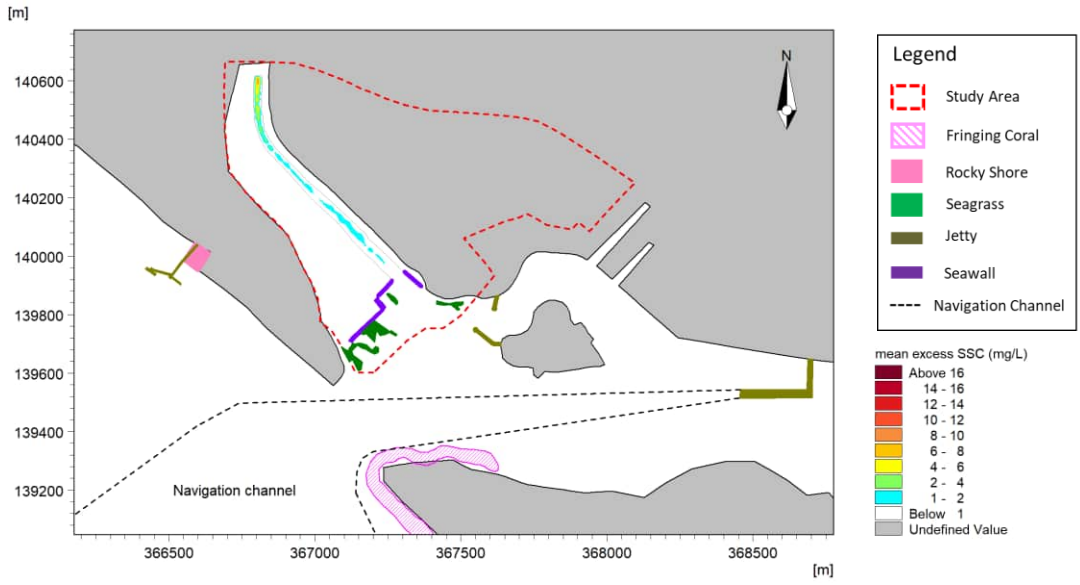


Figure 8-16 Mean Excess SSC during NE Monsoon

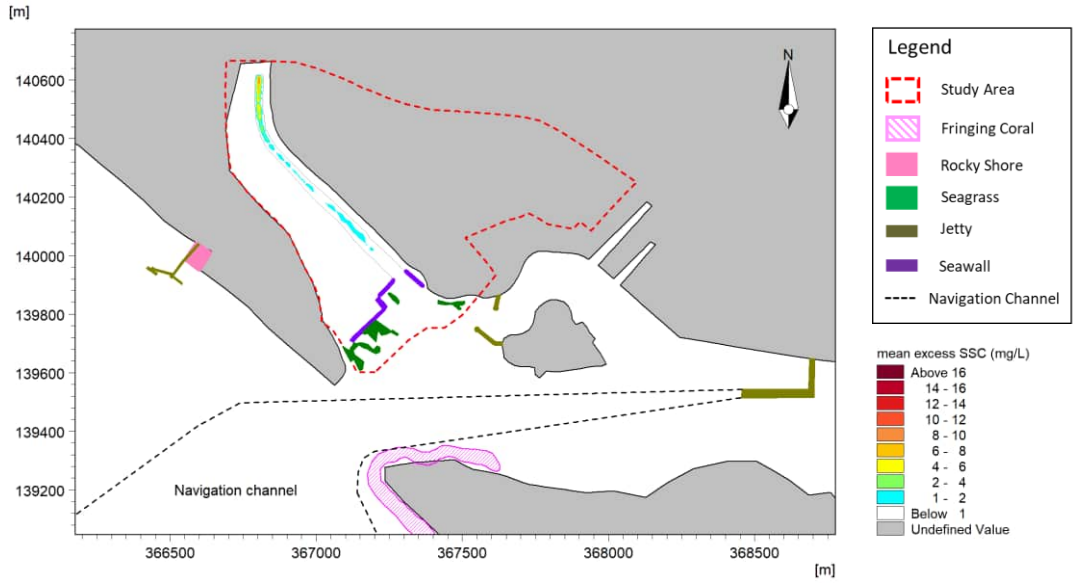


Figure 8-17 Mean Excess SSC during SW monsoon

8.7.2.1.1.2 Excess SSC Impact Assessment

Figure 8-18 and Figure 8-19 are the plots for the exceedance of 5 mg/L (i.e. which is the impact significance criteria defined for 'No Impacts' to coral, seagrass and aquatic fauna as shown in Table 8-19, Table 8-21 and Table 8-24) during the NE simulation period and SW simulation period respectively. SSC exceedances were only observed at the upstream of the Berlayer Creek and the midstream of the Berlayer Creek, where there would be discharge locations which discharge runoff from the catchment. No exceedance of 5mg/L were observed at coral areas and the seagrass meadows, which are located at the outside of the Berlayer Creek.

Comparing the exceedance level against the SSC tolerance limits for corals and seagrass (Table 8-32, Table 8-33), it is concluded that during the construction phase, **No Impacts** from the excess SSC aspect on corals and seagrass.

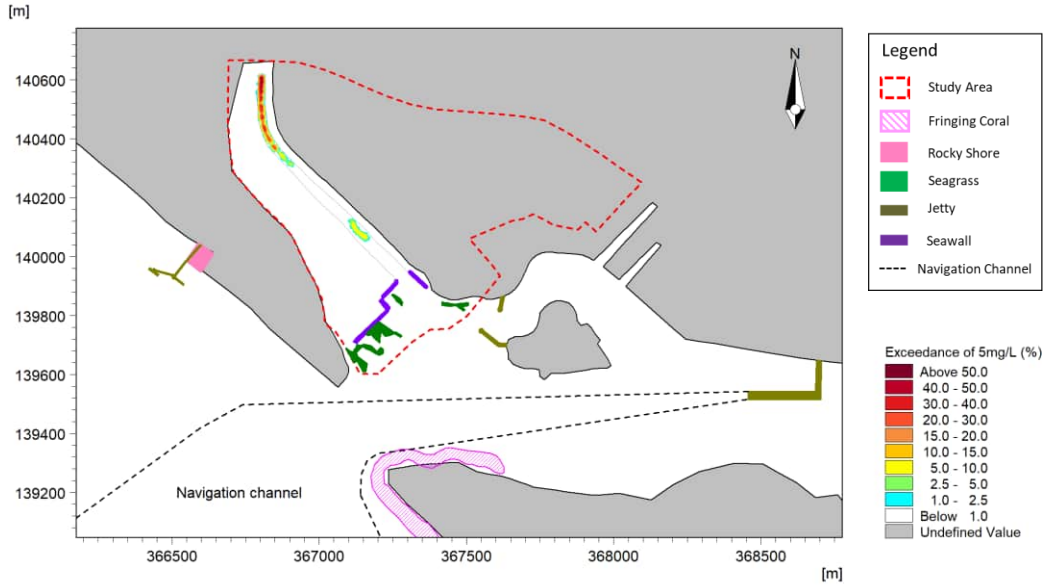


Figure 8-18 Percentage of Time for Excess SSC Exceedance of 5mg/L during NE monsoon

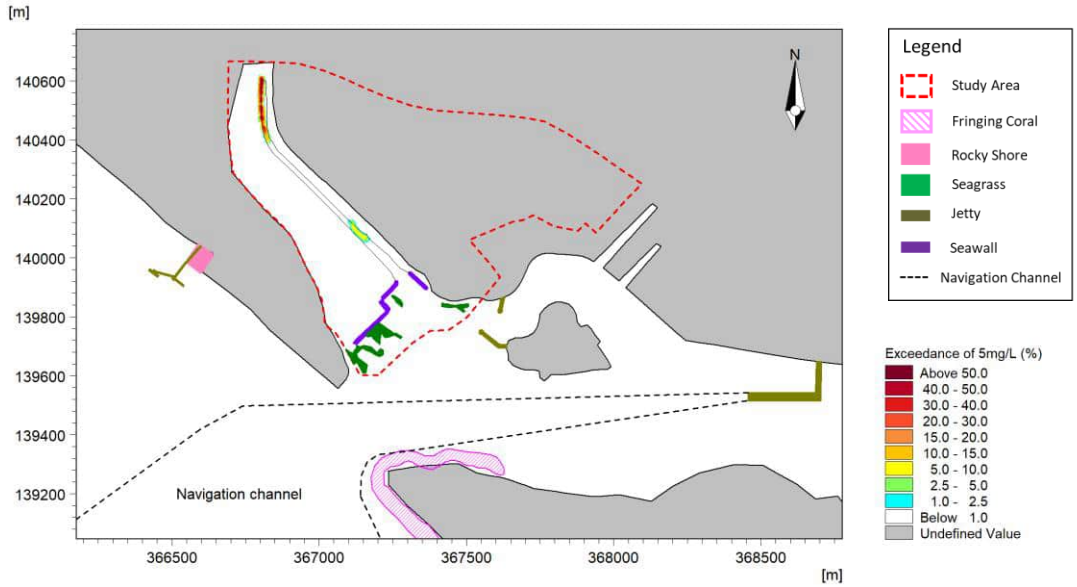


Figure 8-19 Percentage of Time for Excess SSC Exceedance of 5mg/L during SW monsoon

Figure 8-20 and Figure 8-21 are the plots for the exceedance of 25 mg/L during the NE simulation period and SW simulation period respectively. Based on the simulation results for the exceedance of 25 mg/L, there were only exceedances occurred at the upstream of the Berlayer Creek with less than 2% of the time. This means that during 98% of the time the excess SSC was less than 25mg/L.

Comparing the exceedance level against the SSC tolerance limits for the aquatic fauna (Table 8-24), it can be concluded that during the construction phase, it can be expected that excess SSC will have **Minor Impacts** on aquatic fauna in the Assessment Area. It is important to note that the sediment plume model simulation was based on the conservative assumption that the Contractor would discharge turbid water with a maximum allowable TSS level of 50 mg/L. The actual excess SSC may be lower than the results simulated from this sediment plume model.

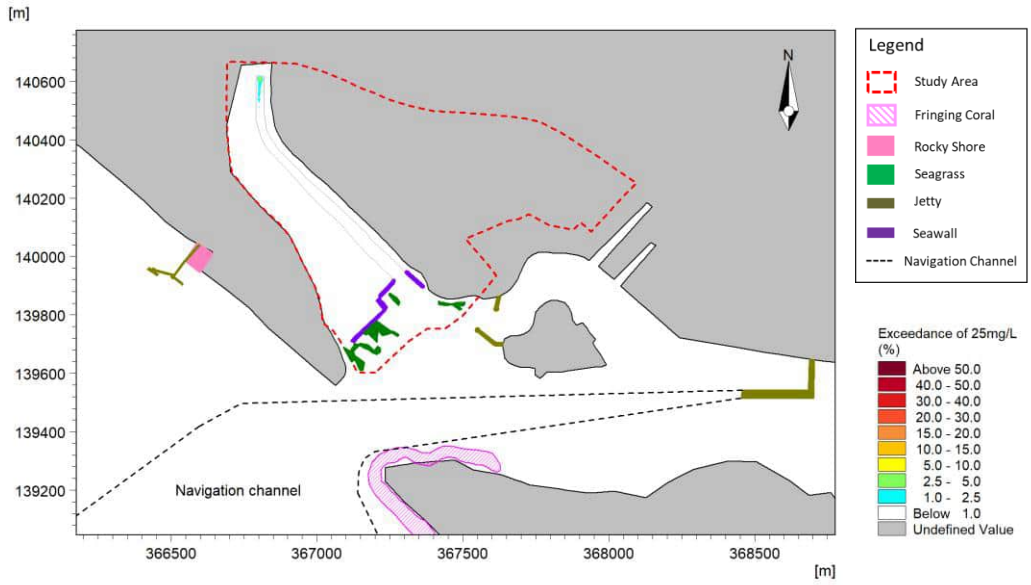


Figure 8-20 Percentage of Time for Excess SSC Exceedance of 25mg/L during the NE monsoon

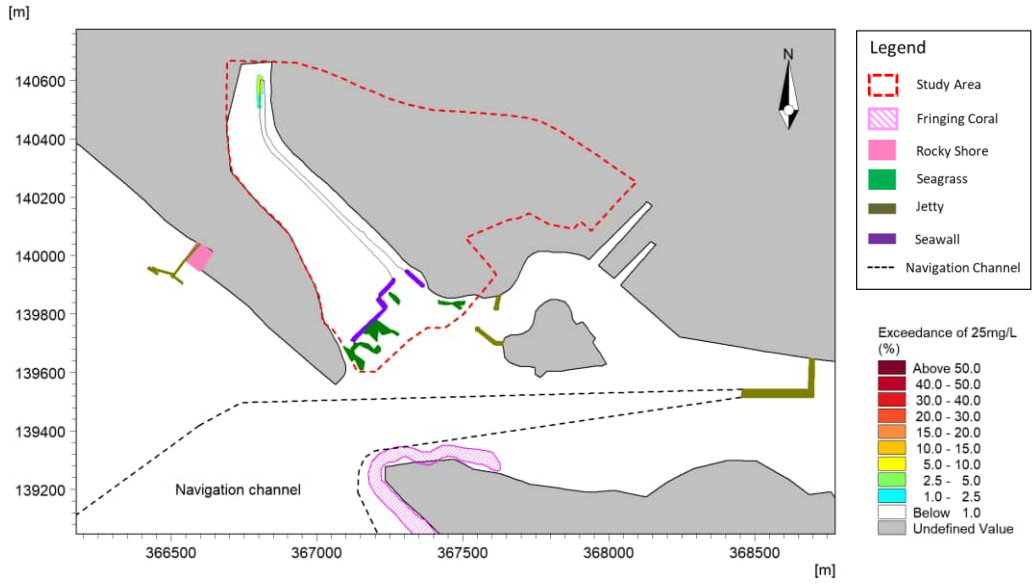


Figure 8-21 Percentage of Time for Excess SSC Exceedance of 25mg/L during the SW monsoon

Table 8-32 EQO at Receptor Site for Construction Phase during the NE monsoon

Environmental Receptor	Max. Percentage of Exceedance of Excess SSC Concentration	Impact Assessment Results	
		Impact Level	Corresponded Criteria to the Impact Level
Seagrass	Excess SSC > 5mg/l for 1% of the time	No impact on seagrass	Excess SSC > 5mg/l for less than 20% of the time
Corals	Excess SSC > 5mg/l for 1% of the time	No impact on corals	Excess SSC > 5mg/l for less than 5% of the time
Aquatic Fauna	Excess SSC < 25mg/l for 98% of the time	Minor Impact	10 mg/L < Excess SSC < 25 mg/L for 95% of the time
International boundary	Excess SSC < 1mg/l for all the time	No impact on international boundary	Excess SSC < 3.3 mg/L for all the time

Table 8-33 EQO at Receptor Site for Construction Phase during the SW monsoon

Environmental Receptor	Max. Percentage of Exceedance of Excess SSC Concentration	Impact Assessment Results	
		Impact Level	Corresponded Criteria to the Impact Level
Seagrass	Excess SSC > 5mg/l for 1% of the time	No impact on seagrass	Excess SSC > 5mg/l for less than 20% of the time
Corals	Excess SSC > 5mg/l for 1% of the time	No impact on corals	Excess SSC > 5mg/l for less than 5% of the time
Aquatic Fauna	Excess SSC < 25mg/l for 98% of the time	Minor Impact	10 mg/L < Excess SSC < 25 mg/L for 95% of the time
International boundary	Excess SSC < 1mg/l for all the time	No impact on international boundary	Excess SSC < 3.3 mg/L for all the time

8.7.2.2 Operational Phase

This section presents the quantitative assessment results for the flooding impact, hydrodynamic impact, and morphological impact and salinity impacts arising from the operational phase of the Project.

8.7.2.2.1 Flooding impact

8.7.2.2.1.1 Maximum Water Level

Figure 8-24 and Figure 8-25 present the maximum water level within the Assessment Area during the NE simulation period and SW simulation period respectively. Each figure shows the simulated results for the baseline case and the operational phase case. The runoff simulated from 25-year return period design rainfall events with climate change impact by SWMM was input to the as the source files in the flooding impact model simulation. The maximum water level at the very upstream of the Berlayer Creek is up to +2.3 mMSL. The maximum water level in the downstream of the Berlayer Creek is +1.1 mMSL for the baseline case and the operational phase. No overflow was observed from the simulation results for both baseline case and the operational phase during the NE and SW monsoons.

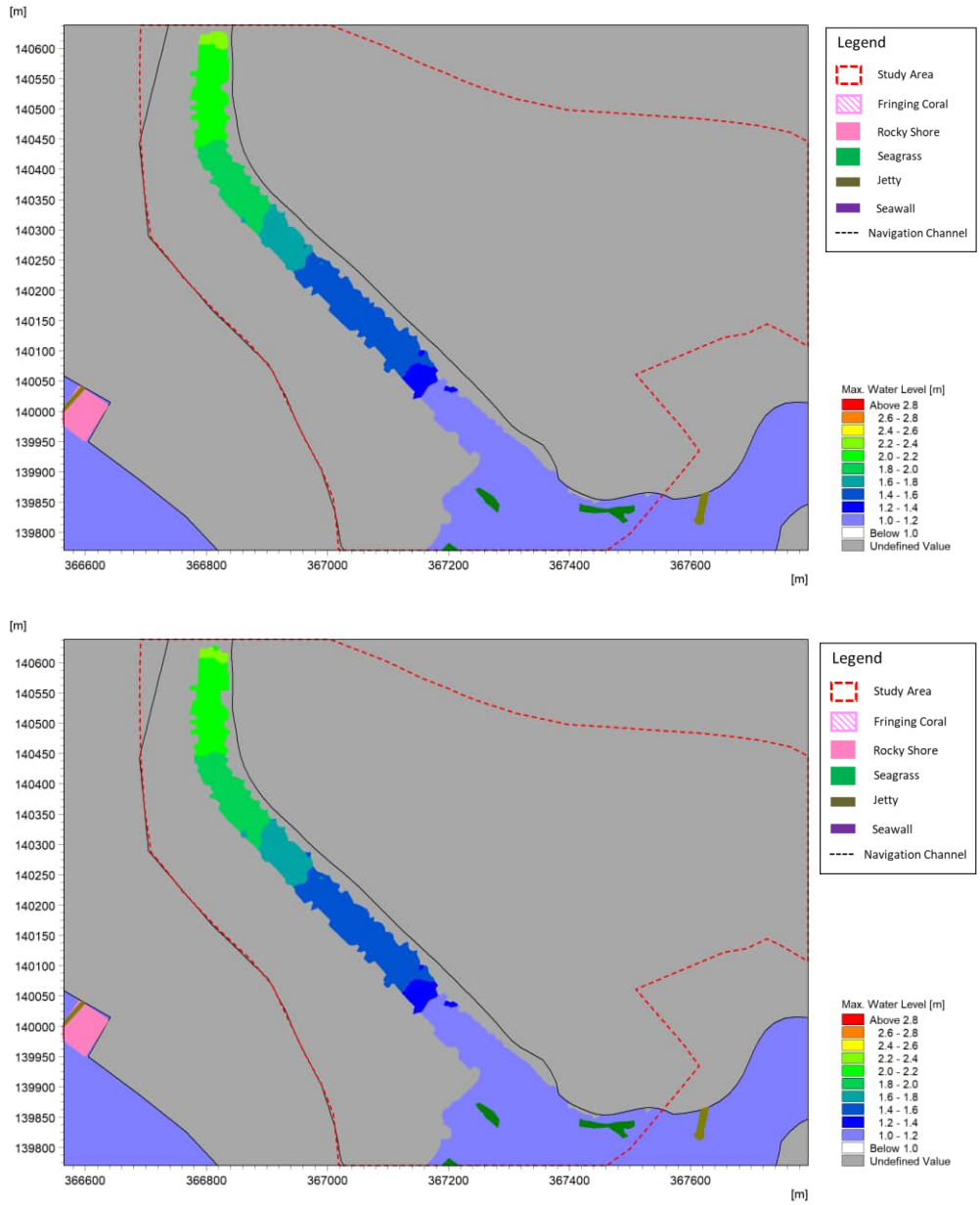


Figure 8-22 Maximum Water Level at the Berlayer Creek for Baseline (top) and Operational Phase (bottom) during NE Monsoon

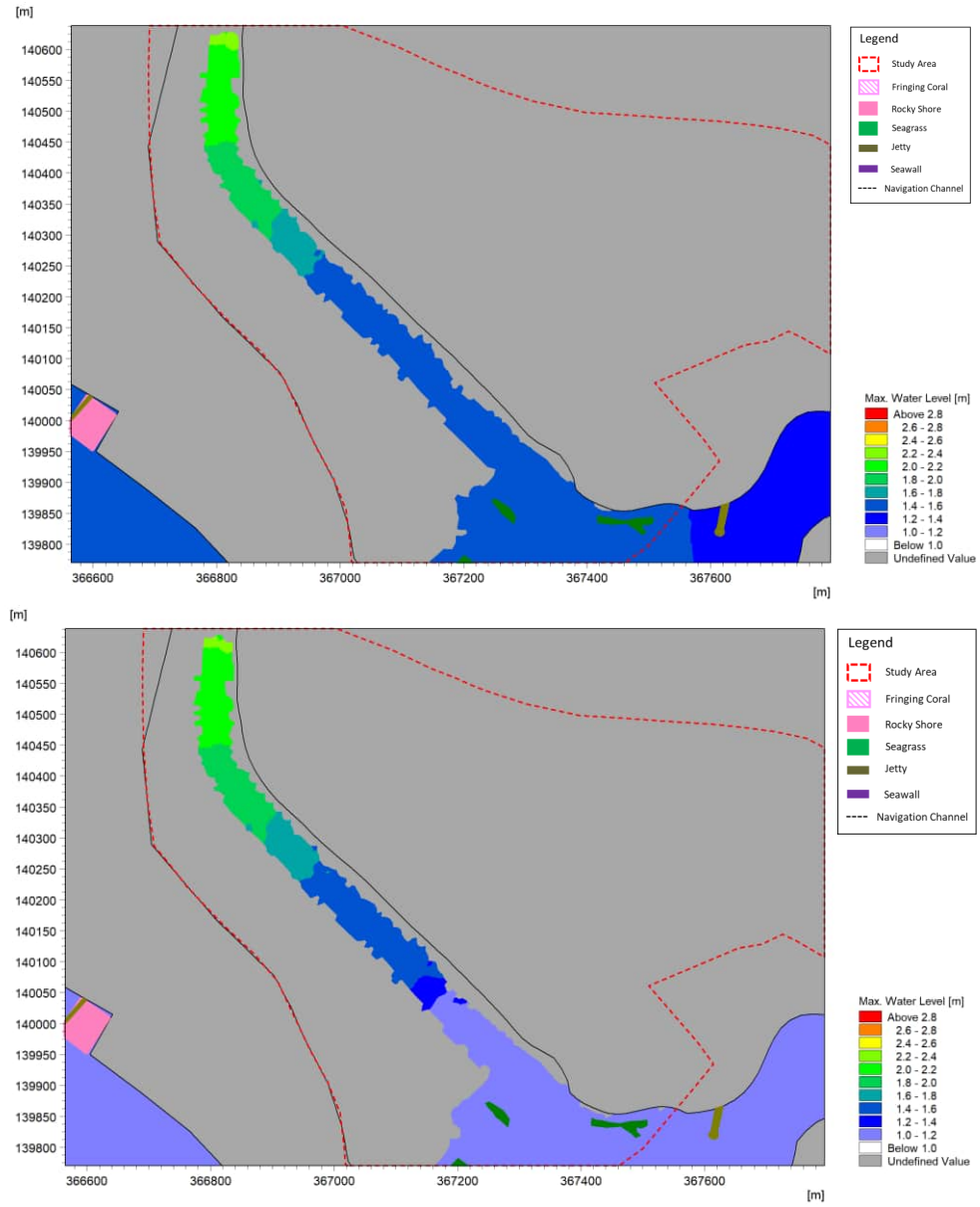


Figure 8-23 Maximum Water Level at the Berlayer Creek for Baseline (top) and Operational Phase (bottom) during SW Monsoon

8.7.2.2.1.2 Maximum Water Depth

Figure 8-24 and Figure 8-25 present the maximum water depth within the Assessment Area during the NE simulation period and SW simulation period respectively. Each figure shows the simulated results for the baseline case and the operational phase case. The runoff simulated from 25-year return period design rainfall events with climate change impact by SWMM was input to the as the source files in the flooding impact model simulation. The maximum water depth at the very upstream of the Berlayer Creek are up to +1.7 mMSL. The maximum water depth in the Berlayer Creek is less than +2.3 mMSL for the baseline case and the operational phase. No overflow was observed from the simulation results for both baseline case and the proposed case during the NE and SW monsoons.

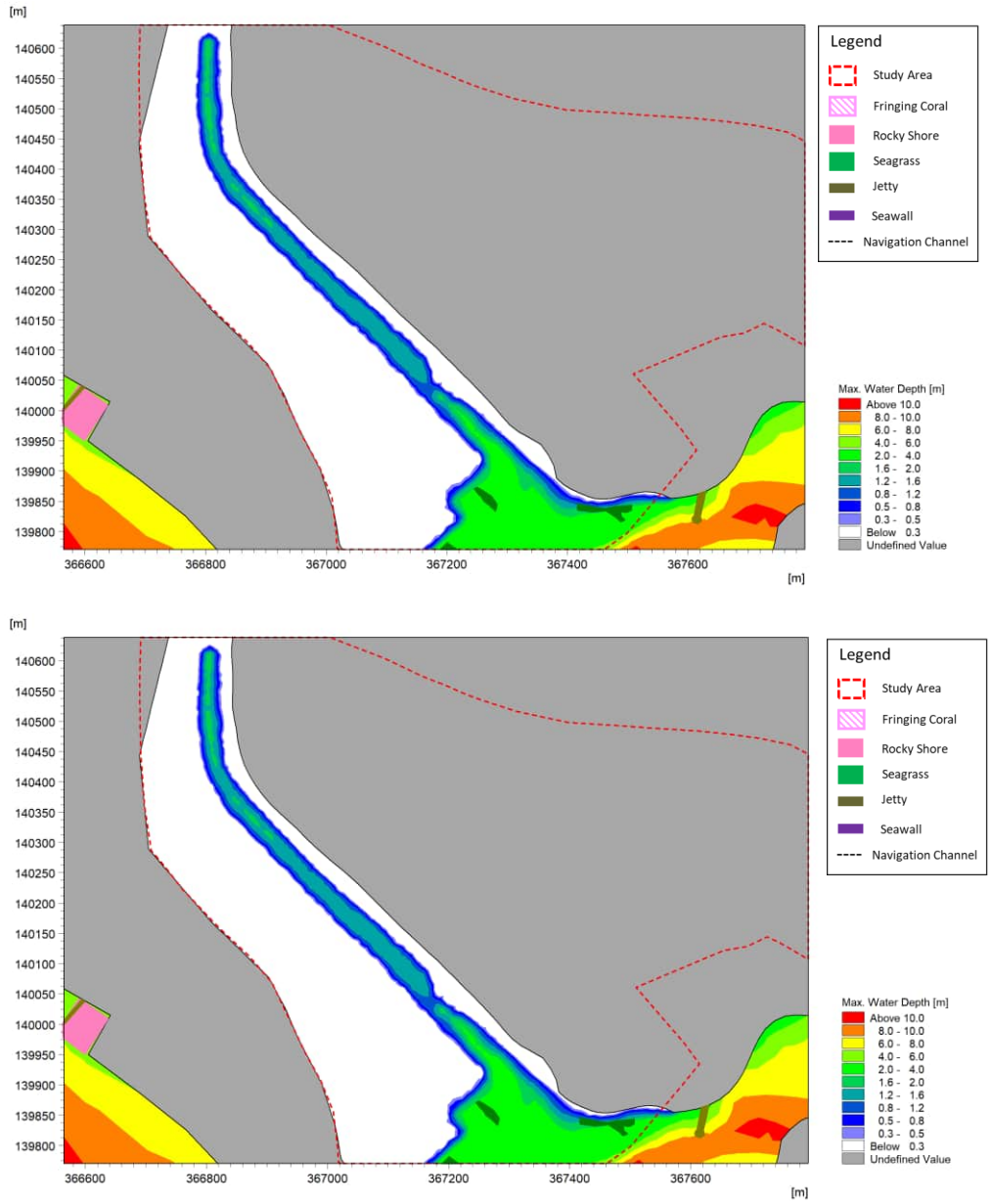


Figure 8-24 Maximum Water Depth at the Berlayer Creek for Baseline (top) and Operational Phase (bottom) during NE Monsoon

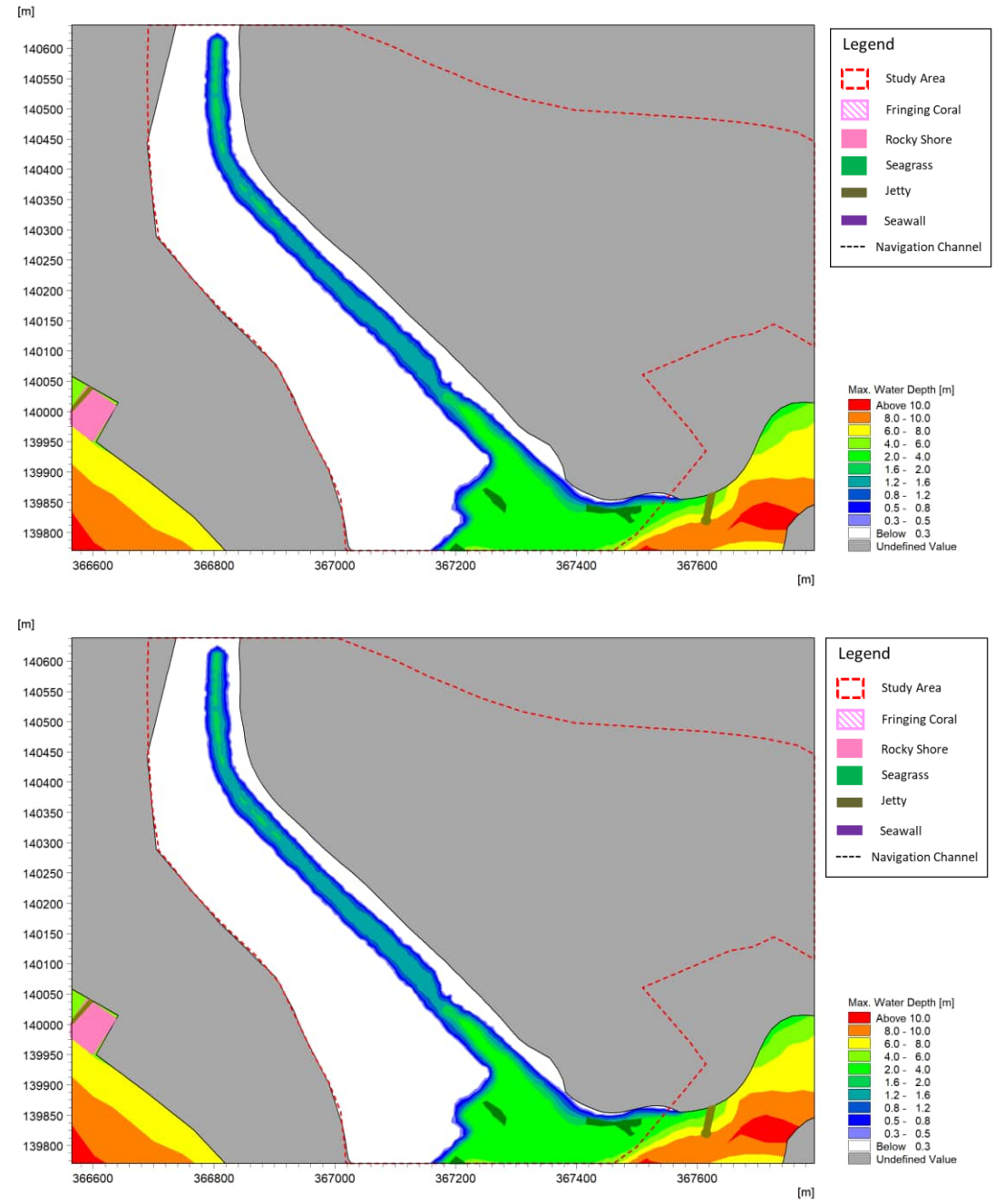


Figure 8-25 Maximum Water Depth at the Berlayer Creek for Baseline (top) and Operational Phase (bottom) during SW Monsoon

8.7.2.2.1.3 Changes in Maximum Water Level

Figure 8-26 and Figure 8-27 show the changes in the maximum water level during the NE simulation period and SW simulation period respectively. In comparison to the baseline case, the maximum water level at the Operational Phase decreases 1.5 cm at the upstream of the Berlayer Creek and increases 1.3 cm at the middle stream of the Berlayer Creek. The rest area has changes within 1 cm. A magnitude of 2 cm is only 1% of the total water depth (i.e. 1.8 m as shown in Figure 8-24 and Figure 8-25). Furthermore, no overflow is observed from the simulation results. Therefore, it is concluded that the flooding impact in the Assessment Area during operational phase is **Negligible**.

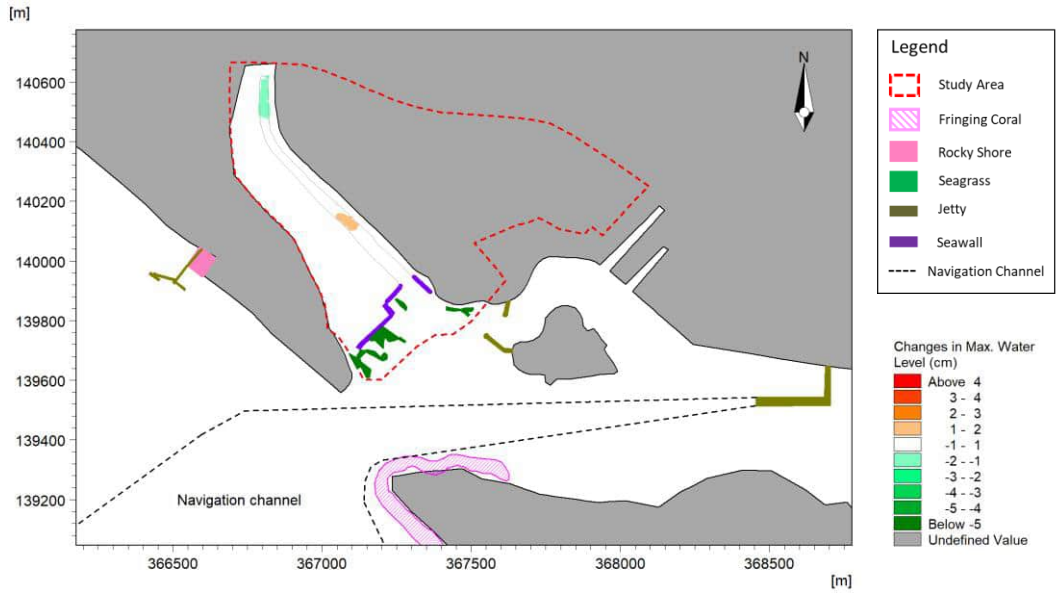


Figure 8-26 Changes in the Maximum Water Level from the Operational Phase to the Baseline case during NE Monsoon

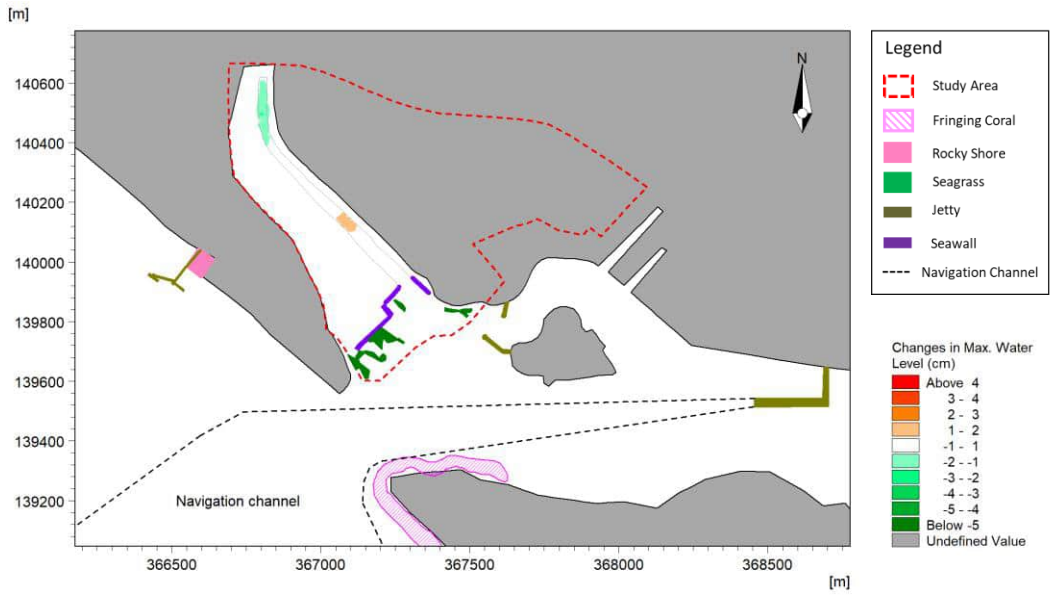


Figure 8-27 Changes in the Maximum Water Level from the Operational Phase to the Baseline case during SW Monsoon

8.7.2.2.2 Hydrodynamic Impacts

8.7.2.2.2.1 Current Field

Figure 8-28 and Figure 8-29 present the simulated current vectors at peak flood tide during the NE simulation period and SW simulation period respectively. Each figure presents the current field for the baseline case and the operational phase. Based on the snapshots of the current fields at the peak flood, it could be seen that the Berlayer Creek is characterised with relatively low currents in both baseline case and the operational phase. The current mainly flow through the Keppel Bay during the flood tides. When comparing the baseline and the operational phase cases, there are no apparent changes in the current fields in the Keppel Bay and the Berlayer Creek.

Figure 8-30 and Figure 8-31 present the simulated current vectors at peak ebb tide during the NE simulation period and SW simulation period respectively. Each figure presents the current field for the baseline case and the operational phase. Based on the snapshots of the current fields at the peak ebb, it could be seen that the Berlayer Creek is characterised with relatively low currents in both baseline case and the operational phase. The current mainly flow through the Keppel Bay during the flood tides. When comparing the baseline and the operational phase cases, there are no apparent changes in the current fields in the Keppel Bay and the Berlayer Creek.

Overall, it can be observed that there are no changes in eddy zones or shear zones associated with the project operational phase in Berlayer development area and adjacent waters. **No Impacts** on the current field during the operational phase.

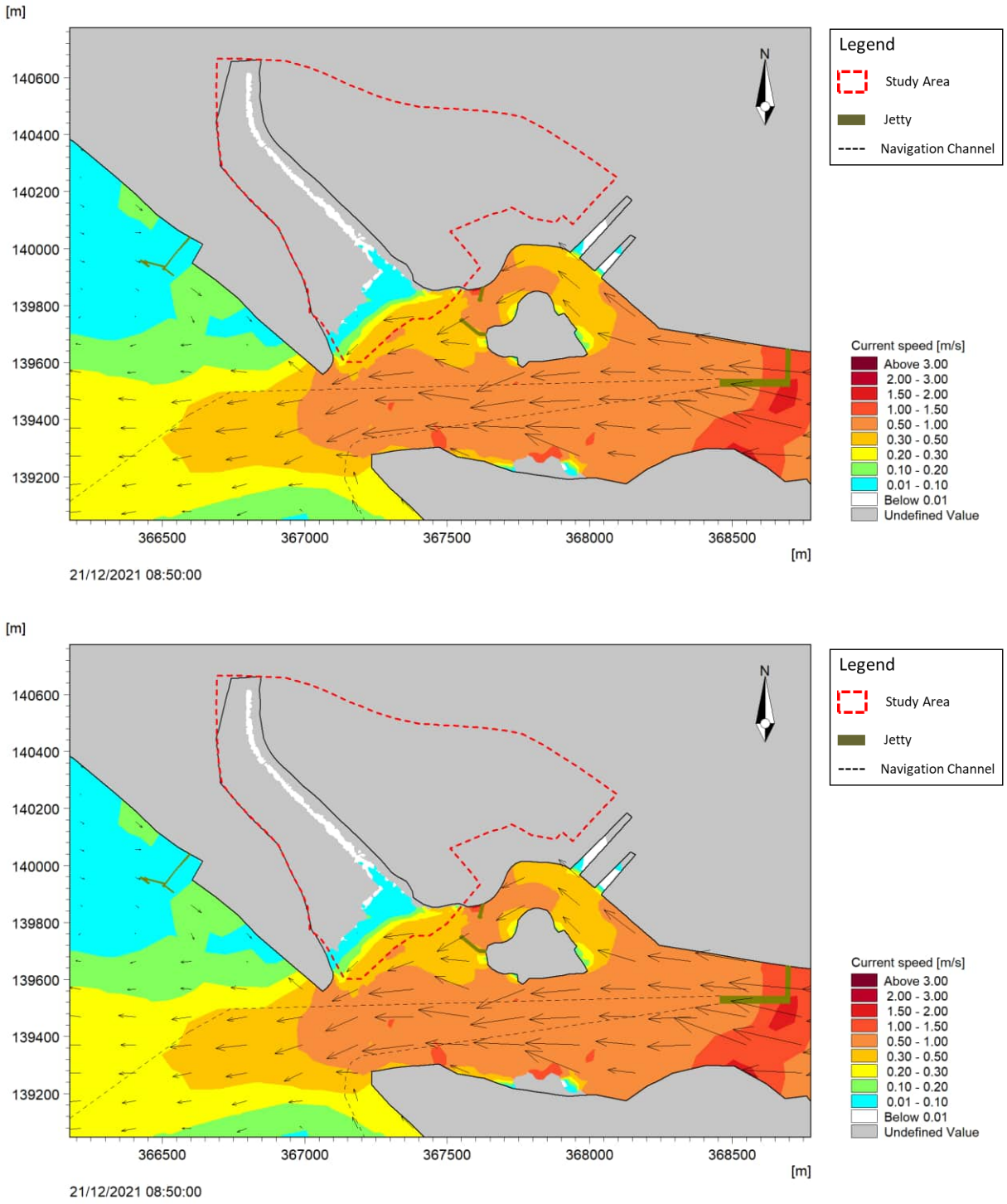


Figure 8-28 Current Field Plots at Peak Flood Tide for Baseline (top) and Operational Phase (bottom) during SW monsoon

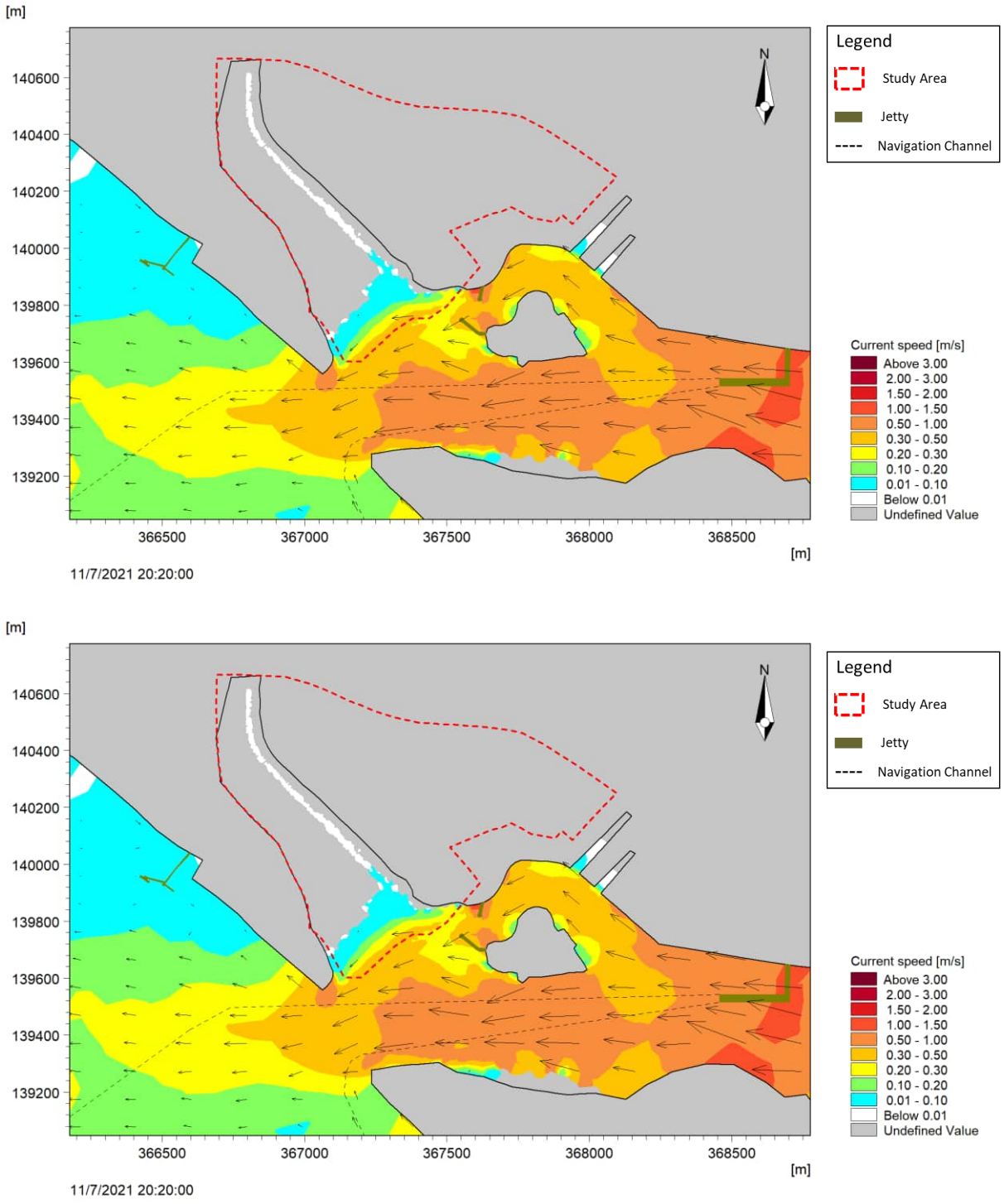


Figure 8-29 Current Field Plots at Peak Flood Tide for Baseline (top) and Operational Phase (bottom) during SW monsoon

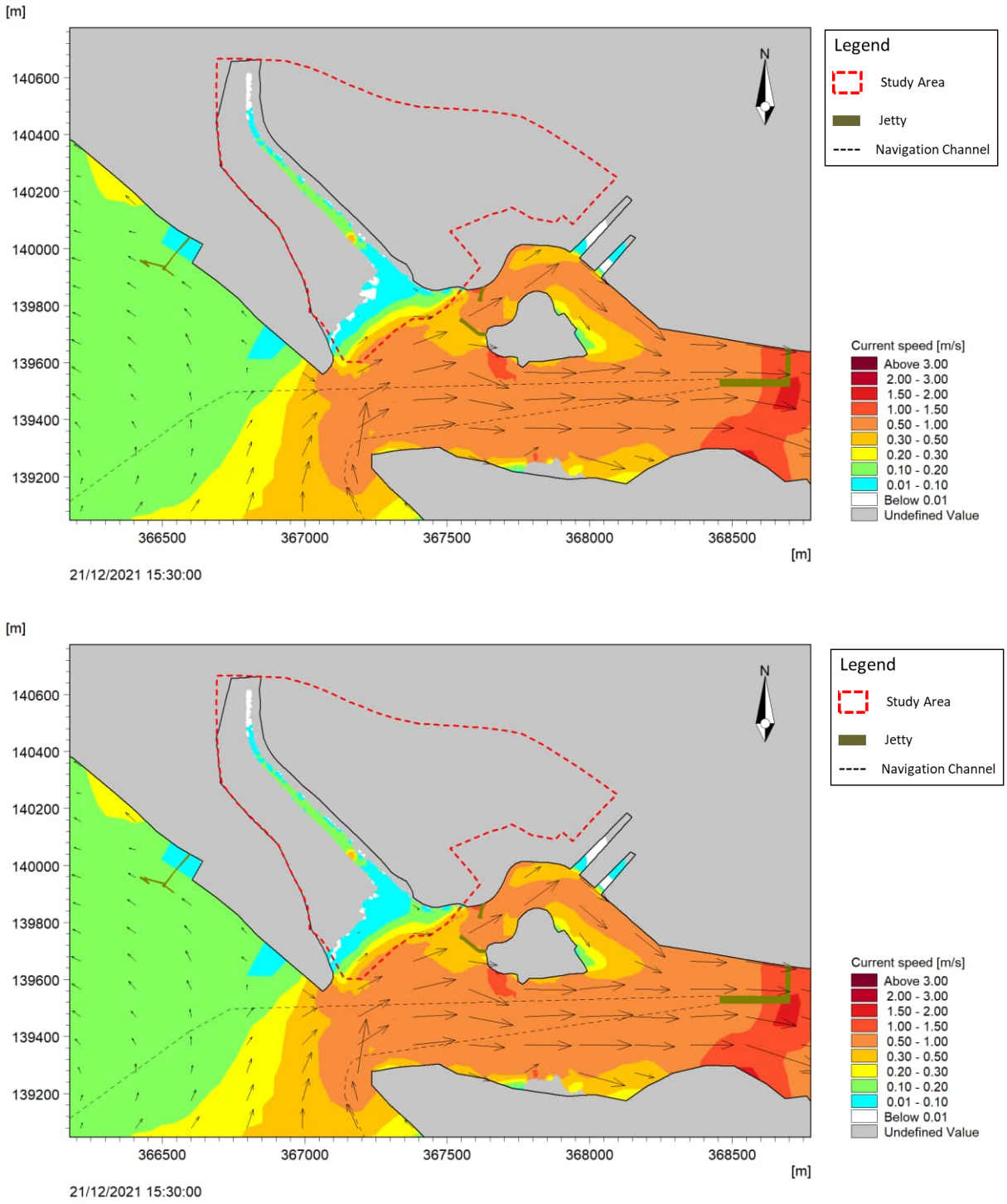


Figure 8-30 Current Field Plots at Peak Ebb Tide for Baseline (top) and Operational Phase (bottom) during NE monsoon

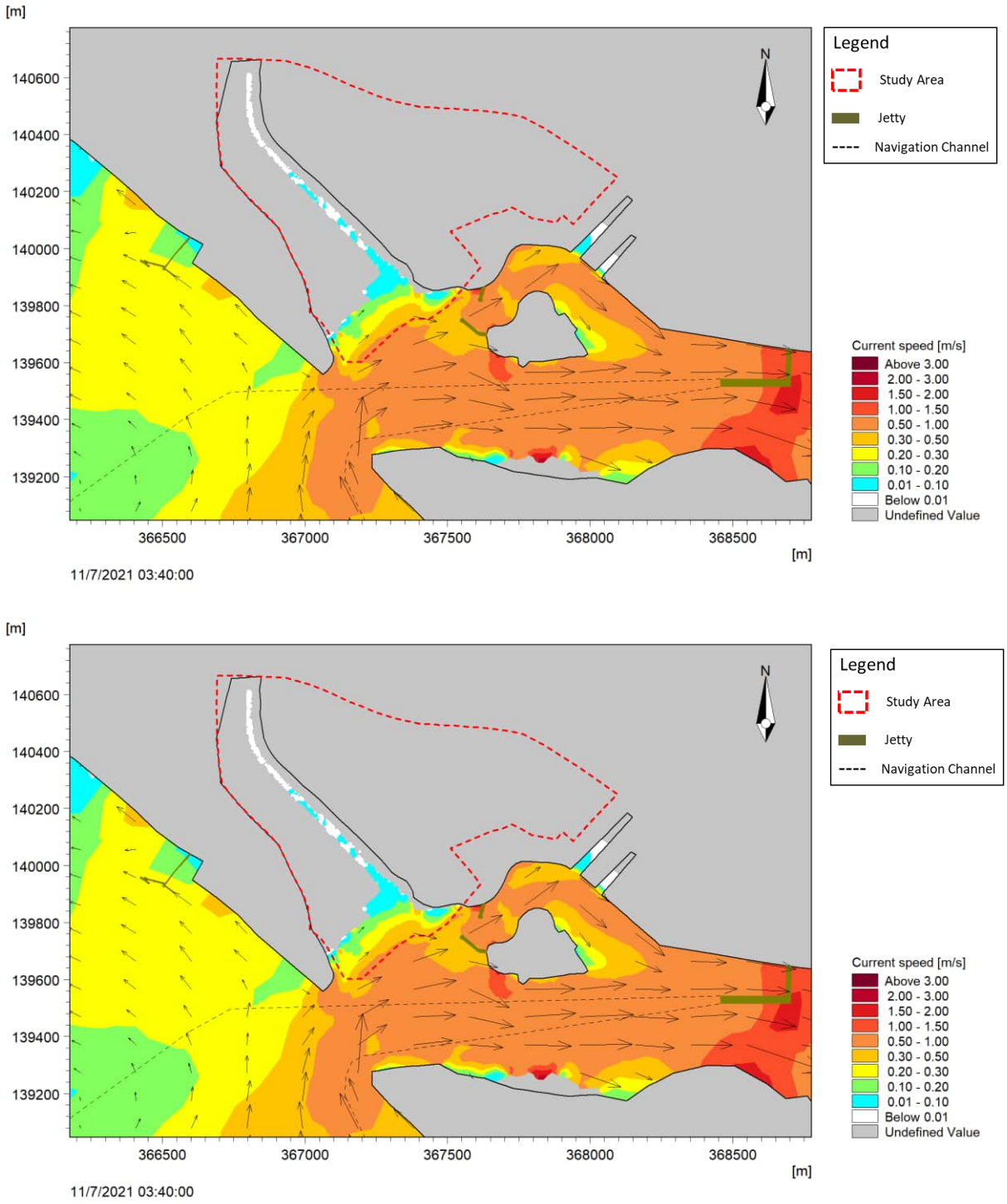


Figure 8-31 Current Field Plots at Peak Ebb Tide for Baseline (top) and Operational Phase (bottom) during SW monsoon

8.7.2.2.2.2 Mean and Maximum Current Speeds

Figure 8-32 and Figure 8-33 present the simulated statistical mean current speed during the NE simulation period and SW simulation period respectively. Each figure shows the simulated results for the baseline case, the operational phase case, and the differences between the two cases. Based on the simulation results, the mean current speeds within Berlayer Creek prior to the Project operational work (baseline case) are typically below 0.2 m/s. The mean current speeds range between 0.3 m/s to 0.8 m/s in the Keppel Bay. During the operational period, the mean current speed is still within 0.2 m/s within Berlayer Creek. The difference plot shows that no changes in mean current speed is observed at the Berlayer Creek and Keppel Bay during both NE and SW monsoons.

Figure 8-34 and Figure 8-35 present the simulated statistical maximum current speed during the NE simulation period and SW simulation period respectively. Each figure shows the simulated results for the baseline case, the operational phase case and the differences between the two cases. Based on the simulation results, the Berlayer Creek was characterized with relatively high maximum current speed at its entrance area, with the ranges of 1.4m/s to 2.0m/s, while the maximum current speed in the other areas within the Berlayer creek are generally below 1.2m/s. During the operational period, the maximum current speed slightly reduced by 0.2-0.3 m/s at the entrance area of the Berlayer Creek. At the end of the Berlayer Creek, the maximum current speed increased by 0.1-0.2 m/s during the operational period. The simulation results in both NE and SW monsoons show the similar results as described above.

Overall, it is expected that there are **No Impacts** on the mean and maximum current speeds during the operational phase.

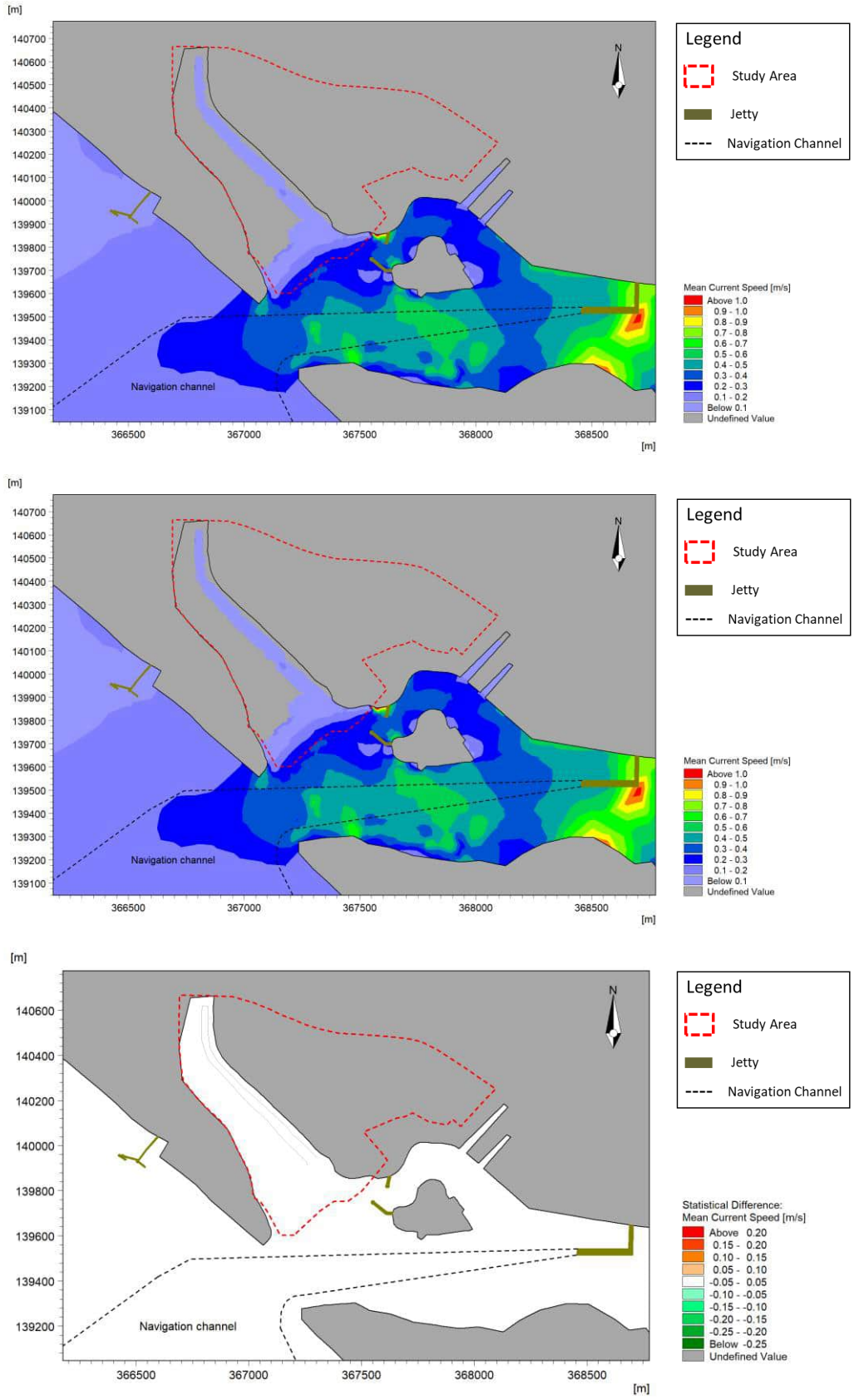


Figure 8-32 Mean Current Speed for Baseline (top), Operational Phase (middle) and Differences in Mean Current Speed (bottom) during NE monsoon

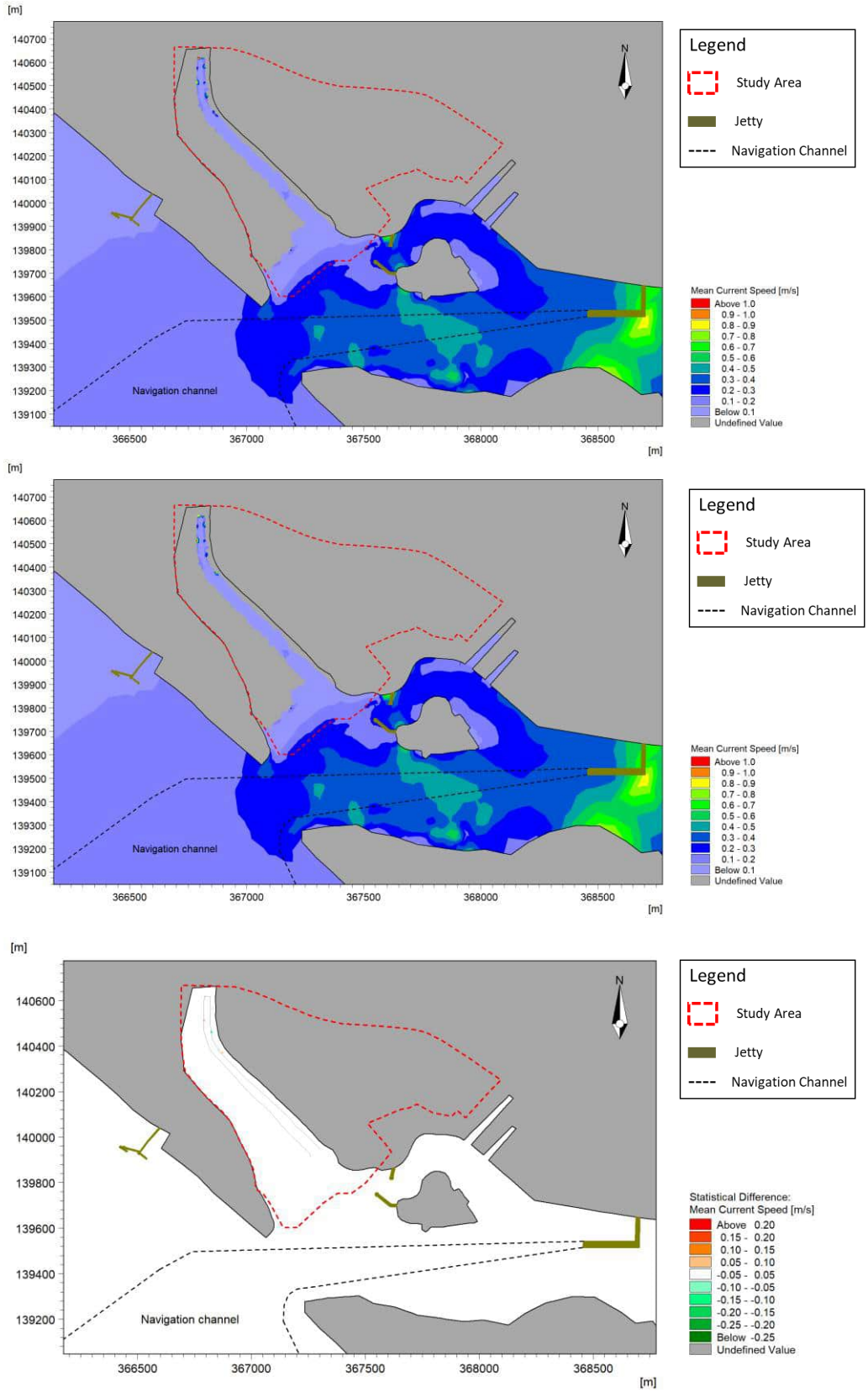


Figure 8-33 Mean Current Speed for Baseline (top), Operational Phase (middle) and Differences in Mean Current Speed (bottom) during SW monsoon

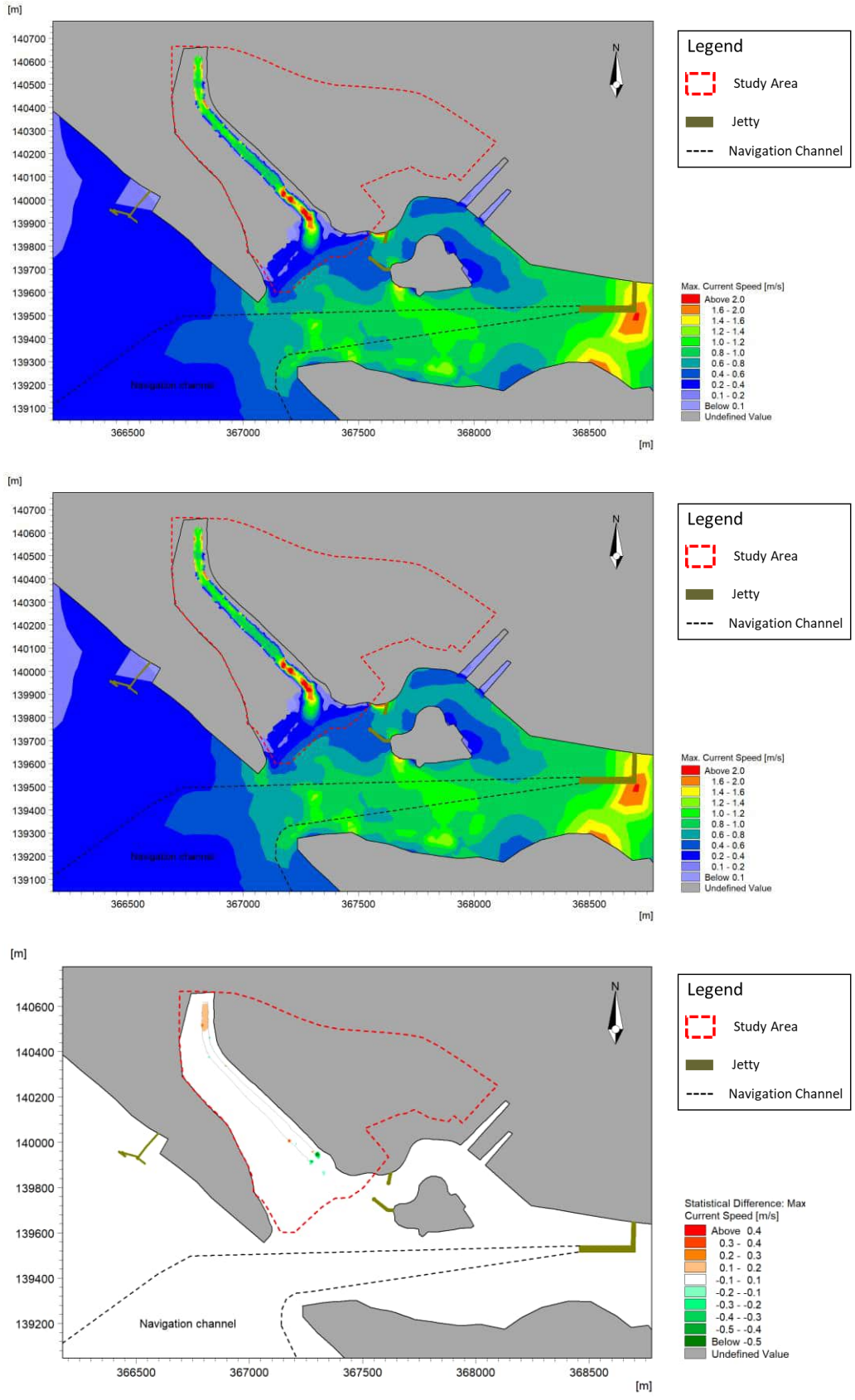


Figure 8-34 Maximum Current Speed for Baseline (top), Operational Phase (middle) and Differences in Maximum Current Speed (bottom) during NE monsoon

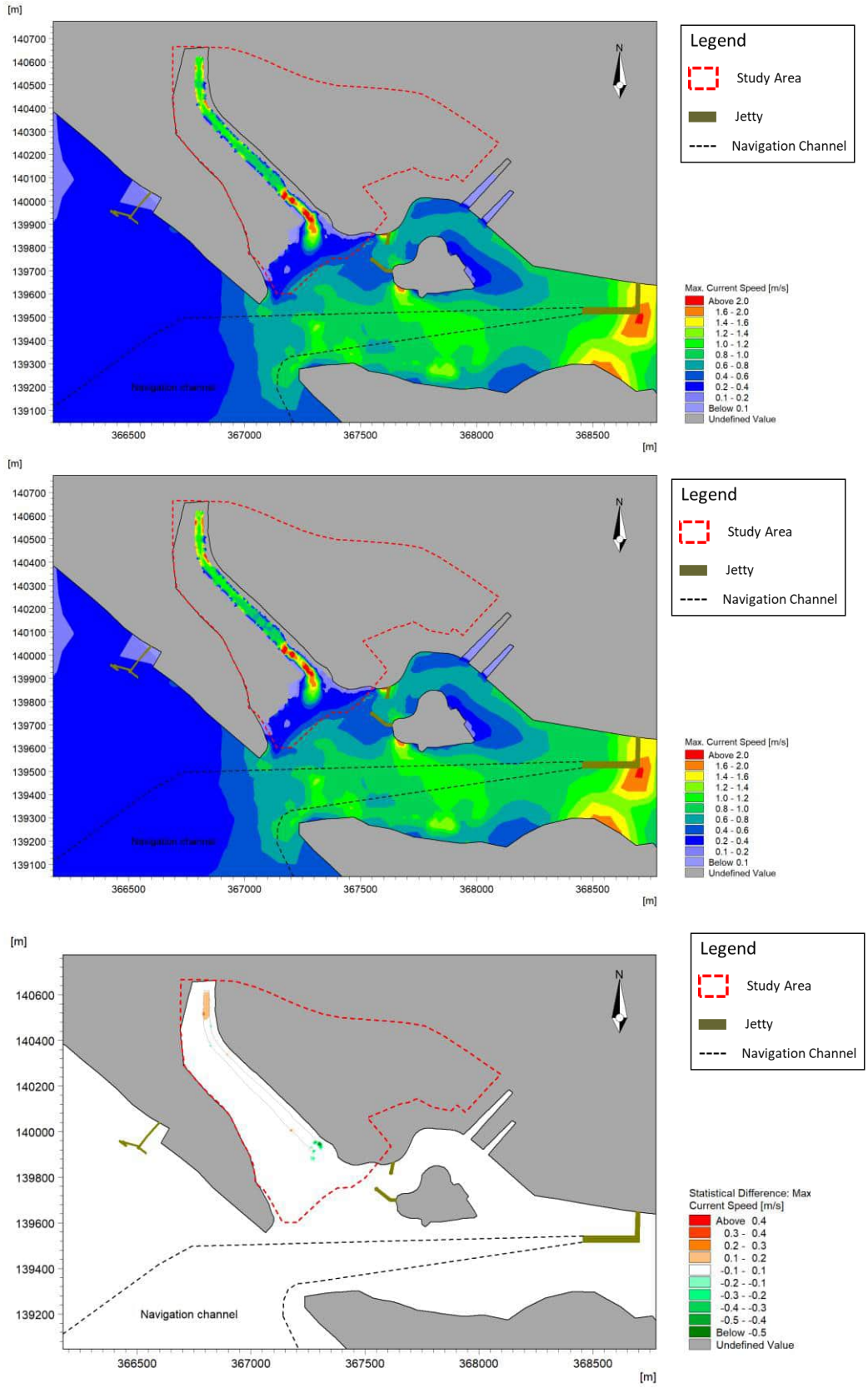


Figure 8-35 Maximum Current Speed for Baseline (top), Operational Phase (middle) and Differences in Maximum Current Speed (bottom) during SW monsoon

8.7.2.2.2.3 Changes in Representative Current Speeds

Figure 8-36 and Figure 8-37 present the simulated representative current speed for exceedance of slack water during the NE simulation period and SW simulation period respectively. Each figure presents the results for the baseline case, operational -phase case and the differences between the two cases. The simulation results show that the Belayer Creek has more than 95% of the time dominating with slack water with the current speed less than 0.25m/s. In the vicinity water area, the current has more than 50% of the time with the slack water. The difference plots for both NE and SW monsoon show that no changes were observed from the operational phase on the slack water durations.

Figure 8-38 and Figure 8-39 present the simulated representative current speed for exceedance of 2.5 knots during the NE simulation period and SW simulation period respectively. Figure 8-40 and Figure 8-41 present the simulated representative current speed for exceedance of 3.5 knots during the NE simulation period and SW simulation period respectively. Each figure presents the results for the baseline case, operational phase case and the differences between the two cases. The simulation results show that only the berthing area has the exceedance of 2.5 knots and 3.5 knots. Most areas at the Assessment Area do not have the current speed greater than 2.5 knots and 3.5 knots. The difference plots for both NE and SW monsoon show that no changes were observed from the operational phase on the durations of current speed greater than 2.5 knots and 3.5 knots.

Overall, no changes were observed from the operational phase on the representative current speeds inclusive of less than 0.25 m/s and greater than 2.5 knots and 3.5 knots. **No Impacts** on the representative current speeds during the operational phase.

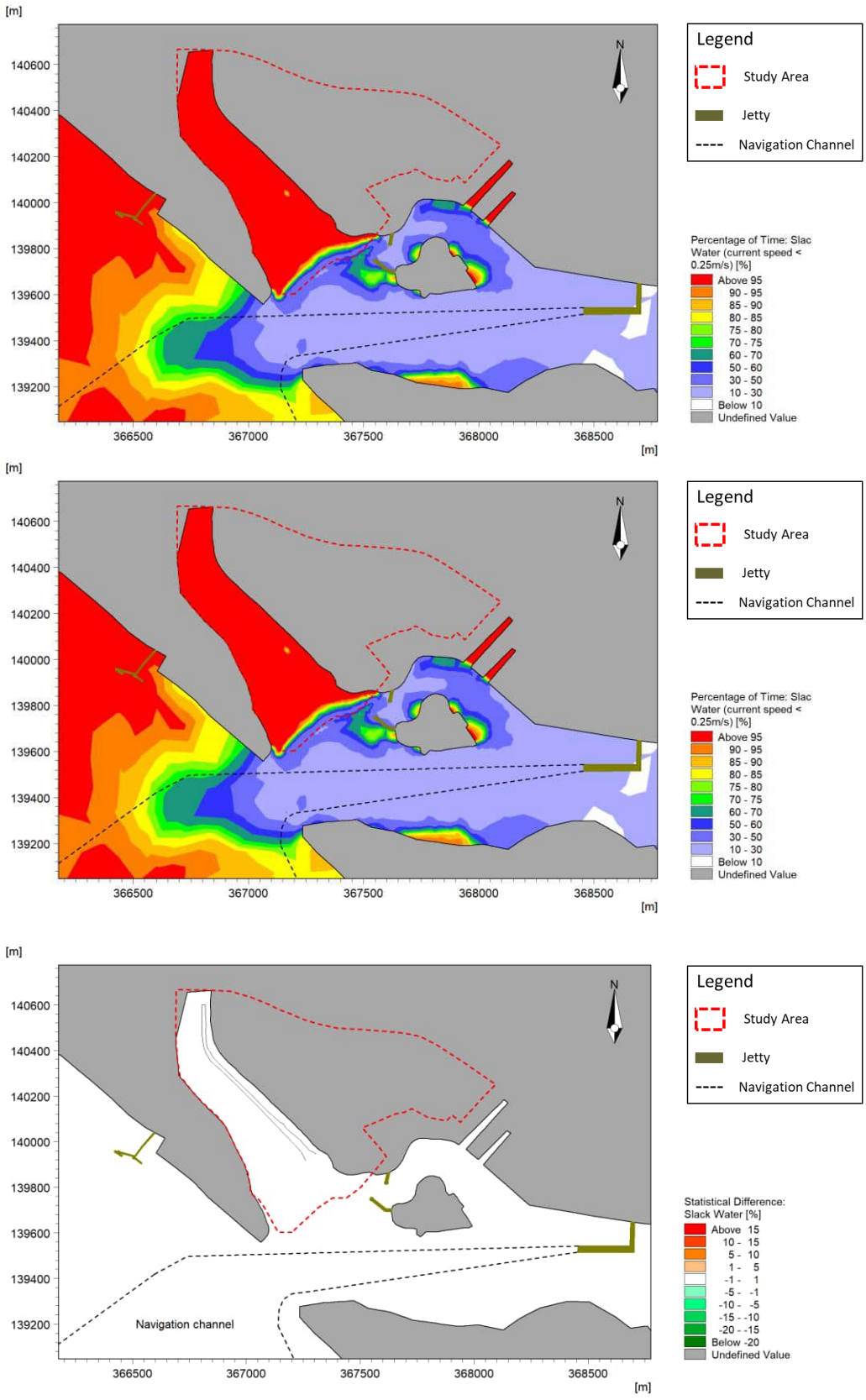


Figure 8-36 Percentage of Time for Slack Water for Baseline (top), Operational Phase (middle) and Differences (bottom) during NE monsoon

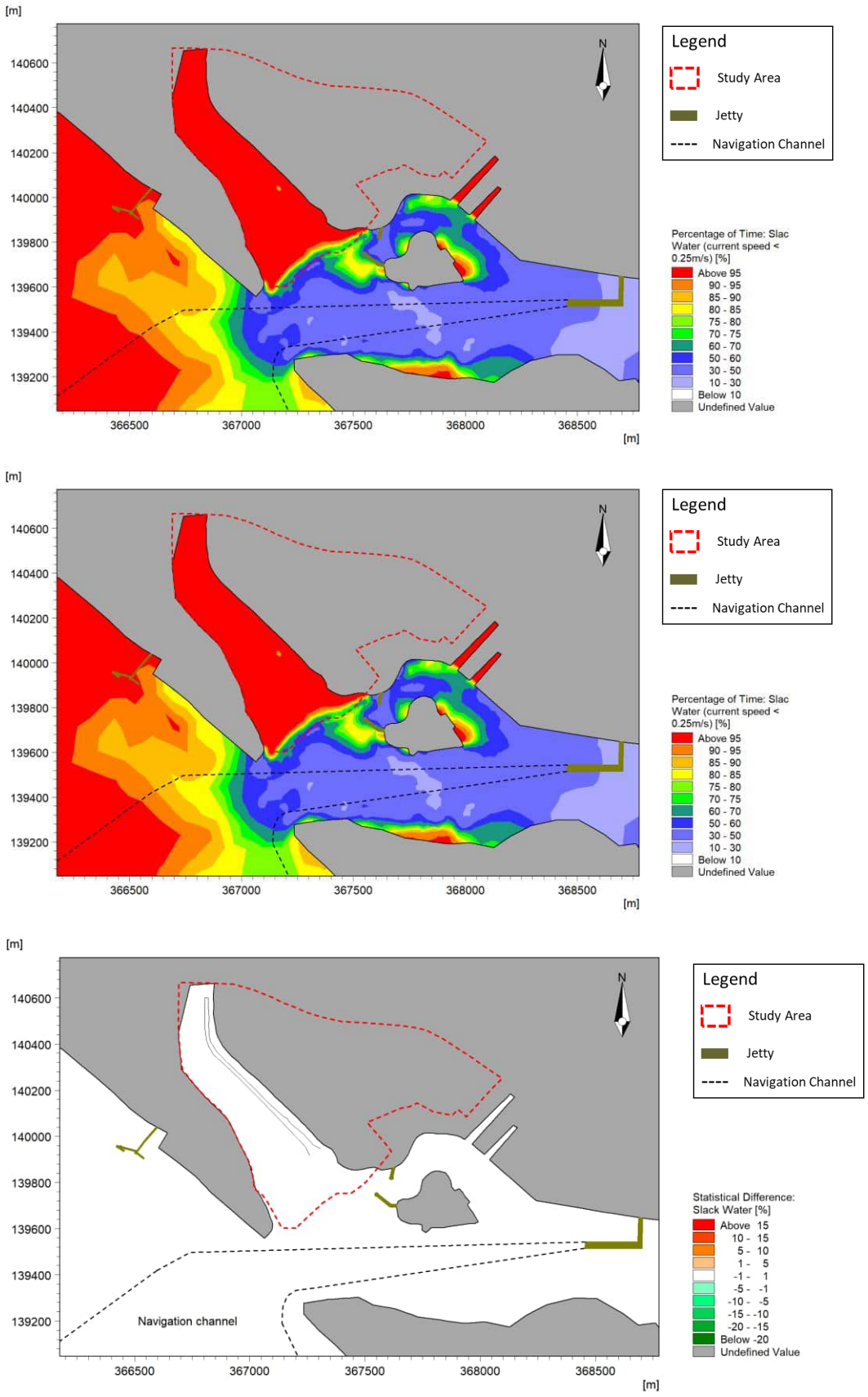


Figure 8-37 Percentage of Time for Slack Water for Baseline (top), Operational Phase (middle) and Differences (bottom) during SW monsoon

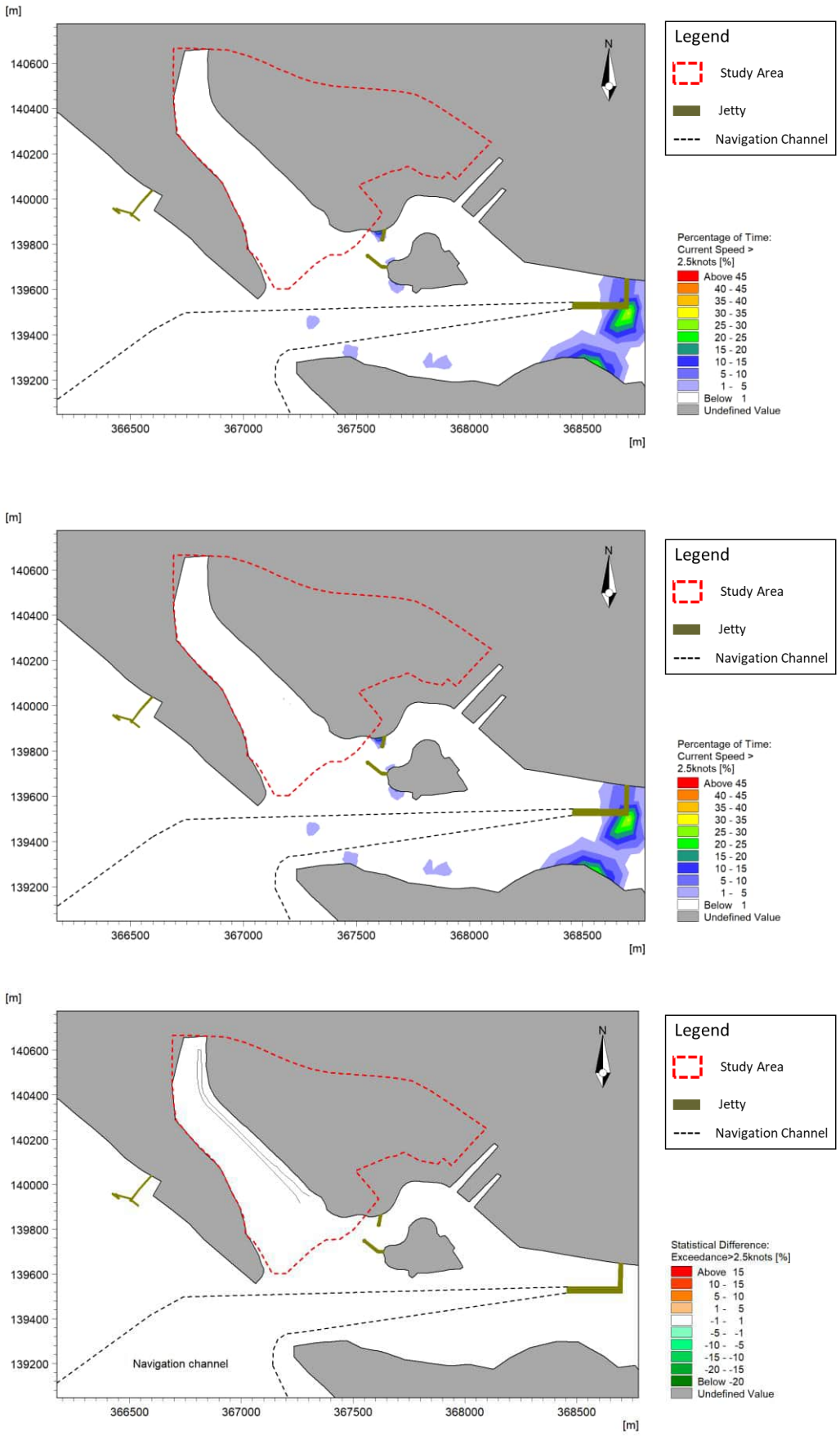


Figure 8-38 Percentage of Time for Current Speed Exceed 2.5 knot Baseline (top), Operational Phase (middle) and Differences (bottom) during NE monsoon

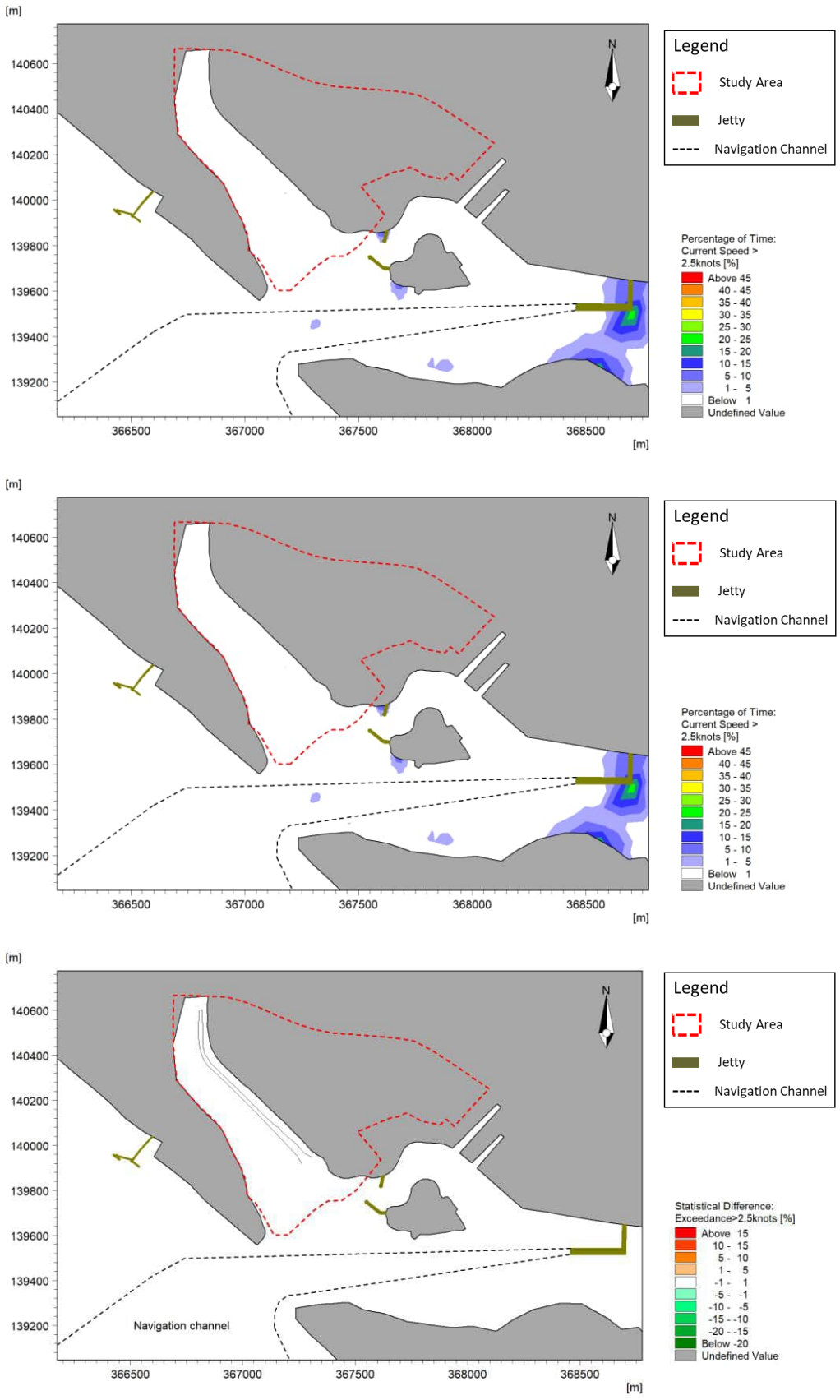


Figure 8-39 Percentage of Time for Current Speed Exceed 2.5 knot Baseline (top), Operational Phase (middle) and Differences (bottom) during SW monsoon

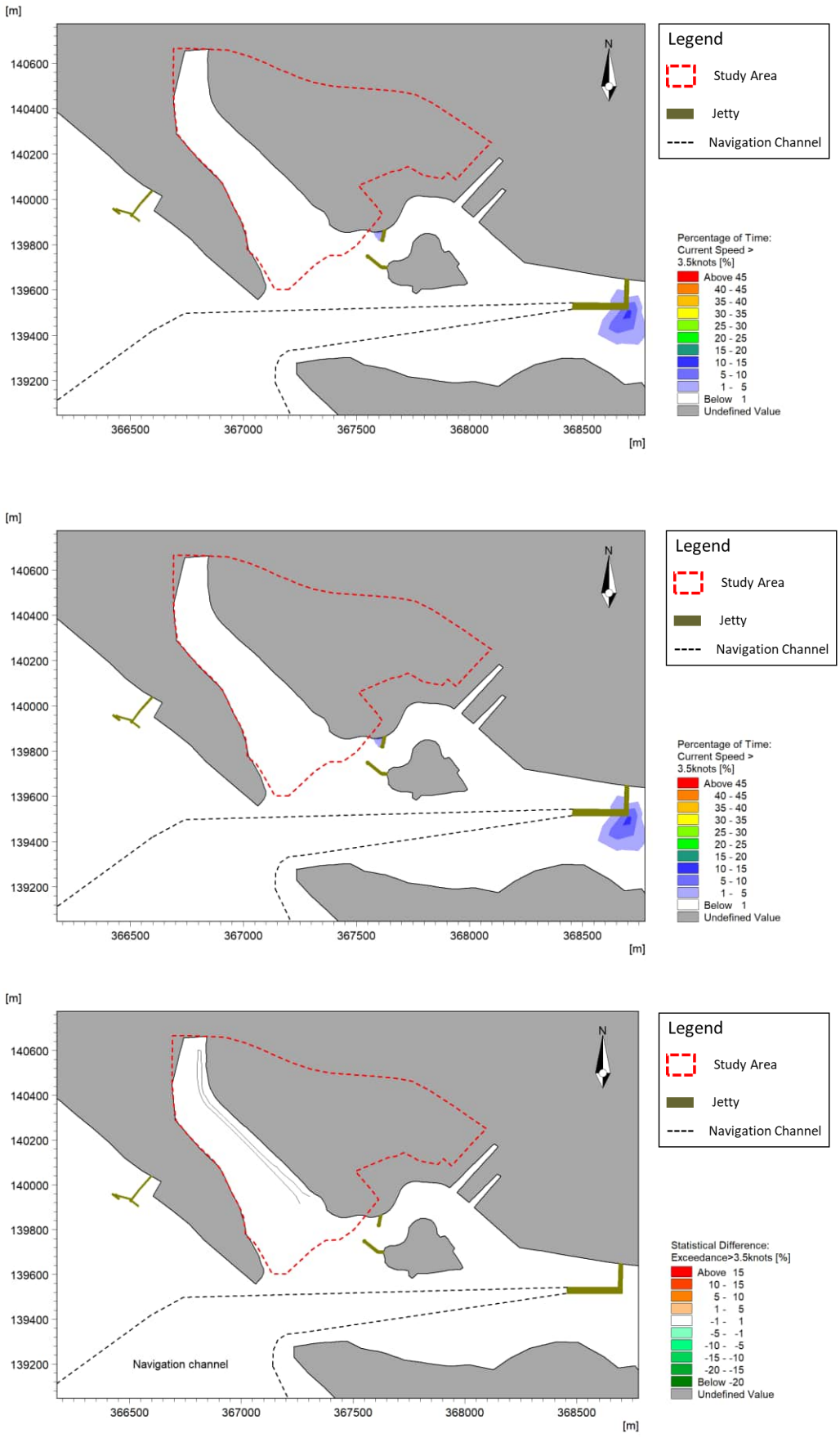


Figure 8-40 Percentage of Time for Current Speed Exceed 3.5 knot Baseline (top), Operational Phase (middle) and Differences (bottom) during NE monsoon

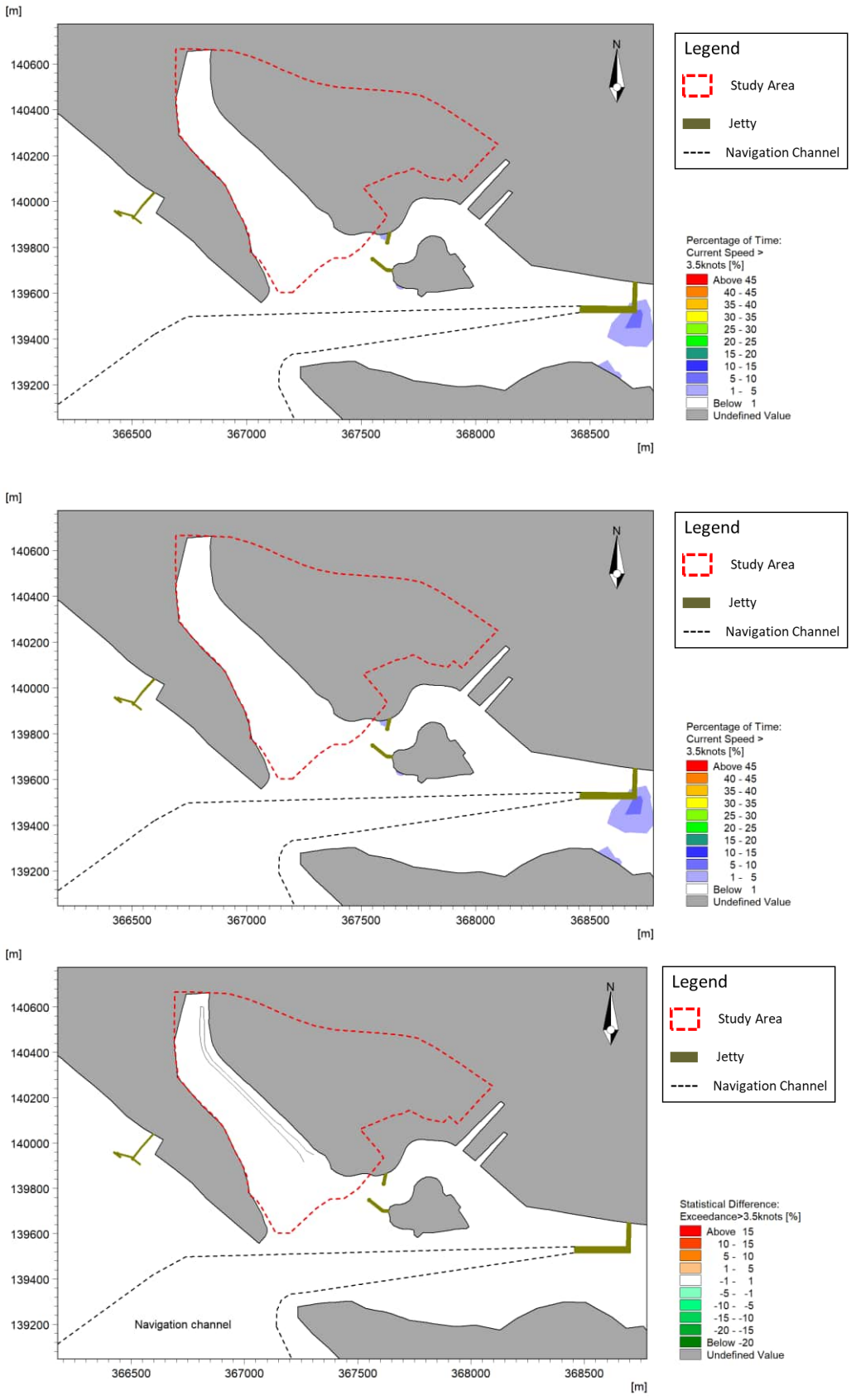


Figure 8-41 Percentage of Time for Current Speed Exceed 3.5 knot Baseline (top), Operational Phase (middle) and Differences (bottom) during SW monsoon

8.7.2.2.3 Morphological Impacts

Figure 8-42 and Figure 8-43 present the sedimentation during the NE simulation period and SW simulation period respectively. Sedimentation and erosion processes were not observed at the Assessment Area.

According to the sedimentation criteria specified for seagrass (Table 8-20), corals (Table 8-22) and mangroves(Table 8-23), marine infrastructure (Table 8-25), **No Impact** from the sedimentation aspect on the environmental receptors in the Assessment Area.

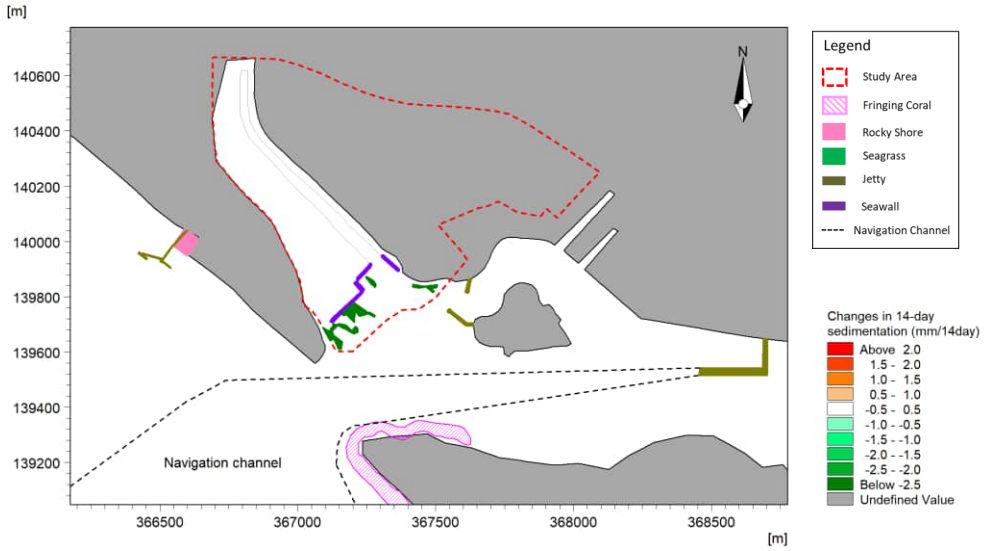


Figure 8-42 Differences in Sedimentation during NE monsoon

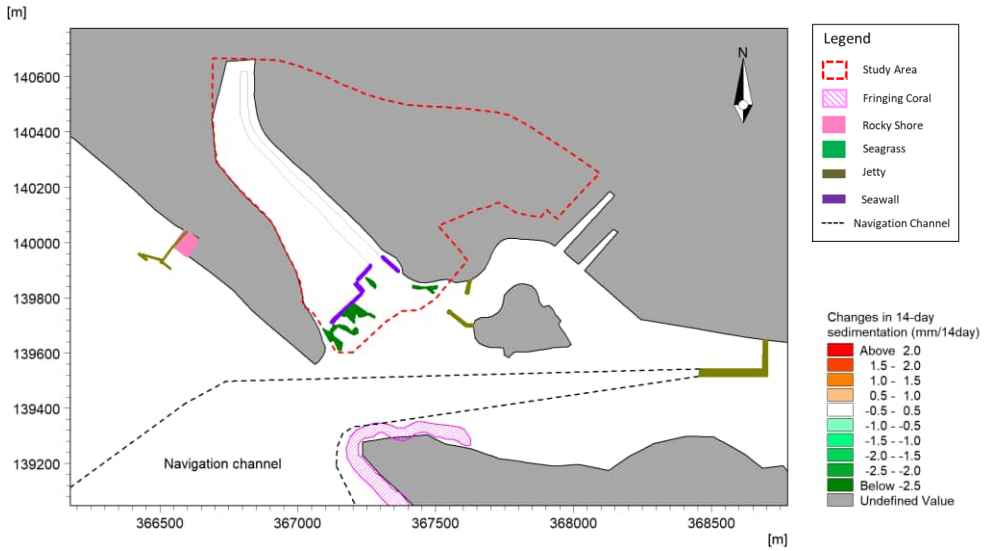


Figure 8-43 Differences in Sedimentation during SW monsoon

8.7.2.2.4 Salinity Impacts

8.7.2.2.4.1 Mean Excess Salinity

Figure 8-44 and Figure 8-45 present the mean salinity in the Assessment Area during the NE simulation period and SW simulation period respectively. Each figure presents the mean salinity for the baseline case and the operational phase. The mean salinity shows increase trend from the upstream of the Berlayer Creek to the river mouth of the Berlayer Creek.

The upstream of the Berlayer Creek received significant flow from the catchments at the upstream of the Berlayer Creek. This fresh water dilutes the salinity level at the upstream of the Berlayer Creek. The downstream of the Berlayer Creek are mainly affected by the marine water, and therefore, the salinity at the downstream of the Berlayer Creek are higher and is closer to the salinity level of marine water.

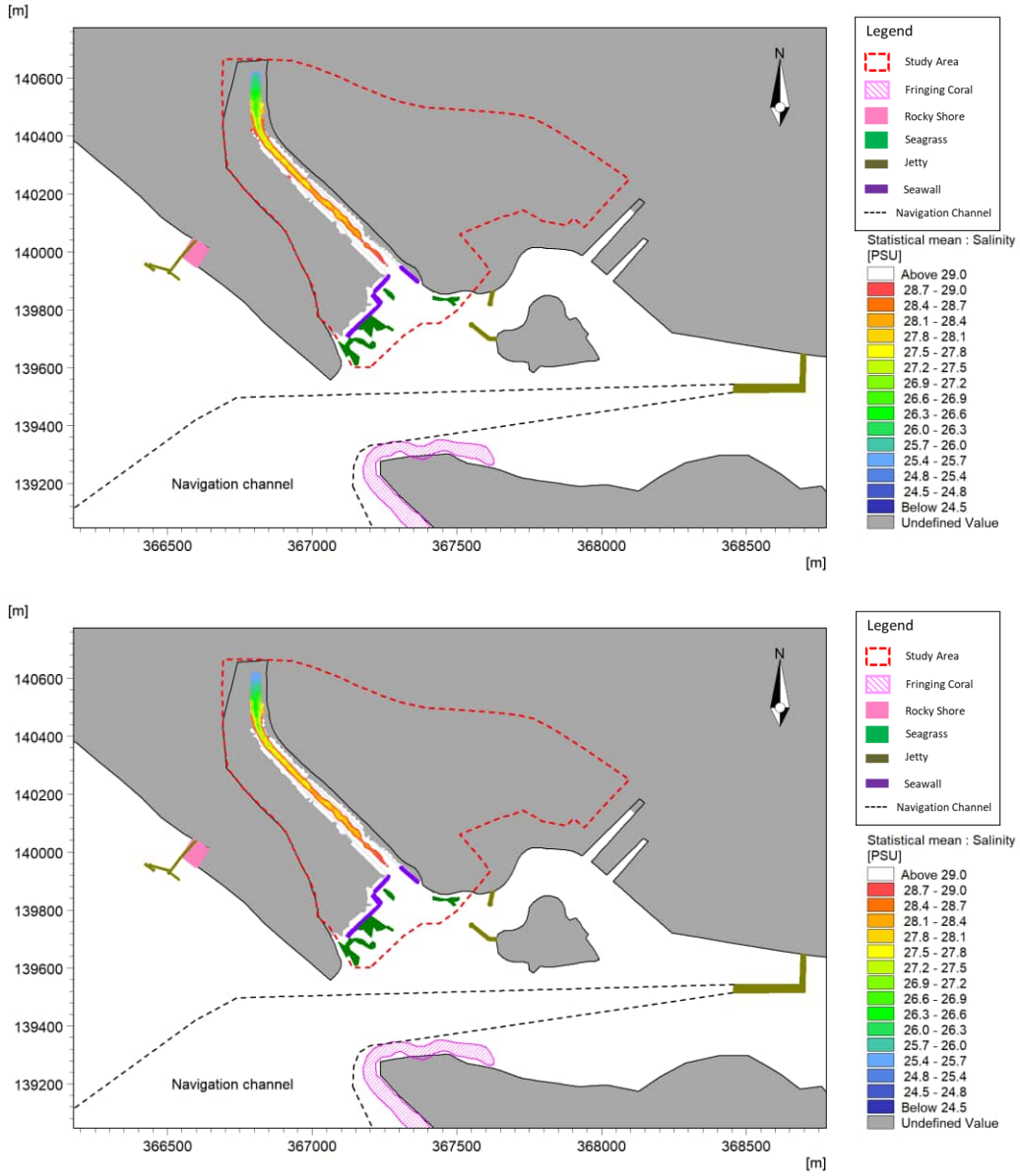


Figure 8-44 Mean Salinity for Baseline (top) and Operational Phase (bottom) during NE monsoon

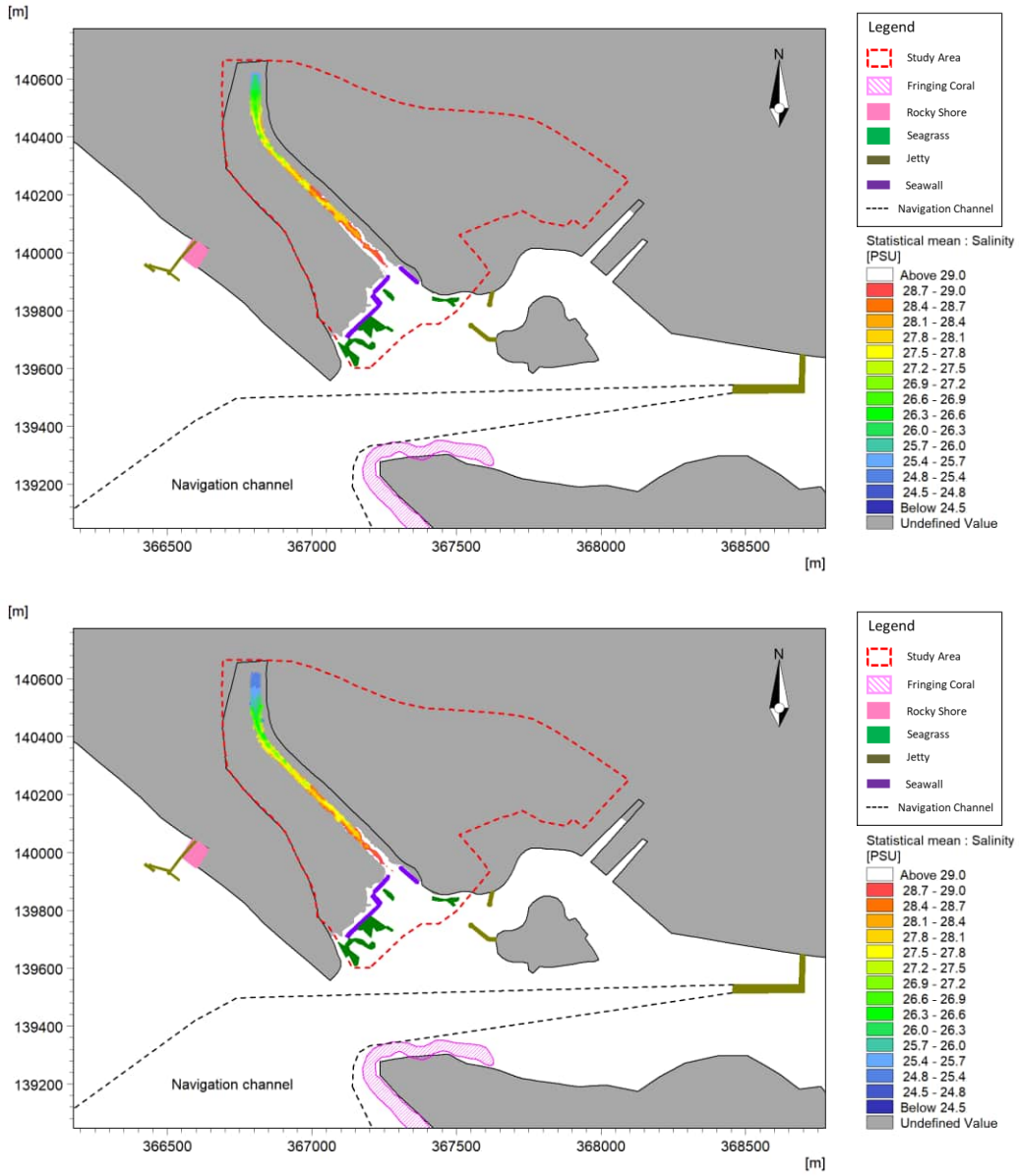


Figure 8-45 Mean Salinity for Baseline (top) and Operational Phase (bottom) during SW monsoon

8.7.2.2.4.2 Salinity Impact Assessment

Figure 8-46 and Figure 8-47 present the changes of the mean salinity from the baseline case to the operational phrase during the NE simulation period and SW simulation period respectively. The simulation results show that comparing to the baseline case, the mean salinity decreased at the river mouth of the Berlayer Creek during the operational phase. The differences were less than 1.0 PSU.

Based on literature review, to ensure no impacts on mangroves, corals and seagrass, the changes in salinity should be no greater than 5% of the background concentration. The background salinity observed on site and also from the model simulation was estimated as 30 PSU. Based on the simulation results, the changes of the salinity are deemed to be less than 5%, and thus is well within this criterion. Therefore, it is concluded that there is no **No Impact** due to changes in salinity on the mangroves, corals and seagrass in the Study Area.

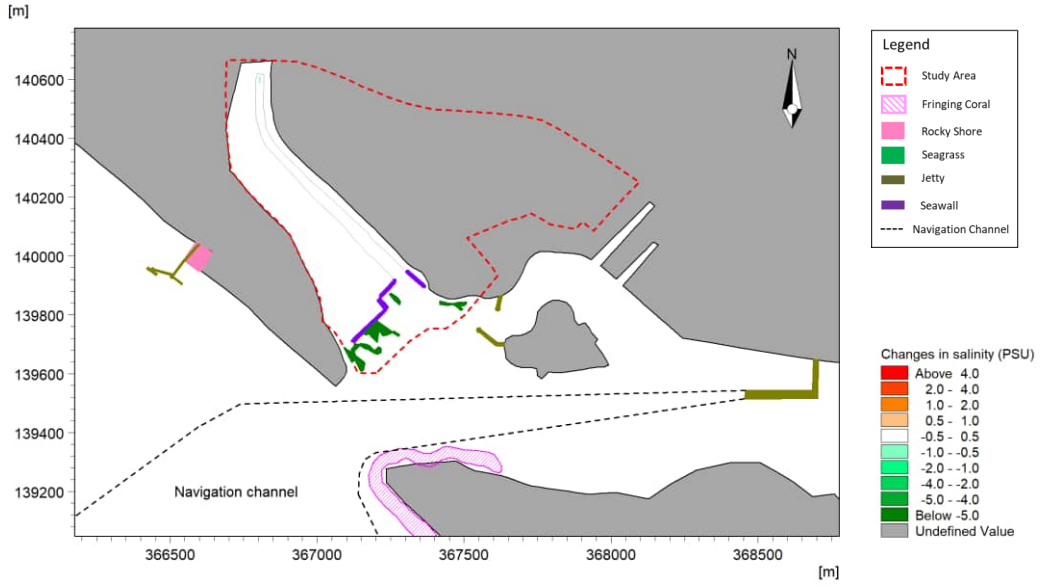


Figure 8-46 Differences in Mean Salinity during NE monsoon

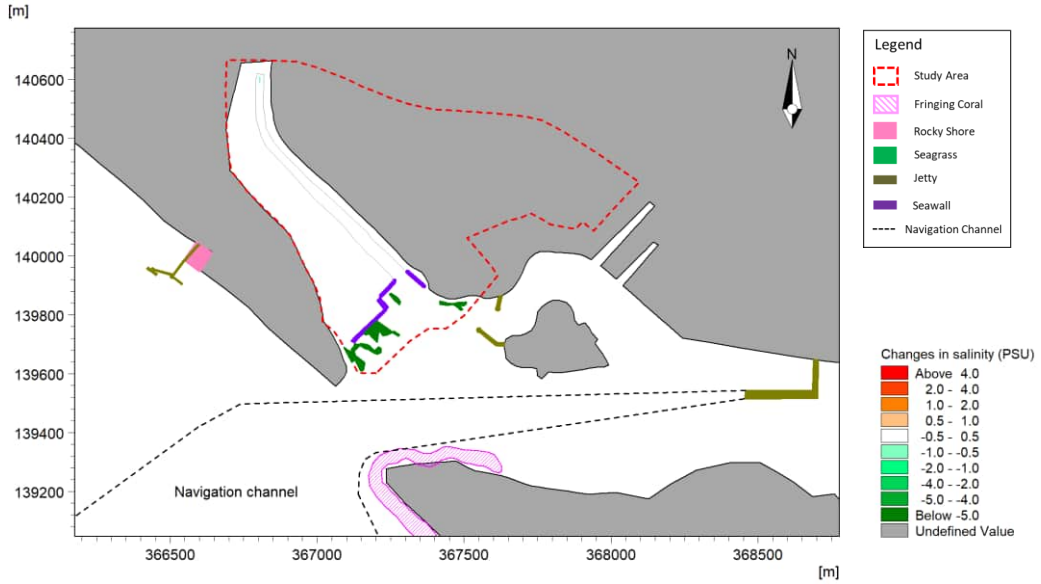


Figure 8-47 Differences in Mean Salinity during SW monsoon

8.8 Recommended Mitigation Measures

In this section, mitigation measures were proposed to further minimise the adverse impacts on the environment where impact significance were assessed to be Moderate or Major during both construction and operational phases.

8.8.1 Construction Phase

8.8.1.1 Minimise

The construction activities of the Project were assessed to have Moderate impact significances on on-site construction workers although with implemented minimum controls. If there are any construction activities that may alter the alignment of or block drains, appropriate measures such as flow diversion of the drain should be carried out before construction commencement within the Keppel Club to avoid blockage that may cause localised flooding. This can also help to reduce peak-flow runoff and avoid water contamination during construction phase. The design of watercourse diversion should follow PUB's Code of Practice on Surface Water Drainage [R-16] to ensure the design watercourse can cater for sufficient flow capacity before discharge during construction phase. The diverted flow among the watercourses shall be treated to meet the guideline of NEA Trade Effluent Discharge Limits before discharging to surrounding watercourses and should be monitored closely during the diversion process to ensure the water quality meets the guidelines, especially the total suspended solids (TSS) parameter.

Furthermore, given the proximity of the construction site to the main watercourses such as Berlayer Creek and concrete drain D5, silt screens/turbidity curtains should be implemented at each of the five main discharge outlets (EO1 to EO5, refer to Figure 8-5). This will ensure that the suspended solids concentration in the discharge flow as well as potential dispersion of suspended solids are contained, thereby preventing the degradation of water quality in these watercourses and minimising the impacts to ecological receptors along Berlayer Creek.

In addition, the water quality of the Berlayer Creek, Marine Area, Keppel Club golf course ponds and concrete drain D5 should also be monitored closely using CCTV and SIDS at relevant discharge outlets and waterbodies, and also monitored through routine inspections throughout the construction phase.

8.8.2 Operational Phase

8.8.2.1 Minimise

The operational activities of the Project were assessed to have Moderate impact significances on maintenance workers, future residents, and visitors of the proposed development although with implemented minimum controls. To reduce operational impacts, a stormwater detention system can be constructed within the development with sufficient capacity to reduce peak-flow and ensure zero increase in peak flow from baseline conditions, as per PUB Code of Practice on Surface Water Drainage. In particular, the detention system should reduce peak runoff discharged from proposed discharge outlets PO1 and PO2 to minimise scouring impacts to the earth banks of the mangroves at Berlayer Creek. In addition, the proposed stormwater outlets that discharge stormwater from the development into Berlayer Creek should be designed with protection structures to further minimise erosion and local scouring at the earth banks of Berlayer Creek.

Post-construction monitoring should be conducted for the first three months to ensure that the discharge flow rate is compliant with the Code of Practice and to also ensure that there are no visible hydrological impacts to the watercourses in the vicinity, especially during wet weather. The system will help to minimise possible flood risks and stress in the watercourses surrounding the development.

8.8.2.2 Remedy/Repair/Restore

The operational activities of the Project were assessed to have Moderate impact significance on maintenance workers, future residents, and visitors of the proposed development although with implemented minimum controls. To further reduce the potential operational impacts, the proposed development area should adopt and incorporate the Active, Beautiful, Clean (ABC) Waters Design approach [P-107]. In addition, post-construction monitoring should be conducted to ensure that water quality in the surrounding watercourses is not impacted by the development.

Active, Beautiful, Clean (ABC) Waters Design features, such as bioretention swales, rain gardens, constructed wetlands and green roofs, can be considered for this proposed development as it can reduce the peak-flow (i.e.

due to a change in land use), introduce more greenery in the proposed development and enhancing biodiversity value of the project.

- Bioretention swales and rain gardens are proposed to be constructed along the green corridors (i.e. Berlayer Creek Corridor, Central Green Corridor and Henderson Road Corridor), within the green areas of the residential estate and near carparks to ensure that runoff from the development is captured and treated before being discharged into Berlayer Creek, ponds in the Central Green Corridor and Concrete Drain D5. Constructed wetlands can also be integrated into the Central Green Corridor, as there are major watercourses planned within this proposed corridor. These features act as buffer areas which can provide temporary storage, reduced peak runoff quantity and flow velocity before it is discharged into the watercourses, thereby minimising flood risks within the proposed development and reducing the likelihood of erosion along the earth banks of the abovementioned watercourses. Furthermore, these water design features can also help provide runoff treatment through sedimentation, filtration, and biological uptake which improves the discharged runoff quality. Moreover, these features can beautify the landscape of the development as well.
- Green roofs can be incorporated into the buildings within the development, which can also help to reduce the quantity of stormwater runoff generated (i.e. due to a change in land use). Rain gardens can also be integrated as part of the green roof strategy, which provides additional stormwater treatment benefits. Apart for providing water-related benefits, this green roof strategy also enhances ecological connectivity as mentioned in Section 7.10.1.3.

It is crucial that adequate capacity for drainage, piping and/or channelling of stormwater run-off will be provided in these ABC Waters Design features. By applying the ABC Waters Design approach, the proposed watercourses within the future development may potentially bring about positive impact to the hydrology and water quality, with a reduction of flood risk and stress to surrounding watercourses.

Post-construction monitoring at the main outlets of the development (i.e. which discharges to Berlayer Creek and Concrete Drain D5) can be conducted for the first three (3) months to ascertain the water quality has both met the NEA Trade Effluent Discharge Limits and ensured that there are no changes to the water quality in Belayer Creek and Concrete Drain D5 from the baseline (baseline water quality as presented in Section 8.4.2.2).

8.9 Residual Impacts

A residual impact assessment has been undertaken assuming the mitigation measures recommended in the previous section have been implemented.

With the implementation of the recommended mitigation measures in conjunction with the identified minimum controls, the residual impact intensity on hydrology and surface water quality can be reduced to **Negligible** during both construction and operational phases. Thereafter, the impact significance is hence reduced to **Minor** during construction phase. Since the proposed stormwater detention system and ABC Waters Design features during operational phase will aid in the reduction of peak runoff and the improvement of runoff water quality prior to discharge into surrounding watercourses, the Project may have impact significance that ranges from **Positive to (Negative) Minor**.

Table 8-34 Summary of residual impacts and its mitigation measures

Activity	Receptor Sensitivity	Impacts	Impact Significance (with minimum controls)	Mitigation Measures	Significance of Residual Impact (with mitigation measures)
During construction phase: • Land clearing, earthworks and excavation activities; • Storage and disposal of solid, liquid and toxic wastes; and • Use and storage of chemical substances, and refuelling activities.	On-site construction workers (Priority 2)	• Increased stormwater peak flow, increased water level and subsequent flooding of surrounding as the watercourses will be occupied by the construction worksite. • Contaminants from the worksite will direct deteriorate the water quality.	• Hydrology: Moderate • Water Quality: Moderate	For any construction activities that may alter the alignment of or block drains, appropriate measures such as watercourse diversion should be carried out to avoid localised flooding. As such, if the need arises the design of the flow diversion within the Keppel Club should follow PUB's Code of Practice on Surface Water Drainage. The diverted flow shall be treated to meet NEA Trade Effluent Discharge Limits.	• Hydrology: Minor • Water Quality: Minor
During operational phase: • Stormwater runoff generation	Maintenance workers, future residents and visitors of the proposed development (Priority 2)	• Increased stormwater peak flow, increased water level and subsequent flooding of surrounding of the watercourses in and near the future development. • Degradation of stormwater water quality due to the wash-off pollutants from the future development.	• Hydrology: Moderate • Water Quality: Minor - Moderate	• Provide ABC Waters Design features within the development (wetland, bioretention swales, rain garden, etc.) • To create green areas around watercourses to filter the stormwater runoff before discharge. • To design protection structures at proposed stormwater outlets discharging	• Hydrology: Positive - (Negative) Minor • Water Quality: Positive - (Negative) Minor

Activity	Receptor Sensitivity	Impacts	Impact Significance (with minimum controls)	Mitigation Measures	Significance of Residual Impact (with mitigation measures)
				from the development to Berlayer Creek to minimise local scouring at mangrove area along Berlayer Creek.	

8.10 Summary of Key Findings

While the hydrological baseline study aimed to identify watercourses present in the Assessment Area including their location, water flow conditions and bank characteristics, the water quality surveys determined the water quality of the surface watercourses.

The baseline hydrological conditions in the Study Area were analysed based on site observations. Berlayer Creek D1 has slow perennial flow during dry and wet weather. The flow pattern of Berlayer Creek was significantly influenced by the tidal flow. During flood tide, the flow along the Berlayer Creek was flowing towards upstream and whereas during ebb tide, the flow of Berlayer Creek was observed flowing downstream. The concrete culvert of D2 was flowing perennially during dry and wet weather conditions. The concrete culvert D3 has perennial flow and the measured flow velocity during dry and wet weather was below 0.06 m/s. The man-made pond D4 within Keppel Club golf course has earth bank with almost stagnant during dry period and equipped with water circulation and aeration system. The concrete drain D5 which receiving runoff from residential area north of the Study Area has a slow perennial flow with less than 0.3 m/s during both dry and wet weather. The runoff from Berlayer Creek D1, concrete culverts D2 and D3, man-made pond D4 within Keppel Club golf course and concrete drain D5 were eventually ended up to the Marine Area near the mouth of Berlayer Creek. The Marine Area near the mouth of Berlayer Creek river was a mixing zone of freshwater, brackish water and sea water. The flow direction in the Marine Area (i.e. near the mouth of Berlayer Creek and near Labrador Nature Reserve) was varied, depending on the flood and ebb tides during spring and neap tidal periods.

To capture the surface water quality of each watercourse contributed by different land use changes, the watercourses were sampled accordingly during dry and/or wet weather. The Berlayer Creek D1 was sampled at its upstream, midstream and downstream. For Keppel Club, the concrete culverts (i.e. D2 ad D3) and concrete drain D5 were sampled at the discharge outlets. The man-made pond D4 were sampled at the two (2) stations and its nearby discharge outlet. The Marine Area (i.e. near the mouth of Berlayer Creek and near Labrador Nature Reserve) were only sampled at one (1) station. And totally of ten (10) sampling stations were determined in the Study Area. The surface water samples were tested for both physical and chemical parameters relevant for sustenance of aquatic life including temperature, pH, salinity, conductivity, TDS, DO, turbidity, TSS, TOC, TP, PO_4-P, TN, NO_3-N, NH_4-N, Enterococcus, and Pb. The sampling results were compared with NEA discharge guideline of Singapore, ASEAN Marine Water Quality Criteria and international criteria for aquatic life.

The in-situ water quality basically was good for aquatic life in terms of temperature, conductivity, salinity, TDS and DO during dry and wet weather conditions. pH was within reasonable range for most sampling stations during both dry and wet weather conditions, except for slight increased pH of downstream of man-made pond D4. All the sampling stations during dry and/or wet weather had higher turbidity than the water quality criteria for aquatic life. The TSS at midstream and downstream of Berlayer Creek D1 and concrete drain D5 during wet weather were exceeded the NEA trade effluent discharge limit (i.e. 50 mg/L). It shows the general trend of high TSS found in watercourses that comprised of seawater such as Berlayer Creek, concrete drain D5 and Marine Area (i.e. near the mouth of Berlayer Creek and Labrador Nature Reserve) during wet weather. It might possible due to the sediment resuspension stormwater runoff from upstream catchment area. Elevated TOC was found in the man-made pond D4 and concrete culverts (i.e. D2 and D3) of the Keppel Club. It might be due to the runoff comprised

of high concentration of organic carbon in the soil organic matters which generated from turf soils. The nutrients in terms of nitrogen and phosphorus compounds which found in most of the watercourses were exceeded the ASEAN Marine Water Quality Criteria or water quality criteria for aquatic life. The possible contamination sources were either from urbanized, golf course areas (e.g. fertilizer from tree plantation and grass patch, food wastes, etc.) or surrounding dense forest (e.g. organic decomposition from dead plants). Elevated enterococcus counts were observed along the Berlayer Creek during both dry and wet weather. It might be due to the faecal pollution generated from the fauna presented along the Creek and/or the flushing runoff of high bacteria composition from upstream urbanized area. Pb indicated low organic content and low Pb pollution within the Study Area.

From the results of the hydrological and water quality assessment, it can be inferred that the watercourses were flowing perennially. Among all the surveyed watercourses, the water quality at the Berlayer Creek, Keppel Club and concrete drain D5 were heavily affected by the tidal influence or urbanised area outside of the Study Area in terms of turbidity, TSS, nutrients and enterococcus. Based on the assessment of the hydrology and surface water quality related impacts on the various sensitive receptors, the findings have been summarised in Table 8-17 and Table 8-18. The activities of construction and operational phases were assessed to cause **Minor – Moderate** impacts on human receptors and the habitat and biocenosis of Bukit Chermin during construction and operational phases, even with implemented minimum controls. Hence, mitigation measures such as Earth Control Measures (ECM) and flow diversion were proposed for construction phase within the Keppel Club in order to help reduce impact on hydrology and water quality to **Minor**. For operational phase, Active, Beautiful, Clean (ABC) Waters Design approach is recommended to reduce the peak-flow due to land use change and to improve stormwater quality as well as introducing more greenery area in the proposed development. In order to filter stormwater before discharging to the watercourses, it is recommended to create green buffer area for the watercourses such as Berlayer Creek and concrete drain D5. With such, the residual impact on hydrology and water quality can be reduced to **Minor**.

From the quantitative impact assessment, it can be inferred that no impacts on hydrodynamic conditions in both construction and operational phases. During the construction phase, it is assumed that the Contactor would discharge the site construction water with TSS of 50mg/L. The quantitative assessment show that the discharge would have **No Impact** on the seagrass, corals, mangrove and international boundary. The changes of the maximum water level and salinity had **No Impact** on the seagrass, corals and mangrove as well. **No Impact** is expected on the morphology of the Assessment Area. **Minor Impact** is expected on the aquatic fauna in the Assessment Area.

Table 8-35 Summary of hydrology and water quality impact assessment

Potential Source of Impact	Impact Significance with Minimum Control	Key Mitigation Measures (if any)	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase			
Land Use Change (Hydrology)	Minor - Moderate	• For any construction activities that may alter the alignment of or block drains, appropriate measures such as watercourse diversion should be carried out to avoid localised flooding. The design should follow PUB Code of Practice on Surface Water Drainage, and the diverted flow shall be treated to meet NEA Trade Effluent Discharge Limits prior to discharge. • Ensure strict compliance with PUB Code of Practice on Surface Water Drainage: – Design of roadside drains and diversion drains; – Implementation of Earth Control	Minor
Solid & Toxic Wastes Generation (Surface Water Quality)	Minor - Moderate		Minor
Improper Management of Chemical Substances (Surface Water Quality)	Minor - Moderate		Minor
Liquid Effluent Generation and Stormwater Runoff (Surface Water Quality)	Minor - Moderate		Minor
Storage and Disposal of Domestic Liquid and Construction Solid Wastes (Surface Water Quality)	Minor - Moderate		Minor
Sediment Plume Impact	No impact on seagrass, corals and international boundary, minor impact on aquatic fauna		-

Potential Source of Impact	Impact Significance with Minimum Control	Key Mitigation Measures (if any)	Residual Impact Significance with Mitigation Measures (if required)
		Measures, to ensure no flood risk and no water quality impact during the construction; – Implement CCTV and Silt Imagery Detection System (SIDS) to monitor surface runoff discharges from sites. • Provide silt curtains at each of the main outlets which discharges flow from the proposed construction sites into the surrounding watercourses.	
Operational Phase			
Altered Stormwater Runoff (Hydrology)	Minor - Moderate	• Provide ABC Waters Design features within the development (wetlands, bioretention swales, rain garden, etc.) or more softscape areas and pervious areas within the development to increase seepage of surface water into the soil to reduce peak flow and flooding risks within the development. • To create green areas around watercourses to buffer against the edge effect of future development. • Ensure strict compliance with PUB Code of Practice on Surface Water Drainage during design of storage system, to reduce peak flow during operational phase to be the same or lower than that of the existing condition. • To design protection structures at proposed stormwater outlets discharging from the development to Berlayer Creek to minimise local scouring at mangrove area along Berlayer Creek. • Provide sufficient disposal bins within the development to avoid improper waste disposal.	Positive – (Negative) Minor
Stormwater Runoff Contamination (Surface Water Quality)	Minor - Moderate		Positive – (Negative) Minor
Improper Management of Liquid and Solid Wastes (Surface Water Quality)	Minor		Minor
Flooding Impact	Negligible impact		-
Hydrodynamic Impact	No impact on navigation and berthing		-
Morphological Impact	No impact		-
Salinity Impact	No Impact		-

9 Soil and Groundwater

9.1 Introduction

Activities during construction and operational phase of the Project, if not managed properly, could potentially lead to contamination of soil and groundwater. In addition to that, during the pre-construction and construction activities such as land preparation and excavation for construction works there is also a potential to encounter historically contaminated soils. This section presents the assessment undertaken to define the nature and scale of potential impacts that soil and groundwater can have on identified sensitive receptors, associated with the Project's construction and operational phase. This section also outlines appropriate controls and best management practices.

9.2 Methodology and Assumptions

This section outlines the methodology adopted for the soil and groundwater baseline studies as well for impact assessment for both construction and operational phases of the Project.

9.2.1 Soil and Groundwater Baseline Study

The purpose of soil and groundwater baseline study was to determine the soil profile of the Study Area, hydrogeological conditions of the aquifer and soil and groundwater chemistry which may potentially have adverse impacts on the surrounding surface watercourses, and eventually impacting humans, habitats and biodiversity (e.g. current and future users of the area, groundwater-dependent habitats and flora and fauna species). Furthermore, this baseline study will ascertain the presence of possible pollutants in the underlying soil and groundwater that may impact the local biodiversity and humans.

Soil and groundwater baseline conditions of the Study Area were determined from the primary data (collected during filed surveys) and secondary data (obtained from desktop research). Field surveys included array of activities such as site reconnaissance, drilling of boreholes and soil sampling, installation of monitoring wells and groundwater sampling and weekly groundwater gauging. Desktop research included review and analysis of relevant publicly available secondary data as well as review and analysis of the data provided by the Client and other Agencies. Following sub-sections detail the methodologies used for data collection and analysis of the collected baseline data.

9.2.1.1 Baseline Data Collection Methodology

9.2.1.1.1 Desktop Research

As a part of desktop research, AECOM reviewed available site-specific public utility drawings (i.e. drainage, water services, sewer, telecommunication and electrical lines) to assess the presence of utilities at the proposed borehole/ monitoring well locations. The historical use of land was analysed (refer to Section 4.1 of this Report) in order to assess possibility of historical contamination of underlying soil. Furthermore, geological conditions of the Study Area have been determined based on geological maps of Singapore [M-4] in order to better understand soil and hydrogeological conditions of the area (refer to the Section 4.3 of this Report).

Information from past environmental site investigation/ environmental site assessment/ environmental baseline study report(s) and observations from a site reconnaissance were considered to better refine the positioning of the borehole/ monitoring well locations. AECOM understood a tender to conduct an environmental site assessment for the Former BP Oil Refinery site was called by SLA in 2014 (Tender Ref No.: SLA000/PT14-13/87.1.837). SLA has shared with AECOM borelogs as well as soil and groundwater analytical results obtained during that study and this information was also taken into consideration in the soil and groundwater analysis.

9.2.1.1.2 Soil and Groundwater Field Investigations

Soil and groundwater field investigations included the following tasks:

- Site reconnaissance and underground utilities detection;
- Drilling of seven (7) boreholes at the Study Area and collection of sixteen (16) soil samples;
- Conversion of all the boreholes into monitoring wells and elevation survey of wells;

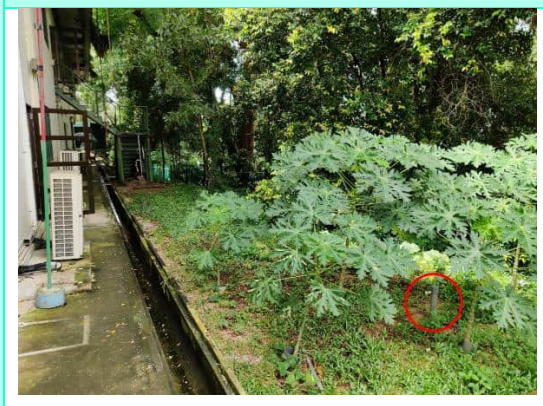
- Monitoring well development and subsequent collection of seven (7) groundwater samples;
- In-situ measurements and laboratory analysis of collected soil and groundwater samples;
- Weekly groundwater gauging at all monitoring wells, inclusive of both high and low tide conditions; and
- Rising head slug test.

9.2.1.1.2.1 Site Reconnaissance and Underground Utilities Detection

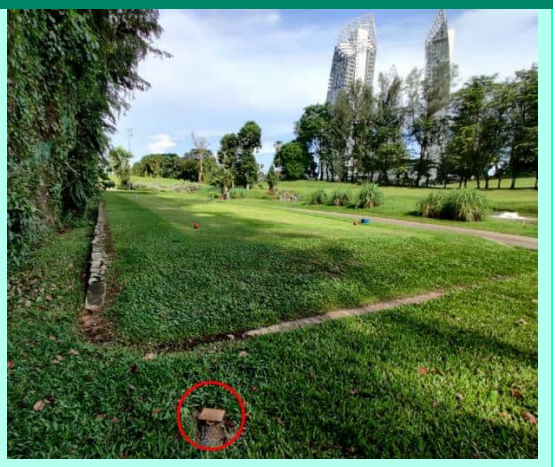
Prior to any field work, site reconnaissance was carried out in order to do visual investigation of the site and obtain preliminary information regarding Study Area's topography, geology, soil conditions, watercourses as well as flora and fauna presence. Information gathered during the site reconnaissance was also used when finalizing the locations of boreholes/ monitoring wells as a part of this study.

Justifications for the borehole/ monitoring well locations are shown in the Table 9-1. The locations of the boreholes and monitoring wells are shown in Figure 9-2.

Table 9-1 Rationale for the selection of boreholes and monitoring wells' locations with photos

Borehole/ Monitoring Well ID	Monitoring Location	Justification	Photo of Installed Monitoring Well
BH1/MW1	Located adjacent to a concrete drain in the south eastern portion of Keppel Club.	• To determine the soil profile and hydrogeological conditions of the Study Area i.e. at Keppel Club and the Former BP Oil Refinery site. • To ascertain the presence of possible pollutants in the underlying soil and groundwater that may impact the local vegetation and downstream watercourses i.e. Berlayer Creek.	
BH2/MW2	Located towards the southern boundary of the site, near the maintenance facilities of Keppel Club.		

Borehole/ Monitoring Well ID	Monitoring Location	Justification	Photo of Installed Monitoring Well
BH3/MW3	Located within the Keppel Club golf course, near to the upstream of Berlayer Creek.		
BH4/MW4	Located within the Former BP Oil Refinery site, near to the midstream (upper) of Berlayer Creek.		
BH5/MW5	Located within the Keppel Club golf course, near to the midstream (lower) of Berlayer Creek.		
BH6/MW6	Located within the Former BP Oil Refinery site, downstream of Berlayer Creek		

Borehole/ Monitoring Well ID	Monitoring Location	Justification	Photo of Installed Monitoring Well
BH7/MW7	Located towards the northern boundary of the Keppel Club golf course.		

Before the commencement of intrusive works (i.e. borehole advancement), a site utility survey was conducted to clear all proposed borehole locations.

9.2.1.1.2.2 Soil Boring and Soil Sampling

A total of seven (7) boreholes, designated as BH1 through BH7 were advanced within the Study Area out of which, five (5) were established within Keppel Club and two (2) within Former BP Oil Refinery site (refer to the Figure 9-2).

To avoid deterioration of aesthetic value that Study Area has (i.e. Keppel Club golf course), as well as to avoid the disruptions of ongoing activities within the Study Area (i.e. maintenance activities within Keppel Club and activities performed by Radio Modellers Singapore [RMS] within Former BP Oil Refinery site) all boreholes were advanced by using hand auger. Only exception to this was advancement of borehole BH4, where conditions and coordination with occupants allowed the use of hydraulic rotary drill for this purpose. All boreholes were advanced at least 1.0 m to 2.0 m below the groundwater level observed at the borehole location during drilling events. This is considered to be sufficient depth for subsequent installation of groundwater monitoring wells to capture possible fluctuations of groundwater.

Soil samples were taken from each borehole at intervals of approximately 0.5 m for soil identification purposes, including assessment of physical properties of soil such as colour, moisture, firmness, plasticity, odour and staining (if any). Furthermore, in-situ measurements of Volatile Organic Compounds (VOCs) by using a Photoionization Detector (PID) were carried out for each of the collected soil samples. Two (2) soil samples were selected from each of the boreholes and sent for laboratory analysis – one (1) sample from surface layer (i.e. 0.3 m below ground surface [m bgs] to 0.5 m bgs) and one (1) soil sample approximately at the observed groundwater level. Detailed soil laboratory analysis programme is described in the Section 9.2.1.1.2.5. Additional soil samples from surface layer were sent for laboratory analysis from BH4 and BH6 (one soil sample from each).



Figure 9-1 Soil boring methods: (A) hand auger (at BH6) and (B) hydraulic rotary drill (at BH4)



Legend

- Boreholes Converted Into Monitoring Wells
- Overall EIS Study Area
- Development Area

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Location of boreholes and monitoring wells

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn SAG	Date APR 2022

Figure No. : **9 - 2** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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9.2.1.1.2.3 Monitoring Well Installation and Elevation Survey

Upon collection of the soil samples, all boreholes were converted into temporary groundwater monitoring wells (MW1 through MW7) to enable groundwater sampling and groundwater gauging. Well casings consisted of 50-milimeter (mm) internal diameter unplasticized polyvinyl chloride (uPVC) pipes. Well casings consisted of machine-slotted (with nominal slot aperture of 0.5 mm) 50-mm internal diameter uPVC pipes which were installed such that the screens intersect the water table to the base of the borehole/monitoring well. The well screens were fixed across the anticipated water table fluctuation range to enable detection of light non-aqueous phase liquid (LNAPL), if any, on the surface of the groundwater table. A filter pack comprising of uniformly graded fine gravel was placed in the annular space between the uPVC screen / casing and borehole wall up to ground level.

Following the installation of the groundwater monitoring wells, elevation survey was performed to obtain the relative elevation of the monitoring wells (the levels were based on Singapore Height Datum [SHD] of 0.000 m).Northing and easting coordinates of the groundwater monitoring wells were also collected using the SVY21 system.



Figure 9-3 (A) Monitoring well installation (MW2) and (B) an example of elevation survey (AECOM©)

9.2.1.1.2.4 Groundwater Gauging, Sampling and Slug Test

All groundwater monitoring wells were developed at least 24 hours after the installation to remove fine particles that may have accumulated in the well during well installation activities and enhance the hydraulic connection between the well screen and target water-bearing zone. Development of each monitoring well included purging a minimum of five (5) well volumes of groundwater or until dry, whichever was achieved first, and this was conducted using dedicated disposable 1-litre (L) polyvinyl chloride (PVC) bailers.

The monitoring wells were then gauged for groundwater levels and presence of LNAPL using an intrinsically safe oil-water interface meter prior to well purging and sample collection. Following the stabilization of the in-situ physicochemical parameters (i.e. pH, electrical conductivity [EC], oxidation and redox potential [ORP], dissolved oxygen [DO], TDS and temperature), one (1) groundwater sample was collected from each groundwater monitoring well for laboratory analysis. Detailed soil laboratory analysis programme is described in the Section 9.2.1.1.2.5.

Well gauging was conducted on a weekly basis for twelve (12) weeks to obtain a trend of the groundwater level fluctuation pattern. Data from the well gauging and elevation survey was subsequently used to generate a groundwater elevation contours and help derive the inferred groundwater flow direction.

One (1) round of slug test (i.e. rising slug test) was conducted on all seven (7) wells to obtain the site-specific hydraulic conductivity, and subsequently derive the groundwater flow velocity. During the slug test, groundwater

was purged from the monitoring wells, and the change in hydraulic head was monitored through time via a water level data logger or oil-water interface meter to determine the hydraulic conductivity of the Study Area.



Figure 9-4 AECOM staff performing a rising head slug test at MW5

9.2.1.1.2.5 Soil and Groundwater Laboratory Analysis Programme

The collected soil and groundwater samples were analysed by a Singapore Accreditation Council (SAC) certified laboratory under the Singapore Laboratory Accreditation Scheme (SINGLAS). Parameters listed in in the Dutch Remediation Circular 2013 were analysed. Major anions and cations were also analysed to determine the geochemical characteristics of the groundwater. A summary of the soil and groundwater analyses parameters and their corresponding test methods are presented in the following table.

Table 9-2 Soil and groundwater parameters analysed and the corresponding test methods

Test Parameter	Test Method	
	Soil (mg/kg)	Groundwater (mg/L)
Metals[7]	USEPA 3051A / APHA 3120B / USEPA 245.1	USEPA 245.1 / APHA 3125B
Total Cyanide	APHA 4500-CN(N)	APHA 4500-CN(N)
Volatile Organic Compounds (VOCs)	USEPA 5021A / 8260D	USEPA 5021A / 8260D

[7] Metals analysis to include arsenic, antimony, barium, cadmium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel and zinc

Test Parameter	Test Method	
	Soil (mg/kg)	Groundwater (mg/L)
Semi-Volatile Organic Compounds (SVOCs), including pesticides[8]	USEPA 3545A / 8270E	USEPA 3510C / 8270E
Total Petroleum Hydrocarbon (TPH)	USEPA 8015C	USEPA 8015C
Miscellaneous Parameters[9]	N.A.	APHA 23rd Edition 2017
Major Anions and Cations[10]	N.A.	APHA 3120B / 4500-CO_2 (D) / 4500-NO_3 (I) / 4500-P (J)
Moisture (% w/w) and organic matter (%)	BS1377: Pt 2&3: 1990	N.A.
Note: N.A.- Not Applicable- samples were not tested for that parameter		

In-situ measurements of soil parameters included VOCs. *In-situ* measurements of groundwater physiochemical parameters, including temperature, pH, conductivity, TDS, oxidation-reduction potential (ORP) and DO, were also carried out and recorded during the groundwater sampling event. One (1) sampling event has been assumed for soil and one (1) for groundwater.

AECOM notes that the soil and groundwater investigation objective is to collect data to assess the environmental impacts and not for the Building Construction Authority (BCA) or building plan submission purpose (Soil Investigation Report), hence drilling through bedrock is not required.

9.2.1.2 Baseline Data Analysis and Assessment Methodology

The Dutch Intervention Values (DIV) in the Dutch Environmental Guidelines Soil Remediation Circular [R-28] are adopted in this study for screening of the 12 priority pollutant metals, inorganic compounds, aromatic compounds, polycyclic aromatic hydrocarbons (PAHs), chlorinated hydrocarbons, pesticides and other pollutants in soil and groundwater. The DIV is referenced in the latest Code of Practice for Pollution Control, 2013 (COPCC) by the NEA.

The DIVs are related to spatial parameters and define soil as being seriously contaminated if the mean soil/ sediment concentration of at least one substance is at least 25 cubic meters (m^3) of soil-volume, or groundwater concentration in at least 100 m^3 of pore-saturated soil-volume, exceeds the DIV. It is noted that the intervention values for groundwater are not based on a separate risk assessment with regards to the contaminants present in the groundwater but are calculated based on partitioning of chemicals at concentrations equivalent to the intervention values in soil/ sediment.

It is recognized that the Dutch Guidelines were developed to assess the acceptability of impacted soil and groundwater at housing estates in the Netherlands and is based on local Dutch ecotoxicology and soil condition (that is, soil made of 10% organic clay or 25% clay), without reference to commercial or industrial general, or similar land uses in Singapore. On that basis, exceedances of the DIVs should not necessarily be interpreted as conclusive regarding the need for remediation. Conversely, if the concentrations of Chemicals of Potential Concern (COPC) were below these criteria, it would be reasonable to conclude that the concentrations are not of concern.

The groundwater results were also compared against the Australian and New Zealand Guidelines for Fresh and Marine Water (ANZGFMW)'s fresh-water trigger values to provide an indication of potential impacts to downstream watercourses (if any). The guideline provides authoritative guidance on the management of water quality for natural and semi-natural water resources in Australia and New Zealand. This guideline applies for both surface water and groundwater since the environmental values which they protect relate to above-ground uses (e.g. maintenance of

[8] Pesticides analysis to include DDT, DDE, DDD, Aldrin, Dieldrin, Endrin, a-HCH, b-HCH, g-HCH, d-HCH, Atrazine, Carbaryl, Carbofuran, Chlordane, Endosulfan, Heptachlor and Heptachlor Epoxide
[9] The miscellaneous parameters for groundwater include Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), fluoride, chloride, bromide, phosphate, sulphate and Total Ammoniacal Nitrogen (TAN)
[10] The major anions and cations include calcium, potassium, magnesium, sodium, bicarbonate, carbonate, nitrate-nitrogen and total phosphorus (TP)

aquatic ecosystems). As the streams are receiving surface runoff from the upstream areas which can be considered to be a slightly to moderately disturbed ecosystems, a 95% protection level is applied for the purpose of this study.

9.2.2 Prediction and Evaluation of Impact Assessment

The soil and groundwater impact assessment will include evaluation of potential impacts on identified human and ecological receptors due to soil and groundwater changes as a result of the proposed pre-construction, construction and operational activities. The methodology used for this purpose is as follows:

- **Identification of Potential Sources of Impacts on Soil and Groundwater** – This step will include identification of the activities during construction and operational phase that could potentially have an impact (direct or indirect) to soil and groundwater's quality and/ or groundwater level and flow;
- **Identification of Sensitive Receptors** – The purpose of this step is to identify human and ecological sensitive receptors in the Study Area which could be impacted by the previously defined potential sources of impacts. Subsequently, identified sensitive receptors will be categorized into one of the three categories (i.e. Priority 1, Priority 2 and Priority 3), based on their significance for natural environment and potential human uses (as defined in the Table 6-2). Due to the planned changes in the Study Area over the course of the Project, sensitive receptors will be defined individually for construction and operational phase of the Project;
- **Soil and Groundwater Baseline Conditions** – Primary and secondary data collected for the purpose of this study will be collated and analysed in order to define and understand the baseline conditions of soil and groundwater within the Study Area;
- **Assessment of Impact Intensity and Consequence** – Intensity of identified impacts relevant to soil and groundwater will be established based on the magnitude of such impacts in relation to the applicable standards and guidelines as well as the spatial extent of such changes. The assessment of impacts has been done qualitatively. The potential consequences of the impact will be assessed taking into consideration both impact intensity and the sensitivity of identified human and ecological receptors;
- **Assessment of Impact Significance** - The overall significance of impact will be determined based on both impact consequence and likelihood of occurrence of that impact;
- **Recommendation of Mitigation Measures** – In cases where impact significance has been assessed to be Moderate or Major, appropriate mitigation measures will be recommended in order to alleviate the adverse construction and operational impacts; and
- **Assessment of Residual Impact Significance** – This step will include assessment of impacts' significance after the implementation of proposed mitigation measures.

9.3 Potential Sources of Soil and Groundwater Impact

Activities during both construction and operational phase of the Project may cause contamination of soil and groundwater as well as decrease in groundwater levels. Furthermore, during the pre-construction and construction activities such as land preparation and excavation for construction works there is also a potential to encounter historically contaminated soils.

9.3.1 Construction Phase

Soil and groundwater can be potentially exposed to contaminants due to the activities during the construction phase of the Project, especially within and around the cut and cover areas. Furthermore, pre-construction and construction activities which include soil dewatering process (e.g. excavations, foundation works) could cause temporary or permanent decrease in groundwater levels. The activities which could affect soil and groundwater (both groundwater quality and groundwater level) during the construction phase and their associated impacts are listed in the Table 9-3.

Table 9-3 Potential sources of soil and groundwater impacts during the construction phase

Activity	Potential Sources of Impacts	Potentially Affected Environmental Parameter	Potential Associated Impacts
• Earthworks, site levelling and land grading works • Foundation works • Construction of the residential buildings and associated roads and infrastructure	• Groundwater extraction/ soil dewatering during pre-construction and construction activities that require dry soil conditions • Decreased infiltration into the ground due to increase of impervious surfaces on the site	Groundwater Level	• Disturbances in habitats and/or reduction in size of species' population and threat to species' long-term viability • It is understood that currently in Singapore groundwater is not used for any beneficial purposes (i.e. drinking or industrial purposes, irrigation)
• Site clearance • Groundwater extraction for the purpose of soil dewatering • Earthworks (e.g. excavation of cut and cover areas, civil engineering earthworks) • Stockpiling of excavated soil from cut and cover areas • Storing, handling, transportation and disposal of soil and groundwater	• Seepage of contaminants from excavated contaminated soil (if encountered) into the underlying soil and groundwater • Soil erosion of exposed soil from excavations and stockpiles • Seepage of contaminants from extracted contaminated groundwater (if encountered) into the underlying soil and groundwater	• Soil quality • Groundwater quality	• Some contaminants such as metals can accumulate in the root zone, affecting vegetation growth and long-term viability • Contaminated soil and groundwater can directly or indirectly affect fauna, possibly leading to reduction in size of species' population and long-term viability • Adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater • It is understood that currently in Singapore groundwater is not used for any beneficial purposes (i.e. drinking or industrial purposes, irrigation) • Groundwater contamination can lead to soil contamination and degradation of land quality. Furthermore, contaminated groundwater may affect the quality of downgradient surface watercourses in their vicinity • Contamination can spread beyond the Study Area boundaries via groundwater
• Site clearance • Handling, transfer and storage of toxic chemical waste • Handling, transfer, refuelling and storage of chemicals (e.g. diesel, bentonite, lubricants, oils, grease, paints solvents, waste treatment chemicals, etc.) • Maintenance of vehicles, machinery and equipment	• Discharge and leakage of toxic chemical waste • Discharge or leakage of chemicals used for refuelling and maintenance of vehicles, machinery and equipment		

The proposed minimum controls or stand practices commonly implemented in Singapore are discussed in the Section 9.6.

9.3.2 Operational Phase

It is anticipated that there will be limited sources of impacts to soil and groundwater quality during the operational phase as use of chemicals and generation of toxic chemical waste are expected to be of limited quantities. However, the permanent land use change (i.e. increase of impervious surfaces) due to the proposed developments may lead to decrease in infiltration of surface water and stormwater into the soil. The activities which could affect soil and groundwater (both groundwater quality and groundwater level) during operational phase and their associated impacts are listed in the Table 9-4.

Table 9-4 Potential sources of soil and groundwater impacts (Operational Phase)

Activity	Potential Sources of Impacts	Potentially Affected Environmental Parameter	Potential Associated Impacts
Permanent Land Use Change	Decreased infiltration into the ground due to more areas with impervious surfaces in the new development	Groundwater Level	• Disturbances in habitats and/or reduction in size of species' population and threat to species' long-term viability • It is understood that currently in Singapore groundwater is not used for any beneficial purposes (i.e. drinking or industrial purposes, irrigation)
	Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater	• Soil Quality • Groundwater Quality	• Some contaminants such as metals can accumulate in the root zone, affecting vegetation growth and long-term viability • Contaminated soil and groundwater can directly or indirectly affect fauna, possibly leading to reduction in size of species' population and long-term viability • Adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater • It is understood that currently in Singapore groundwater is not used for any beneficial purposes (i.e. drinking or industrial purposes, irrigation)
Maintenance and landscaping works	Discharge or leakage of waste and chemicals into the soil	• Soil Quality • Groundwater Quality	• Some contaminants such as metals can accumulate in the root zone, affecting vegetation growth and long-term viability • Contaminated soil and groundwater can directly or indirectly affect fauna, possibly leading to reduction in size of species' population and long-term viability • Contaminated soil and groundwater can have adverse effects on human health • It is understood that currently in Singapore groundwater is not used for any beneficial purposes (i.e. drinking or industrial purposes, irrigation) • Groundwater contamination can lead to soil contamination, degradation of land quality and it

Activity	Potential Sources of Impacts	Potentially Affected Environmental Parameter	Potential Associated Impacts
			can be transported to surface water bodies, leading to their deterioration

The proposed minimum controls or stand practices commonly implemented in Singapore are discussed in Section 9.6.

9.4 Baseline Soil and Groundwater

A soil and groundwater baseline study were carried out as a part of this EIS to determine the soil profile and hydrogeological conditions of the Study Area, and also to ascertain the presence of possible pollutants in the underlying soil and groundwater that may impact the local vegetation, humans and downgradient watercourses.

The following sub-sections describe the results of the baseline assessment.

9.4.1 Baseline Monitoring Personnel

The assessment and site surveys were conducted by the following personnel:

- Mr. Albert Payapaya, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Mr Jafon Ng, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Mr. Jaypee Bautista, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Mr. Mark Shi, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Ms. Rena Tang, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Ms. Ruzanna Alwi, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist);
- Mr. Grujica Sarenac, AECOM Singapore Pte Ltd (Soil and Groundwater Specialist); and
- Specialist Testing and Technical Services (STATS) Asia Pacific Pte Ltd (Drilling Specialists)

9.4.2 Baseline Findings

9.4.2.1 Soil Profile

The boreholes within the Study Area were installed between April 8, 2021 and April 26, 2021. Termination depths of all the boreholes ranged from 3.0 m bgs (at BH1) to 5.5 m bgs (at BH3). All the boreholes were advanced using a hand auger, except the borehole BH4 (located at the Former BP Oil Refinery site) for which the hydraulic rotary drill was used. At each borehole, the encountered lithology was logged by AECOM field personnel in accordance with the Unified Soil Classification System (USCS). The PID detector screening and visual/olfactory observations were also recorded.

Based on the information obtained during the soil investigation study, the soil profile encountered at the Study Area generally consisted of silty clay. Layers of clay were observed at BH2 at 2.5 m bgs down to termination depth (i.e. 3.5 m bgs) and at BH5 from 1.5 m bgs down to termination depth (i.e. 4.0 m bgs). Sandy clay was observed at BH3 at 0.5 m bgs, while sand layer was found at 0.4 m bgs at BH5. Layer of small sawdust alike wood pieces was encountered at BH6 at 3.2 m bgs, with approximate thickness of 0.3 m. The cross-sections of the lithology for the Study Area is presented in Figure 9-5, Figure 9-6, Figure 9-7. The soil boring details are provided in Appendix N.

During the borehole drilling and soil sampling no staining was observed in soil samples. Slight hydrocarbon odour was only observed at BH4 from 2.5 m bgs to 3 m bgs. However, it should be noted that no exceedances of DIVs were reported in soil samples taken from this BH4.

Previously carried out site assessment within Former BP Oil Refinery in 2016 shows that the rest of the area, besides silty clay, also consists of layers of silty sand, clay, sandy clay, sandy silt and organic layers. Subsurface layers of asphalt and concrete backfill have also been found in three locations. Also, a layer of decomposed wood

was found in borehole SB34 at 4.1 m bgs down to 4.5 m bgs. The borelogs from 2016 study are shown Appendix O.

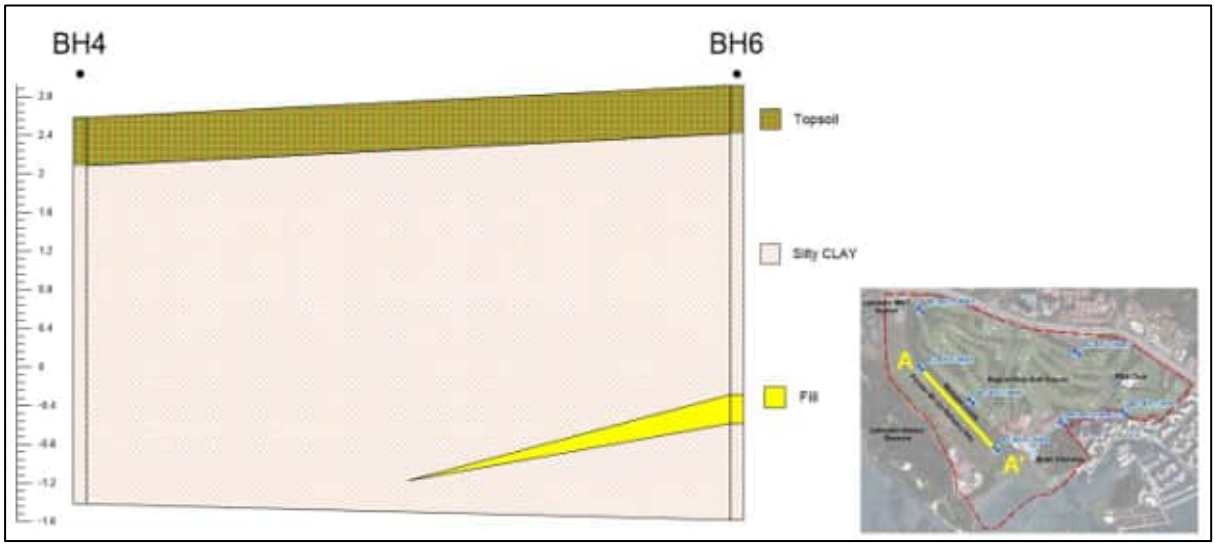


Figure 9-5 Lithology cross-section (A-A')

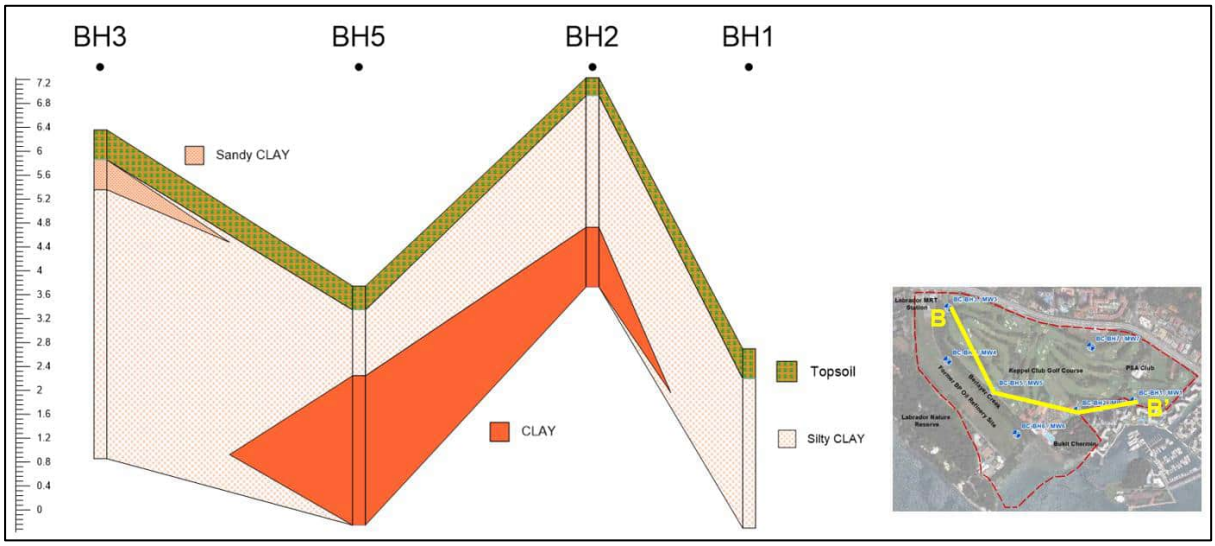


Figure 9-6 Lithology cross-section (B-B')

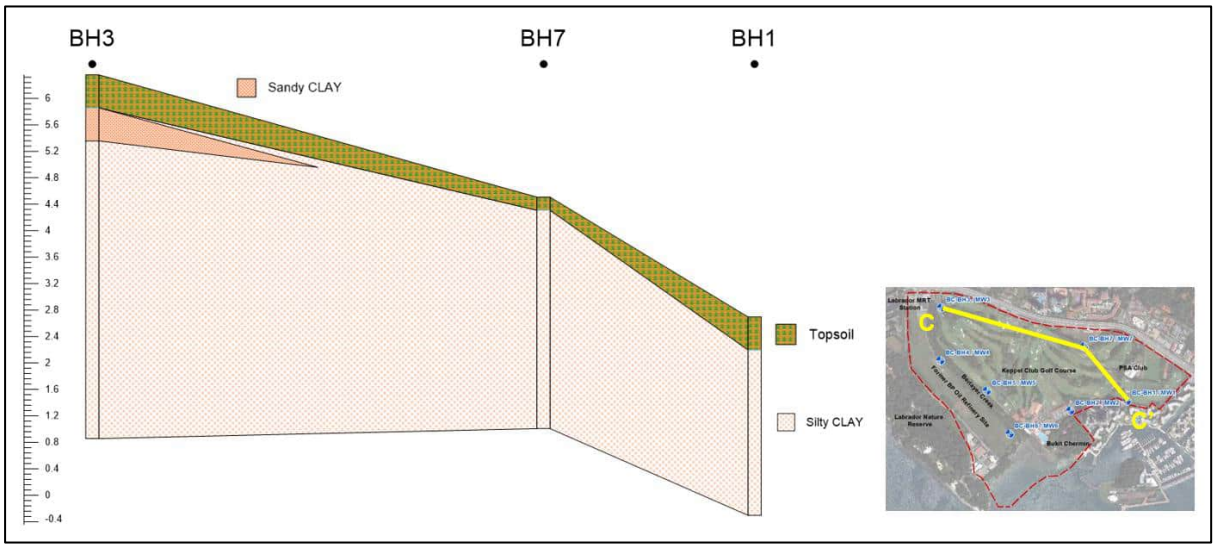


Figure 9-7 Lithology cross-section (C-C')

9.4.2.2 Soil Baseline Results

In total sixteen (16) soil samples were collected from the boreholes- two (2) soil samples were collected from boreholes BH1, BH2, BH3, BH5 and BH7, while three soil samples were taken from BH4 and BH6. Majority of the samples collected from the subsurface (i.e. from 0.5 m bgs down to the termination depth of all boreholes) during field activities did not exhibit signs of visual or olfactory contamination. Slight hydrocarbon odour was only observed at BH6 at approximately 2.5 m bgs to 3.0 m bgs. The PID readings recorded for all soil samples were between 0.0 parts per million (ppm) and 14.3 ppm, indicating negligible concentration of VOCs.

A summary of the reported constituents in soil and a comparison of the soil analytical results with the DIVs for soil is shown in Table 9-5 and Figure 9-8. A copy of the full laboratory report for the soil samples is included in Appendix P.

Table 9-5 Summary of soil analytical results

Test Parameters	Unit	DIV (2013)	BH1		BH2		BH3		BH4			BH5		BH6			BH7	
			0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs
Metals																		
Arsenic	mg/kg	76.00	8.6	1.2	10.6	10.2	1.1	0.3	10.6	6.4	7.5	2.0	2.6	10.8	14.1	2.6	4.0	1.5
Antimony	mg/kg	22.00	1.8	2.9	1.4	1.3	1.1	N.R.	8.3	N.R.	0.9	0.8	0.2	2.4	1.0	0.4	1.5	1.5
Barium	mg/kg	-[a]	140.2	14.5	32.6	34.1	6.2	6.7	18.4	19.8	18.8	7.6	9.2	24.0	20.5	21.4	15.7	29.3
Cadmium	mg/kg	13	0.7	0.5	0.4	0.4	0.2	0.3	0.4	0.5	0.4	0.2	0.2	0.4	0.5	0.2	0.5	0.4
Chromium	mg/kg	180 / 78[b]	14.6	20.4	14.2	12.1	5.7	12.2	16.5	13.1	16.5	7.0	6.8	13.3	29.3	10.8	14.9	10.2
Cobalt	mg/kg	190	4.4	14.3	1.0	2.5	0.1	N.R.	0.9	1.5	0.9	0.2	0.3	1.1	0.8	1.3	0.5	3.3
Copper	mg/kg	190	159.3	39.9	23.6	40.5	2.8	1.8	12.5	14.4	16.3	2.4	4.1	9.3	14.1	15.9	16.1	12.6
Mercury	mg/kg	36 / 4[c]	1.4	N.R.	0.2	0.3	N.R.	N.R.	0.2	0.1	N.R.	N.R.	N.R.	0.1	0.1	0.1	0.5	N.R.
Lead	mg/kg	530	216.9	12.1	98.6	61.6	11.8	20.2	12.5	16.1	18.0	14.4	15.6	14.5	13.3	29.9	14.2	13.4
Molybdenum	mg/kg	190	3.7	1.0	0.9	1.3	N.R.	N.R.	2.0	0.6	0.6	N.D.	0.2	0.9	0.2	0.3	0.2	N.R.
Nickel	mg/kg	100	9.7	24.5	3.9	7.8	N.R.	N.R.	3.8	3.6	3.5	N.R.	N.R.	4.2	3.0	3.0	3.4	10.7
Zinc	mg/kg	720	375.2	111.3	81.3	291.9	4.4	2.6	37.6	46.7	28.2	4.8	8.4	34.2	34.8	37.4	20.1	44.0
Cyanide																		
Cyanide (Total)	mg/kg	20 / 50 [d]	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Volatile Organic Compounds (VOCs)																		
25 Compounds	mg/kg	Various	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Semi-Volatile Organic Compounds (SVOCs)																		
Polynuclear Aromatic Hydrocarbons (PAHs)																		
Phenanthrene	mg/kg	Not Available	0.6	N.R.	N.R.	N.R.	0.1	0.1	N.R.	0.3	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Fluoranthene	mg/kg	Not Available	3.0	N.R.	0.1	N.R.	N.R.	0.1	N.R.	0.2	N.R.	N.R.	N.R.	N.R.	0.4	0.4	N.R.	N.R.
Benzo(a) anthracene	mg/kg	Not Available	2.4	N.R.	0.1	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	0.2	0.3	N.R.	N.R.

Test Parameters	Unit	DIV (2013)	BH1		BH2		BH3		BH4			BH5		BH6			BH7	
			0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs
Chrysene	mg/kg	Not Available	3.0	N.R.	0.1	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Benzo(a) pyrene	mg/kg	Not Available	3.5	N.R.	0.2	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Benzo(ghi) perylene	mg/kg	Not Available	3.0	N.R.	0.1	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Benzo(k) fluoranthene	mg/kg	Not Available	1.5	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.D.	N.D.	N.D.
Indeno (1,2,3cd) pyrene	mg/kg	Not Available	3.0	N.R.	0.1	N.R.	N.D.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.D.	N.R.	N.R.
Sum of PAHs	mg/kg	40.0	20.0	N.R.	0.8	N.R.	0.1	0.2	N.R.	0.5	N.R.	N.R.	N.R.	N.R.	0.6	0.6	N.R.	N.R.
Other Pollutants																		
Phthalates (total)	mg/kg	Not Available	N.R.	N.R.	N.D.	0.36	N.R.	N.R.	N.R.	3.71	N.R.	N.R.	N.R.	N.R.	3.66	5.91	N.R.	N.R.
Pyridine	mg/kg	11	2.75	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.D.
40 Compounds	mg/kg	Various	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Total Petroleum Hydrocarbons (TPHs)																		
C_6-C_9	mg/kg	Not Available	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
C_{10}-C_{14}	mg/kg	Not Available	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
C_{15}-C_{28}	mg/kg	Not Available	96.5	N.R.	39.6	29.0	N.R.	N.R.	37.76	20.13	33.49	N.R.	N.R.	15.07	30.5	109.27	N.R.	N.R.
C_{29}-C_{36}	mg/kg	Not Available	95.7	N.R.	87.5	35.0	N.R.	N.R.	113.5	16.82	29.06	N.R.	N.R.	N.R.	33.98	72.85	12.10	N.R.
C_6-C_{36} (Total) Mineral Oils	mg/kg	5,000[e]	192.2	N.R.	127.1	63.9	N.R.	N.R.	151.3	36.95	62.55	N.R.	N.R.	15.07	64.48	182.1	12.10	N.R.
Miscellaneous Parameters																		
pH	-	Not Available	7.6	8.4	7.9	7.7	7.4	5.0	7.1	8.1	8.3	7.9	5.2	8.3	8.2	8.2	8.5	5.1
Moisture Content	%	Not Available	27.51	13.30	18.38	19.48	19.98	32.24	33.08	17.57	22.19	12.98	9.53	16.66	23.69	17.03	26.07	19.81

Test Parameters	Unit	DIV (2013)	BH1		BH2		BH3		BH4			BH5		BH6			BH7	
			0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs	0.3 m bgs	1.3 m bgs	0.5 m bgs	3.2 m bgs	0.3 m bgs	0.5 m bgs	1.5 m bgs
Organic Matter	%	Not Available	4.26	1.24	2.72	4.67	1.24	1.80	7.46	2.54	1.83	0.54	0.71	1.01	2.71	1.74	1.61	0.58

Notes:

Not Available - value not specified in standard

N.R. – Not Reported above the limit of reporting (LOR)

a - The barium standard has been repealed because the intervention value for barium proved to be lower than the concentration naturally occurring in the soil.

b - Intervention value for Chromium (III) = 180 mg/kg; Chromium (IV) = 78 mg/kg

c - Intervention value for Inorganic Mercury = 36 mg/kg; Organic Mercury = 4 mg/kg

d - Intervention value for free cyanide = 20 mg/kg; complex cyanide = 50 mg/kg

e - Intervention value for mineral oil; This applies to contamination due to mixtures (e.g. gasoline or domestic heating oil), then not only the alkane content but also the content of aromatic and/or polycyclic aromatic hydrocarbons must be determined. This aggregate parameter has been adopted for practical reasons. Further toxicological and chemical disaggregation is under study.

Metals including arsenic, antimony, barium, cadmium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel and zinc were reported in most soil samples at concentrations above their respective levels of reporting (LOR). All of the detections were below their respective DIVs.

Polynuclear Aromatic Hydrocarbons (PAHs) were reported at BH1 at depth 0.5 m bgs (i.e. phenanthrene, fluoranthene, benzo[a] anthracene, chrysene, benzo[a] pyrene, benzo[ghi] perylene, benzo[k] fluoranthene, indeno[1,2,3cd] pyrene), at BH2 at depth 0.3 m bgs (i.e. fluoranthene, benzo[a] anthracene, chrysene, benzo[a] pyrene, benzo[ghi] perylene, indeno[1,2,3cd] pyrene), at BH3 at 0.5 m bgs (i.e. phenanthrene) and at 3.2 m bgs (i.e. phenanthrene, fluoranthene). Phenanthrene and fluoranthene were also reported at BH6 at 0.5 m bgs and 1.5 m bgs. Sum of PAHs at each of the soil samples with PAH detections was below the DIV.

Phthalates (total) were reported at BH2 (at depth 1.3 m bgs), BH4 (at depth 0.5 m bgs) and BH6 (at depths 0.5 m bgs and 1.5 m bgs). All of the detections were below their respective DIV.

Pyridine was only reported at BH1 at depth 0.5 m bgs. The concentration of pyridine in this soil sample was below the DIV.

Total Petroleum Hydrocarbons (TPH) were reported at soil samples collected from BH1 (0.5 m bgs), BH2 (0.3 m bgs and 1.3 m bgs), BH4 (0.3 m bgs, 0.4 m bgs and 1.0 m bgs), BH6 (0.3 m bgs, 0.5 m bgs and 1.5 m bgs) and BH7 (0.5 m bgs). All of the detections were below their respective DIVs.

The remaining parameters analysed for soil samples were below their LORs.

The source(s) of parameters reported above their respective LOR in collected soil samples could not be conclusively ascertained. As detailed in Section 4.1 of this Report, the area east of Berlayer Creek has historically been a forested area and nutmeg plantation until it was eventually turned into the Keppel Club golf course and accompanying facilities. The area west of Berlayer Creek (i.e. Former BP Oil Refinery) has been used as an oil refinery site and also for petroleum storage and distribution until late 1990s. Given the fact that the presence of metals, PAHs and TPHs is a common and well-documented occurrence in urban soils that are exposed to anthropogenic activities, it is possible that the historical use of land has potentially caused the changes in chemical composition of soil, as reported in this Study. However, it should be noted that some of the reported parameters, such as metals, are also naturally occurring elements in the environment and their presence in soil might be due to soil weathering process. However, abovementioned claims can not be confirmed nor disproved as currently there are no comprehensive studies that provide the information on the background concentrations of these parameters in soils in Singapore.

In a previously carried out study at the Study Area (i.e. at Former BP Oil Refinery) in 2016/ 2017 tested soil samples also had detections of metals (i.e. arsenic, antimony, barium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel and zinc), PAHs (i.e. Phenanthrene, fluoranthene, benzo[a] pyrene, benzo[ghi] perylene, benzo[k] fluoranthene, indeno[1,2,3cd] pyrene and benzo[b] & benzo[k] fluoranthene), pyrene and TPH. Additionally, detections of pesticides (i.e. DDD/DDE/DDT) were also noted. Concentrations of arsenic and DDD/DDE/DDT exceeded their respective DIVs. A copy of full laboratory report of tested soil samples from the previously carried out study is shown in Appendix Q.

Summary of reported parameters in this and previous study is shown in the table below.

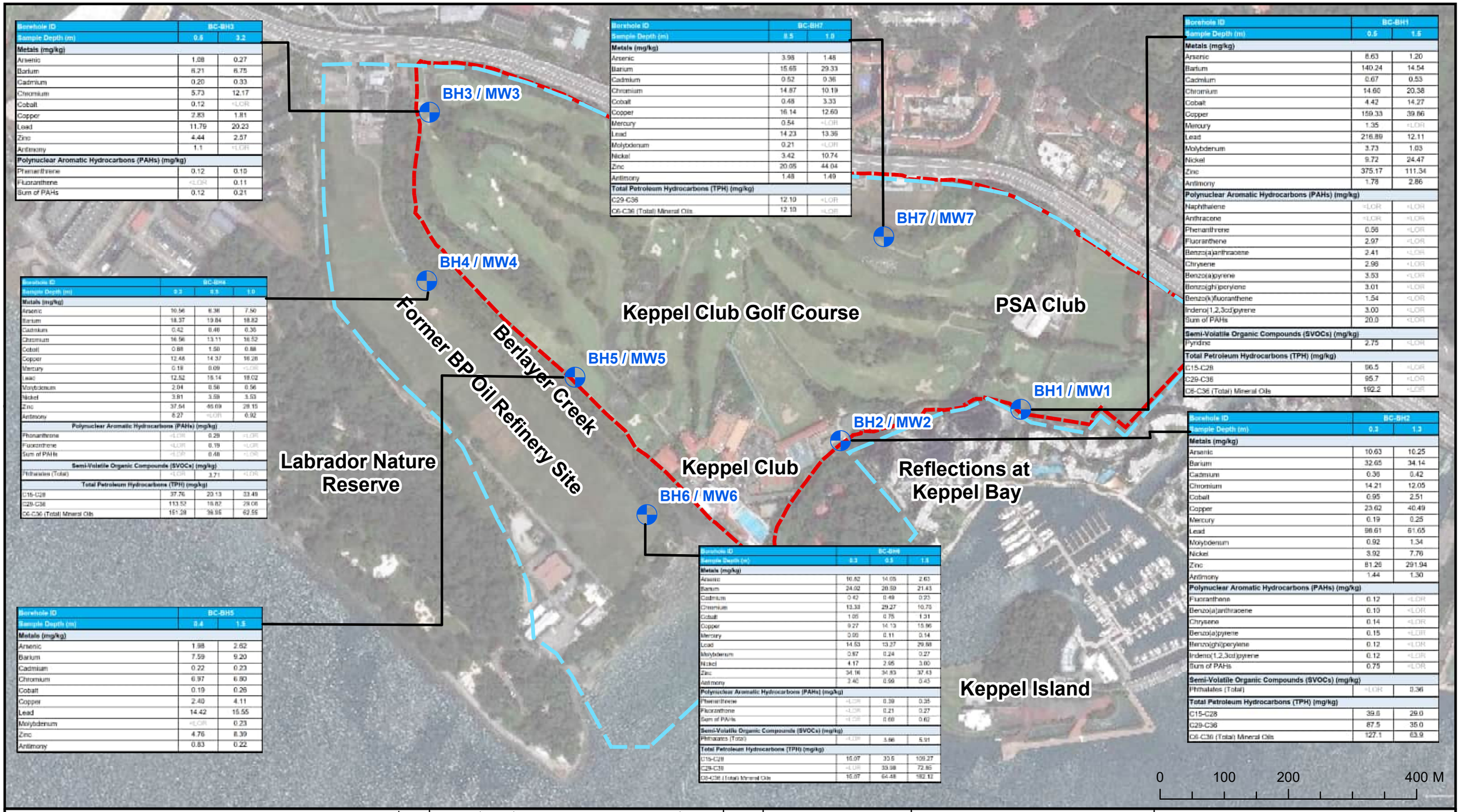
Table 9-6 Comparison of reported parameters in soil in current and previous study within the Study Area

Parameter	Soil Baseline Study 2021 (Current Study- whole Study Area)	Soil Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Soil Investigation in 2016/2017
Metals			
Arsenic	0.27 mg/kg – 14.05 mg/kg	2.6 mg/kg – 14.1 mg/kg	<0.5 mg/kg – 155.0 mg/kg
Antimony	<0.15 mg/kg – 8.3 mg/kg	<0.15 mg/kg – 8.3 mg/kg	1.0 mg/kg – 5.4 mg/kg
Barium	6.2 mg/kg – 140.2 mg/kg	18.4 mg/kg – 24.0 mg/kg	15.3 mg/kg – 54.1 mg/kg

Parameter	Soil Baseline Study 2021 (Current Study- whole Study Area)	Soil Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Soil Investigation in 2016/2017
Cadmium	0.2 mg/kg – 0.7 mg/kg	0.2 mg/kg – 0.5 mg/kg	<0.5 mg/kg – 3.6 mg/kg
Chromium	5.7 mg/kg – 29.3 mg/kg	10.8 mg/kg – 29.3 mg/kg	8.30 mg/kg – 32.2 mg/kg
Cobalt	<0.075 mg/kg – 14.3 mg/kg	0.8 mg/kg – 1.5 mg/kg	0.8 mg/kg – 4.0 mg/kg
Copper	1.8 mg/kg – 159.0 mg/kg	9.3 mg/kg – 16.3 mg/kg	3.2 mg/kg – 176 mg/kg
Lead	11.8 mg/kg – 216.9 mg/kg	12.5 mg/kg – 29.9 mg/kg	9.9 mg/kg – 43.2 mg/kg
Mercury	<0.075 mg/kg – 1.35 mg/kg	<0.075 mg/kg – 0.2 mg/kg	0.03 mg/kg – 0.2 mg/kg
Molybdenum	<0.15 mg/kg – 3.73 mg/kg	0.2 mg/kg – 2.0 mg/kg	<0.5 mg/kg – 12.7 mg/kg
Nickel	<1.5 mg/kg mg/kg – 24.47 mg/kg	3.0 mg/kg – 4.2 mg/kg	1.1 mg/kg – 16.4 mg/kg
Zinc	4.8 mg/kg – 375 mg/kg	28.2 mg/kg – 46.7 mg/kg	1.6 mg/kg – 61.4 mg/kg
Semi-Volatile Organic Compounds (SVOCs)			
Polynuclear Aromatic Hydrocarbons (PAHs)			
Phenanthrene	<0.1 mg/kg – 0.6 mg/kg	<0.1 mg/kg – 0.4 mg/kg	<0.1 mg/kg – 0.3 mg/kg
Fluoranthene	<0.1 mg/kg – 3 mg/kg	<0.1 mg/kg – 0.27 mg/kg	<0.1 mg/kg – 0.6 mg/kg
Benzo(a) anthracene	<0.1 mg/kg – 2.4 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.3 mg/kg
Chrysene	<0.1 mg/kg – 3.0 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.2 mg/kg
Pyrene	N.T.	N.T.	<0.1 mg/kg – 0.6 mg/kg
Benzo(a) pyrene	<0.1 mg/kg – 3.5 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.1 mg/kg
Benzo(ghi) perylene	<0.1 mg/kg – 3.0 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.2 mg/kg
Benzo(k) fluoranthene	<0.1 mg/kg – 1.5 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.4 mg/kg
Indeno (1,2,3cd) pyrene	<0.1 mg/kg – 3.0 mg/kg	<0.1 mg/kg	<0.1 mg/kg – 0.1 mg/kg
Benzo(b) & Benzo(k)fluoranthene	N.T.	N.T.	<0.2 mg/kg – 0.4 mg/kg
Sum of PAHs	<0.1 mg/kg – 20 mg/kg	<0.1 mg/kg – 0.6 mg/kg	<0.2 mg/kg – 2.1 mg/kg
Other Pollutants			
Pyridine	<0.2 mg/kg – 2.8 mg/kg	<0.2 mg/kg	N.T.
Phthalates (total)	<0.2 mg/kg – 0.4 mg/kg	<0.2 mg/kg – 5.9 mg/kg	<0.2 mg/kg
Pesticides			

Parameter	Soil Baseline Study 2021 (Current Study- whole Study Area)	Soil Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Soil Investigation in 2016/2017
DDD/DDE/DDT[a]	<0.2 mg/kg	<0.2 mg/kg	<0.5 mg/kg – **24.2** mg/kg
4.4'-DDD	N.T.	N.T.	<0.1 mg/kg – 22.5 mg/kg
4-4'-DDE	N.T.	N.T.	<0.1 mg/kg – 0.5 mg/kg
4.4'-DDT	N.T.	N.T.	<0.1 mg/kg – 4.4 mg/kg
Total Petroleum Hydrocarbons (TPH)			
C_6-C_9	<0.1 mg/kg	<0.1 mg/kg	<5.0 mg/kg
C_{10}-C_{14}	<10 mg/kg	<10 mg/kg	<5.0 mg/kg – 51.0 mg/kg
C_{15}-C_{28}	<10.0 mg/kg – 96.5 mg/kg	15.1 mg/kg – 109.3 mg/kg	<10.0 mg/kg – 145.0 mg/kg
C_{29}-C_{36}	<10.0 mg/kg – 113.5 mg/kg	<10.0 mg/kg – 113.5 mg/kg	10.0 mg/kg – 47.0 mg/kg
C_6-C_{36} (Total)/ Mineral Oils	<10.0 mg/kg – 192.9 mg/kg	15.1 mg/kg – 182.1 mg/kg	<50.0 mg/kg – 185.0 mg/kg

Note:
123 – Exceedance of the DIV
N.T. – Not tested
[a]**- DDD**- Dichlorodiphenyldichloroethane; **DDE**- Dichlorodiphenyldichloroethylene; **DDT**- Dichlorodiphenyltrichloroethane



Borehole ID	BC-BH3	
Sample Depth (m)	0.6	3.2
Metals (mg/kg)		
Arsenic	1.08	0.27
Barium	8.21	6.75
Cadmium	0.20	0.33
Chromium	5.73	12.17
Cobalt	0.12	<LOR
Copper	2.83	1.81
Lead	11.79	20.23
Zinc	4.44	2.57
Antimony	1.1	<LOR
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)		
Phenanthrene	0.12	0.10
Fluoranthene	<LOR	0.11
Sum of PAHs	0.12	0.21

Borehole ID	BC-BH7	
Sample Depth (m)	0.5	1.0
Metals (mg/kg)		
Arsenic	3.98	1.48
Barium	15.65	29.33
Cadmium	0.52	0.36
Chromium	14.87	10.19
Cobalt	0.48	3.33
Copper	16.14	12.60
Mercury	0.54	<LOR
Lead	14.23	13.36
Molybdenum	0.21	<LOR
Nickel	3.42	10.74
Zinc	20.05	44.04
Antimony	1.48	1.49
Total Petroleum Hydrocarbons (TPH) (mg/kg)		
C29-C36	12.10	<LOR
C6-C36 (Total) Mineral Oils	12.10	<LOR

Borehole ID	BC-BH1	
Sample Depth (m)	0.6	1.5
Metals (mg/kg)		
Arsenic	8.63	1.20
Barium	140.24	14.54
Cadmium	0.67	0.53
Chromium	14.60	20.38
Cobalt	4.42	14.27
Copper	159.33	39.86
Mercury	1.35	<LOR
Lead	216.89	12.11
Molybdenum	3.73	1.03
Nickel	9.72	24.47
Zinc	375.17	111.34
Antimony	1.78	2.86
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)		
Naphthalene	<LOR	<LOR
Anthracene	<LOR	<LOR
Phenanthrene	0.56	<LOR
Fluoranthene	2.97	<LOR
Benzo(a)anthracene	2.41	<LOR
Chrysene	2.98	<LOR
Benzo(a)pyrene	3.53	<LOR
Benzo(ghi)perylene	3.01	<LOR
Benzo(k)fluoranthene	1.54	<LOR
Indeno(1,2,3cd)pyrene	3.00	<LOR
Sum of PAHs	20.0	<LOR
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)		
Pyridine	2.75	<LOR
Total Petroleum Hydrocarbons (TPH) (mg/kg)		
C15-C28	86.5	<LOR
C29-C36	85.7	<LOR
C6-C36 (Total) Mineral Oils	192.2	<LOR

Borehole ID	BC-BH4		
Sample Depth (m)	0.3	0.5	1.0
Metals (mg/kg)			
Arsenic	10.56	8.36	7.50
Barium	18.37	19.84	18.82
Cadmium	0.42	0.46	0.36
Chromium	16.56	13.11	16.52
Cobalt	0.88	1.50	0.88
Copper	12.48	14.37	16.26
Mercury	0.18	0.09	<LOR
Lead	12.52	15.14	19.02
Molybdenum	2.04	0.56	0.56
Nickel	3.81	3.59	3.53
Zinc	37.54	46.69	28.15
Antimony	0.27	<LOR	0.92
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)			
Phenanthrene	<LOR	0.29	<LOR
Fluoranthene	<LOR	0.19	<LOR
Sum of PAHs	<LOR	0.48	<LOR
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)			
Phthalates (Total)	<LOR	3.71	<LOR
Total Petroleum Hydrocarbons (TPH) (mg/kg)			
C15-C28	37.76	20.13	33.49
C29-C36	113.52	18.82	28.06
C6-C36 (Total) Mineral Oils	151.28	38.95	62.55

Borehole ID	BC-BH2	
Sample Depth (m)	0.3	1.3
Metals (mg/kg)		
Arsenic	10.63	10.25
Barium	32.65	34.14
Cadmium	0.36	0.42
Chromium	14.21	12.05
Cobalt	0.95	2.51
Copper	23.62	40.49
Mercury	0.19	0.25
Lead	98.61	61.65
Molybdenum	0.92	1.34
Nickel	3.92	7.76
Zinc	81.26	291.94
Antimony	1.44	1.30
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)		
Fluoranthene	0.12	<LOR
Benzo(a)anthracene	0.10	<LOR
Chrysene	0.14	<LOR
Benzo(a)pyrene	0.15	<LOR
Benzo(ghi)perylene	0.12	<LOR
Indeno(1,2,3cd)pyrene	0.12	<LOR
Sum of PAHs	0.75	<LOR
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)		
Phthalates (Total)	<LOR	0.36
Total Petroleum Hydrocarbons (TPH) (mg/kg)		
C15-C28	39.6	29.0
C29-C36	87.5	35.0
C6-C36 (Total) Mineral Oils	127.1	63.9

Borehole ID	BC-BH5	
Sample Depth (m)	0.4	1.5
Metals (mg/kg)		
Arsenic	1.98	2.62
Barium	7.59	9.20
Cadmium	0.22	0.23
Chromium	6.97	6.80
Cobalt	0.19	0.26
Copper	2.40	4.11
Lead	14.42	15.55
Molybdenum	<LOR	0.23
Zinc	4.76	8.39
Antimony	0.83	0.22

Borehole ID	BC-BH6		
Sample Depth (m)	0.3	0.5	1.5
Metals (mg/kg)			
Arsenic	10.82	14.05	2.63
Barium	24.02	20.59	21.43
Cadmium	0.42	0.49	0.23
Chromium	13.33	29.27	10.75
Cobalt	1.05	0.75	1.31
Copper	9.27	14.13	15.96
Mercury	0.09	0.11	0.14
Lead	14.53	13.27	29.68
Molybdenum	0.67	0.24	0.27
Nickel	4.17	2.65	3.00
Zinc	34.16	34.83	37.43
Antimony	2.40	0.59	0.45
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)			
Phenanthrene	<LOR	0.39	0.35
Fluoranthene	<LOR	0.21	0.27
Sum of PAHs	<LOR	0.60	0.62
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)			
Phthalates (Total)	<LOR	5.66	5.91
Total Petroleum Hydrocarbons (TPH) (mg/kg)			
C15-C28	16.07	33.6	109.27
C29-C36	<LOR	33.08	72.85
C6-C36 (Total) Mineral Oils	16.07	64.48	182.12

Legend

- Boreholes Converted Into Monitoring Wells
- Overall EIS Study Area
- Development Area

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Soil analytical results

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn SAG	Date APR 2022

Figure No. : **9 - 8** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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9.4.2.3 Groundwater Elevation

Based on the gauging records of MW1 through MW7, measured weekly between May 24, 2021 to August 16, 2021, the average stabilized water level (SWL) ranged from 0.50 m reduced level (mRL) (i.e. 2.196 m bgs) in MW1 to 5.39 mRL (i.e. 1.94 m bgs) in MW2The SWL from the 12 gauging sessions are presented in Table 9-7 (low tide conditions) and Table 9-8 (high tide conditions).

Table 9-7 Groundwater elevation data (m RL)- low tide conditions

Gauging Event	Date of Gauging Event	Monitoring Well ID						
		MW1	MW2	MW3	MW4	MW5	MW6	MW7
1	24 May 2021	0.36	5.61	N.A.	0.83	1.69	2.85	2.86
2	31 May 2021	0.45	5.20	4.94	1.27	1.67	2.57	2.83
3	7 June 2021	0.33	5.27	5.03	1.39	1.64	2.79	2.88
4	14 June 2021	0.58	5.03	4.94	1.13	0.86	2.63	3.18
5	21 June 2021	0.52	5.25	5.06	1.55	1.70	2.82	3.02
6	28 June 2021	0.68	5.05	4.94	1.45	1.72	2.87	2.95
7	5 July 2021	0.54	5.64	5.19	1.66	1.75	2.90	3.08
8	12 July 2021	0.76	5.95	5.35	1.75	1.81	2.91	3.15
9	19 July 2021	0.34	5.41	5.14	1.71	1.61	2.61	2.95
10	26 July 2021	0.63	5.10	4.97	1.21	1.66	2.29	2.81
11	2 August 2021	0.48	5.35	5.00	1.34	1.70	2.85	2.90
12	16 August 2021	0.40	4.77	4.79	1.15	1.69	2.75	2.89
Average		0.50	5.30	5.03	1.37	1.62	2.74	2.96

Note:
N.A. – Not Applicable; groundwater level was not gauged due to unforeseen site constraints

Table 9-8 Groundwater elevation data (m RL)- high tide conditions

Gauging Event	Date of Gauging Event	Monitoring Well ID						
		MW1	MW2	MW3	MW4	MW5	MW6	MW7
1	24 May 2021	0.38	5.65	N.A.	1.56	1.74	2.87	2.93
2	31 May 2021	0.54	5.18	4.96	1.29	1.69	2.77	2.94
3	7 June 2021	0.33	6.26	4.98	1.39	1.70	2.77	2.88
4	14 June 2021	0.53	5.03	4.93	1.37	1.65	2.64	2.87
5	21 June 2021	0.50	5.27	5.06	1.56	1.71	2.86	2.94
6	28 June 2021	0.61	5.04	4.93	1.49	1.69	2.87	2.93
7	5 July 2021	0.56	5.64	5.16	1.60	1.75	2.91	3.20
8	12 July 2021	0.75	5.90	5.34	1.78	1.82	2.92	3.08
9	19 July 2021	0.37	5.43	5.14	1.74	1.72	2.70	2.86
10	26 July 2021	0.60	5.10	4.96	1.25	1.69	2.30	2.81
11	2 August 2021	0.50	5.40	5.01	1.35	1.72	2.86	2.92
12	16 August 2021	0.46	4.77	4.80	1.22	1.66	2.70	2.89
Average		0.51	5.39	5.02	1.47	1.71	2.76	2.94

Note:
N.A. - Not Applicable; groundwater level was not gauged due to unforeseen site constraints

The SWL trends are also graphically presented in Figure 9-9 (low tide conditions) and Figure 9-10 (high tide conditions).

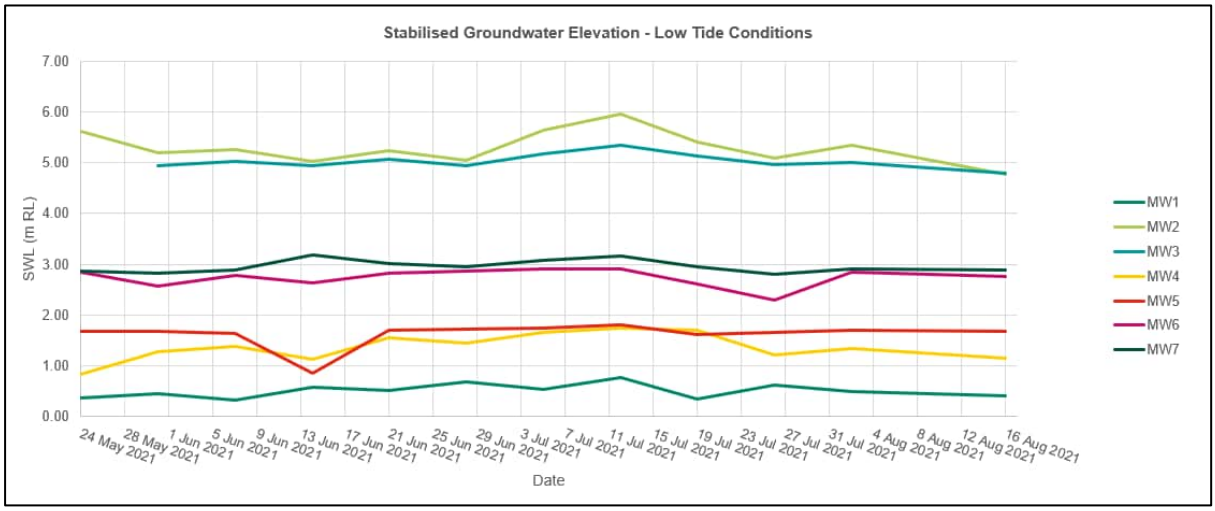


Figure 9-9 Groundwater elevation data – low tide conditions

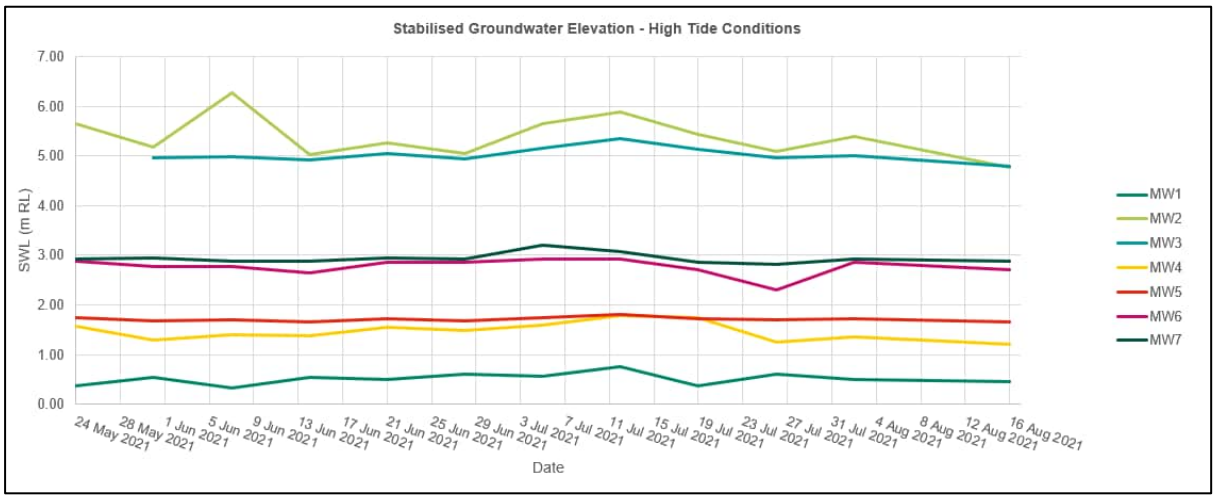


Figure 9-10 Groundwater elevation data – high tide conditions

SWL during low tide conditions ranged from 0.33 m RL (i.e. 2.37 m bgs) in MW1 to 5.95 m RL (i.e. 1.28 m bgs) in MW2, with the overall average SWL being 2.79 m RL. During the high tide conditions SWL ranged from 0.33 m RL (i.e. 2.37 m bgs) in MW1 to 6.26 m RL (i.e. 1.37 m bgs) in MW2, while the average recorded SWL was 2.83 m RL. By examining groundwater elevation data, it can be observed that the groundwater level in majority of the wells show limited oscillations and variations over time. Slight increase in groundwater level can be observed in the beginning of July, followed by the decrease mid-July. It can be also noted that the groundwater levels during low and high tide conditions are relatively similar and don't show notable significant variations (refer to the Table 9-7 and Table 9-8). The difference between average SWL during low and high tide conditions in most of the monitoring wells was less than 0.10 m, highest one being in MW4 (i.e. 0.1 m difference).

Observed groundwater depths (i.e. from 0.1 m bgs to 2.828 m bgs within the Study Area during groundwater gauging events are similar with the groundwater depths observed during previous study carried out within the site (i.e. 0.889 m bgs to 2.41 m bgs). Borelogs from previous study with groundwater depth data are shown in Appendix O.

9.4.2.4 Groundwater Flow Direction and Velocity

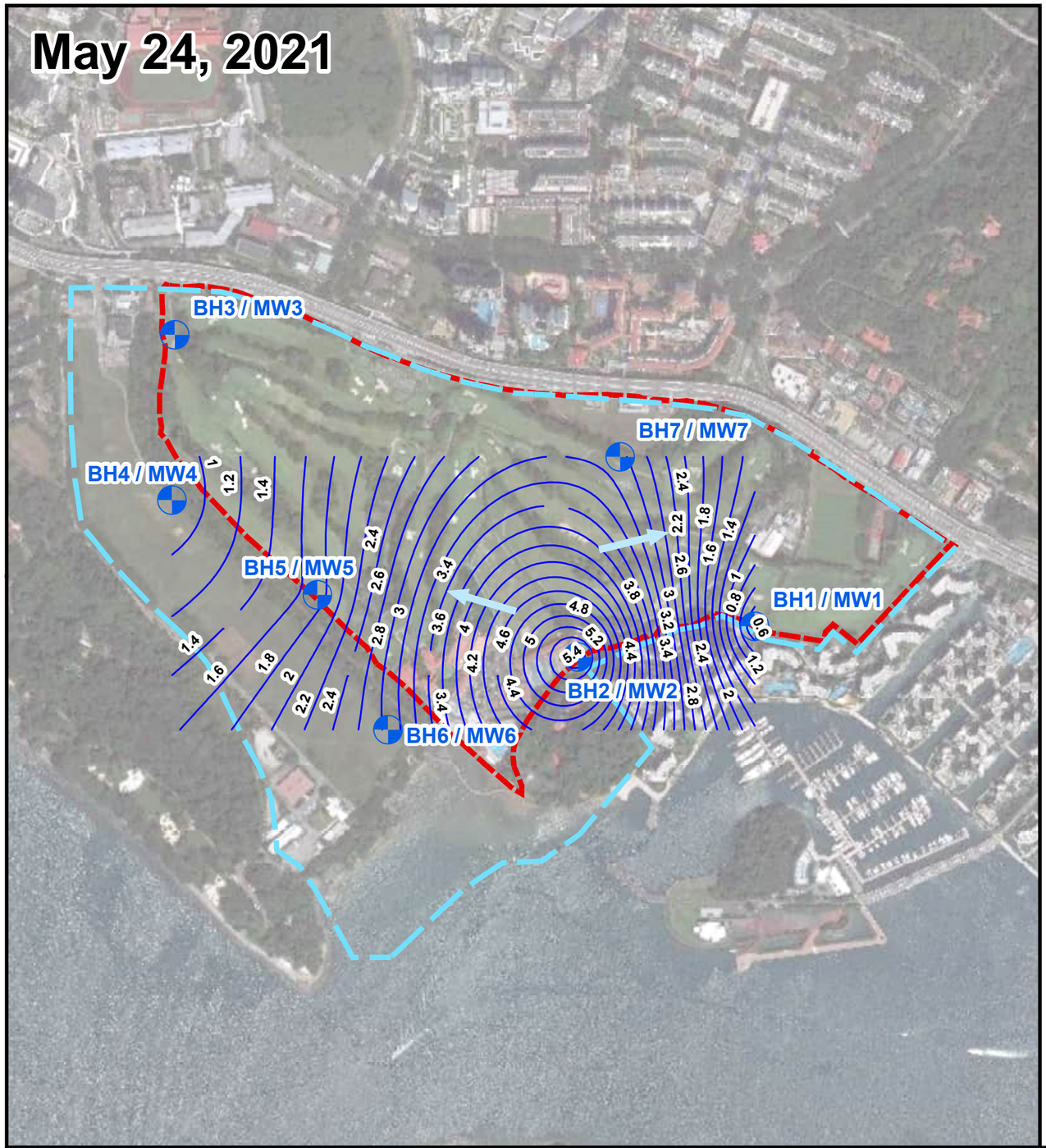
The hydraulic gradient calculated using the EPA On-Line Tools for Site Assessment is 0.001887 meter/meter (m/m) (high tide conditions) to 0.002065 m/m (low tide conditions). The linear velocity of the groundwater flow was calculated based on the Darcy's Equation as follows:

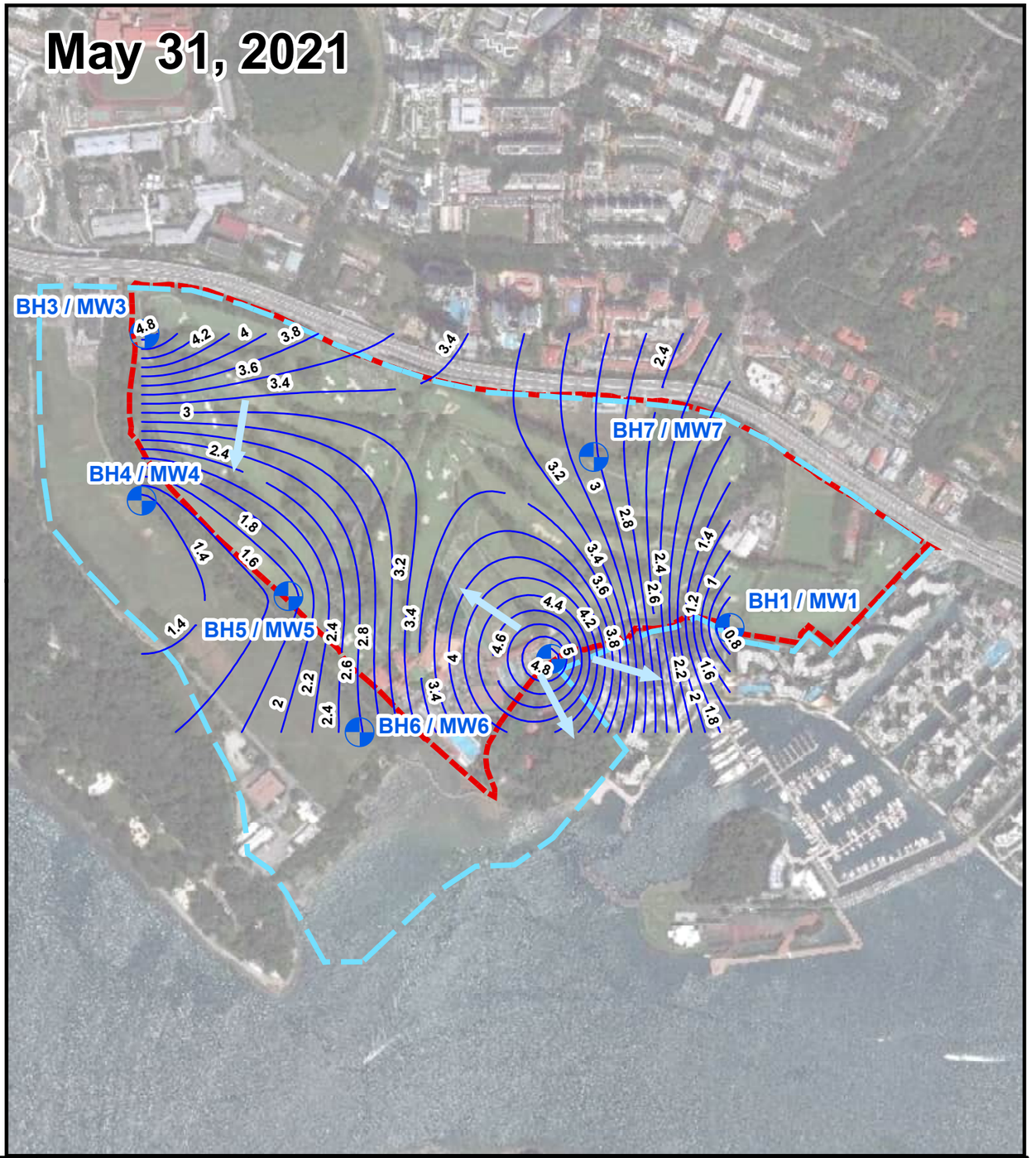
$$V = \frac{(Ki)}{n}$$

Where V = Groundwater flow velocity;
K = Hydraulic conductivity obtained from slug test: 2.8×10^{-7} to 1.5×10^{-4} centimetre per second (cm/s) (see attached Appendix GG);
n = Effective porosity: 0.39 for clay, 0.38 for sandy clay and 0.36 for silty clay; and
i = Hydraulic gradient: 0.001887 m/m to 0.002065 m/m.

Based on the groundwater elevation contour maps (Figure 9-11 to Figure 9-16), the inferred groundwater flow direction within Study Area follows the topography of the site and generally flows towards major watercourses within the Study Area (i.e. Berlayer Creek, Marine Area). Furthermore, by analysing the long-term groundwater flow data, there are no significant changes on how the groundwater moves in the Study Area during high and low conditions. Calculated velocity ranged between 4.23×10^{-4} m per year (clay) and 2.64×10^{-1} m/ year (silty clay). The groundwater seepage velocity varies depending on the varying clay, silt and sand contents at a specific location and should be used as a general guide only.

The groundwater isocontours and the inferred groundwater flow are presented in Figure 9-11, Figure 9-13, Figure 9-15 and Figure 9-17 for low tide conditions and Figure 9-12, Figure 9-14, Figure 9-16 and Figure 9-18 for high tide conditions.





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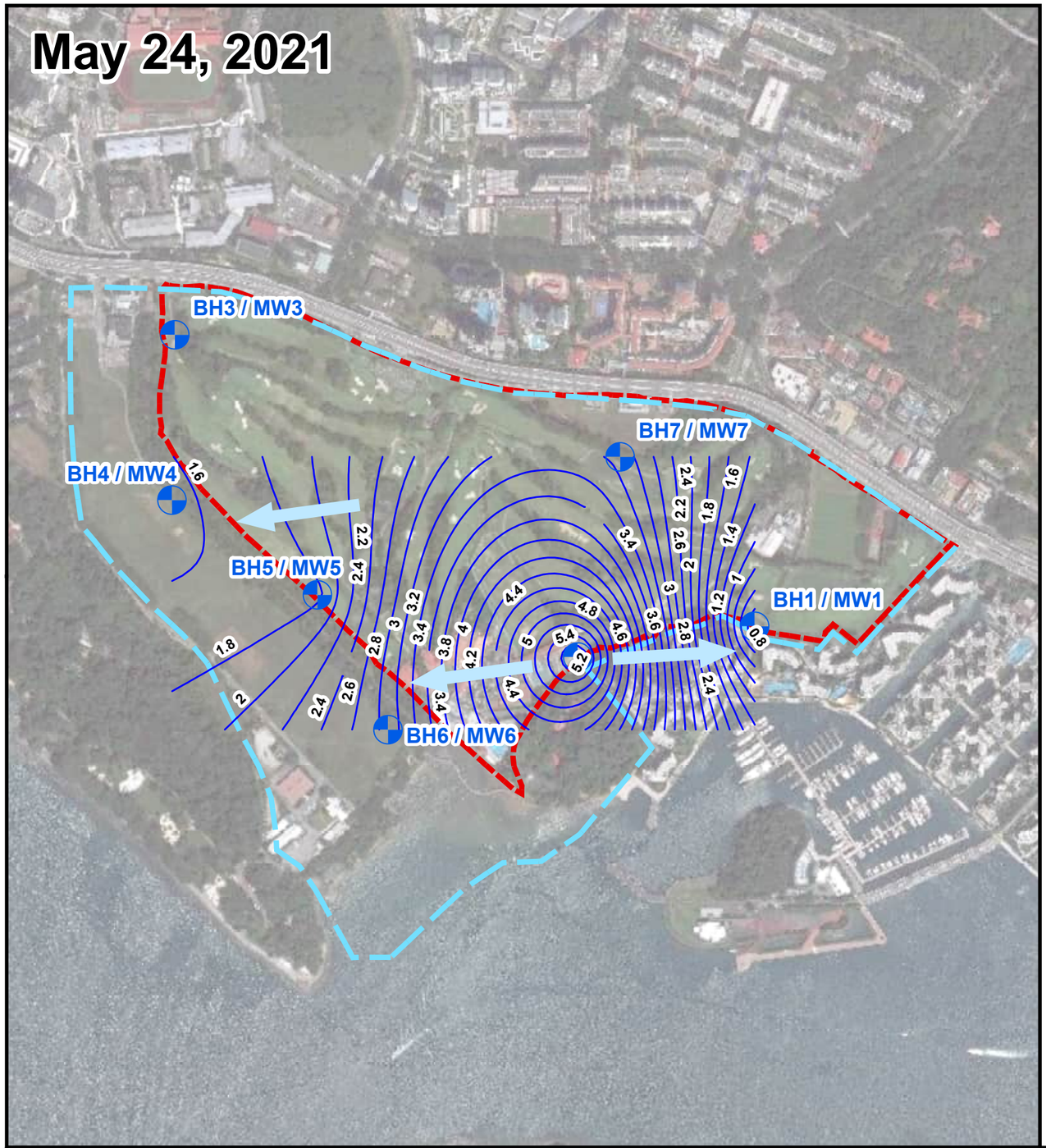
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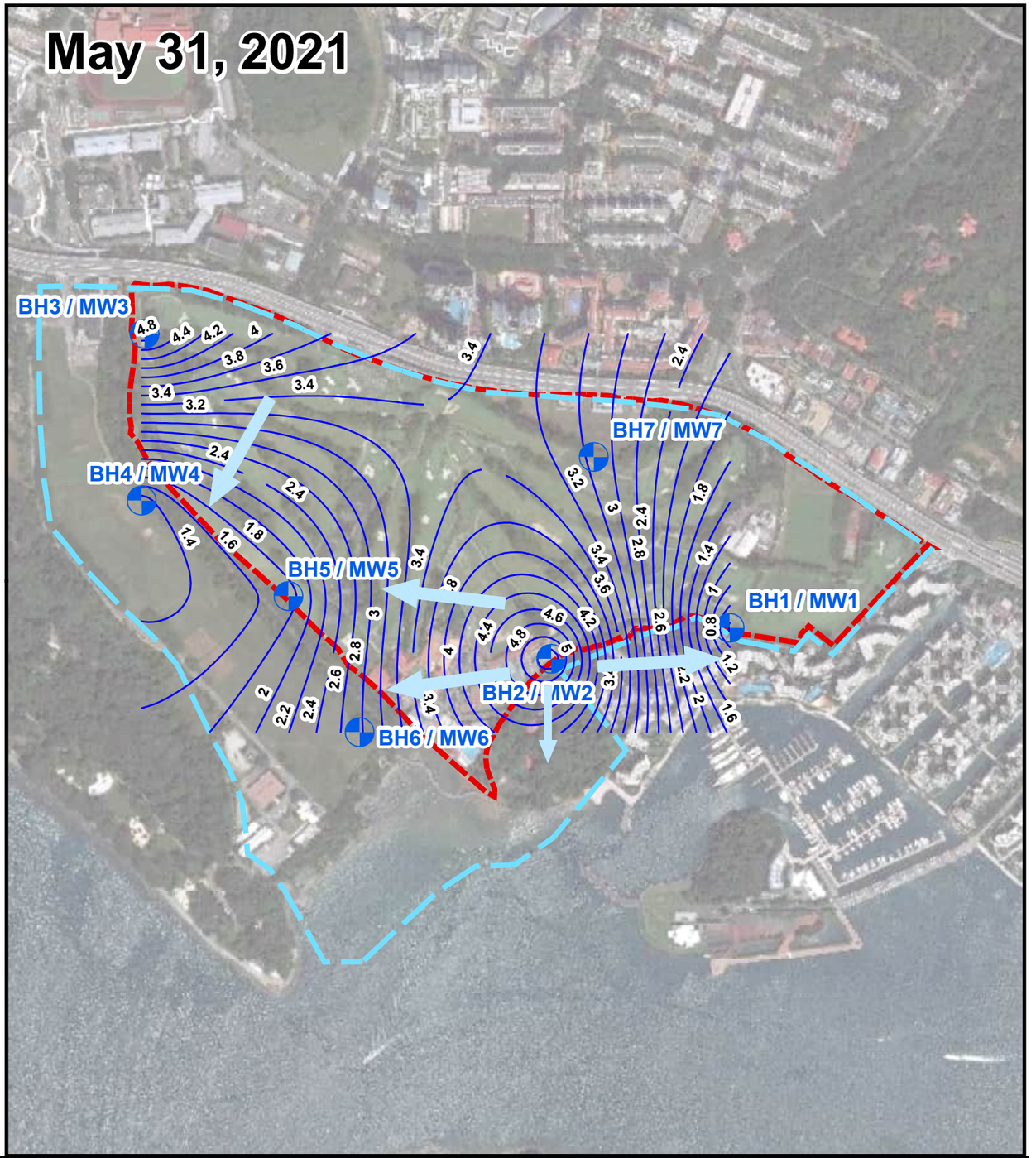
Groundwater elevation contour map - low tide conditions (May 2021)

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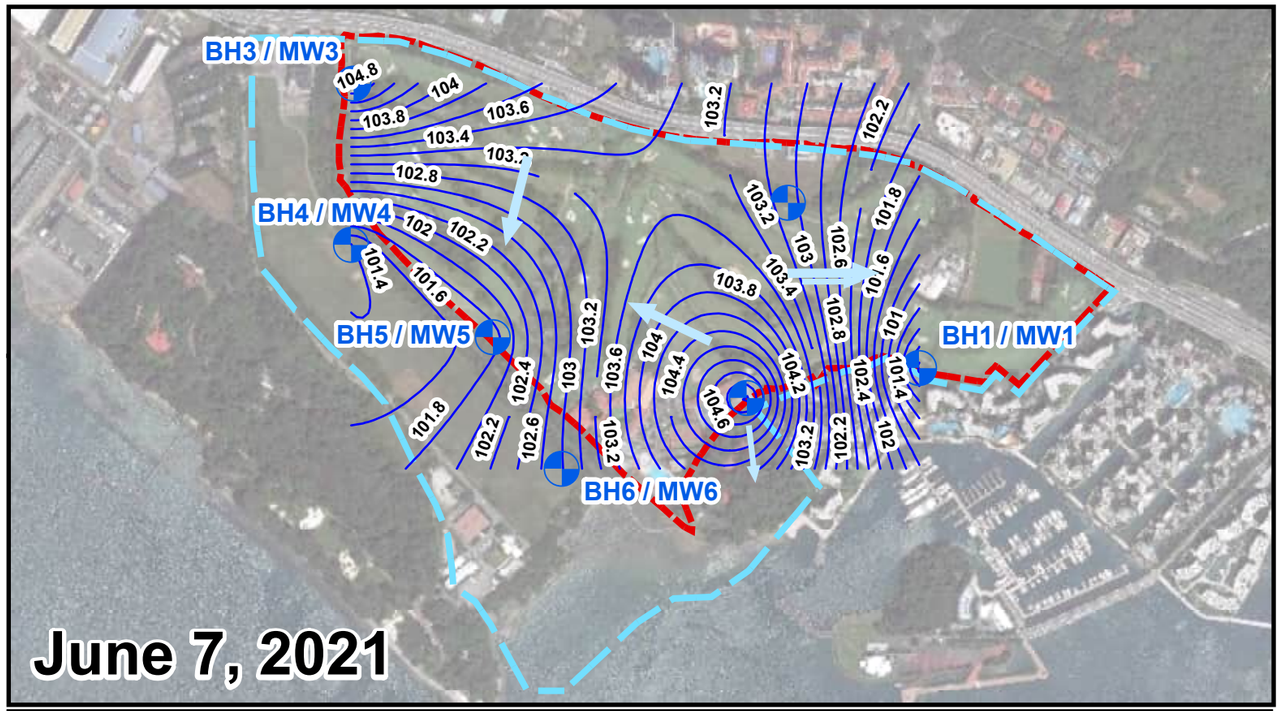
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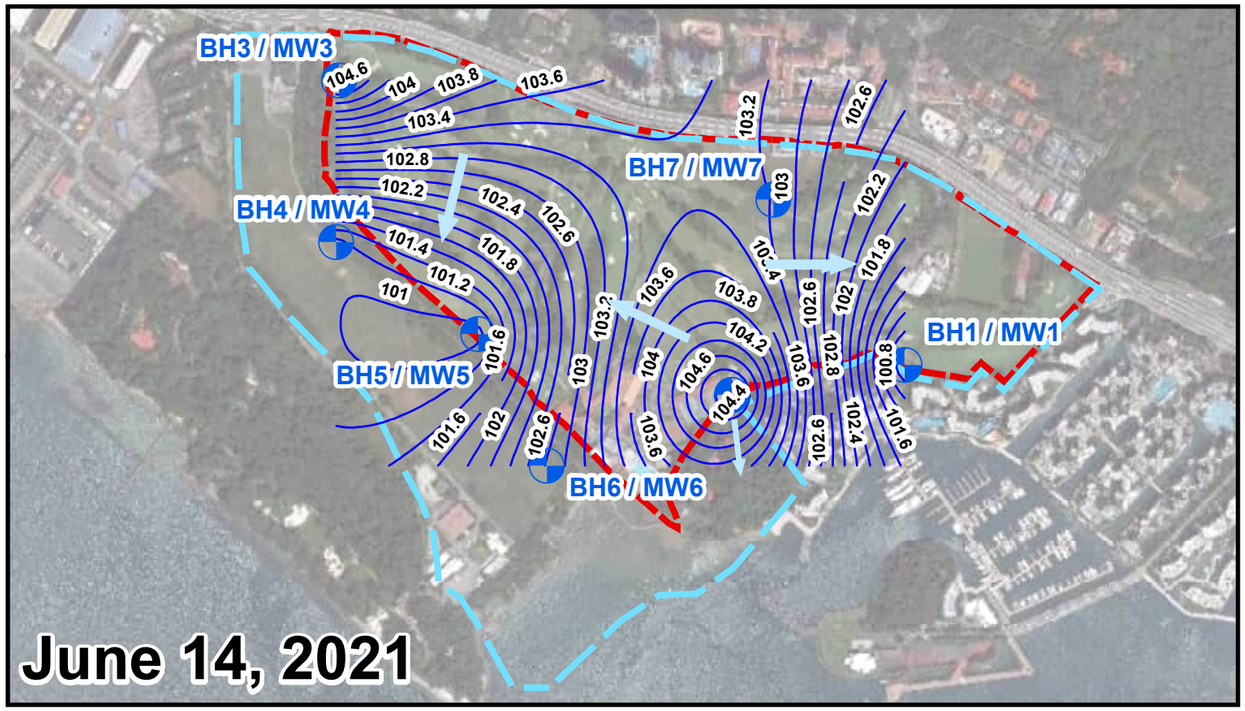
Groundwater elevation contour map - high tide conditions (May 2021)

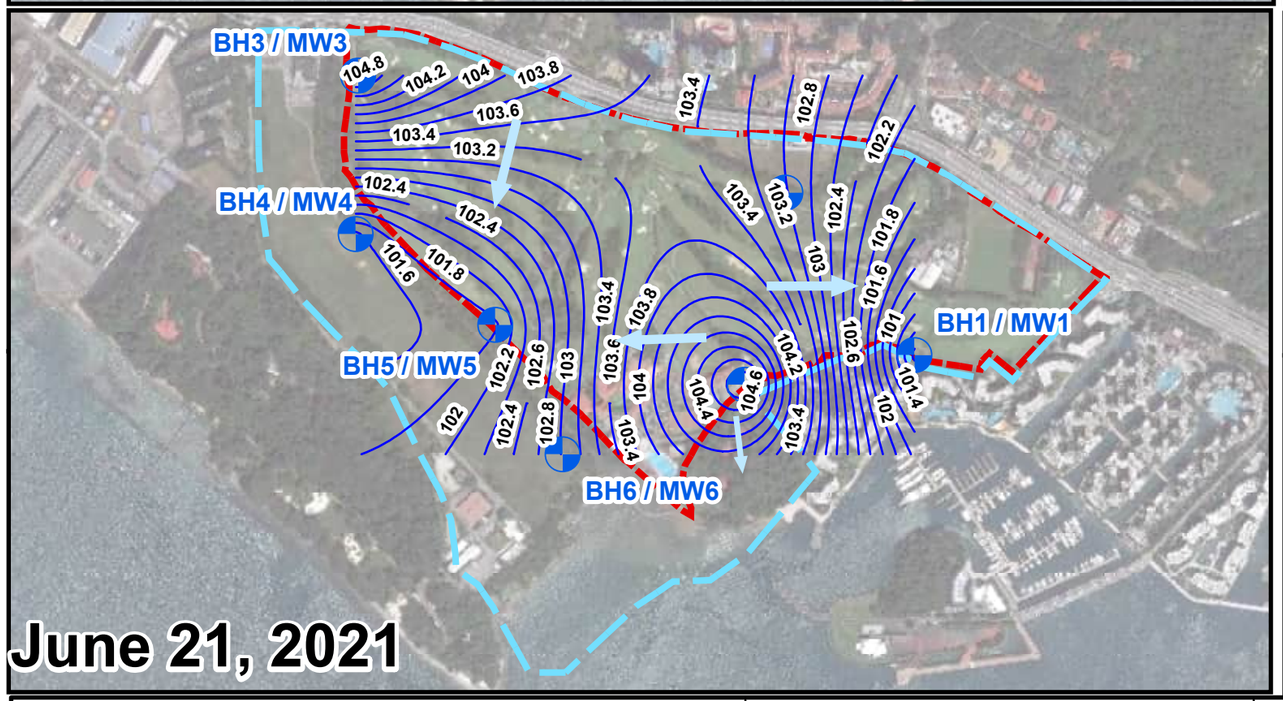
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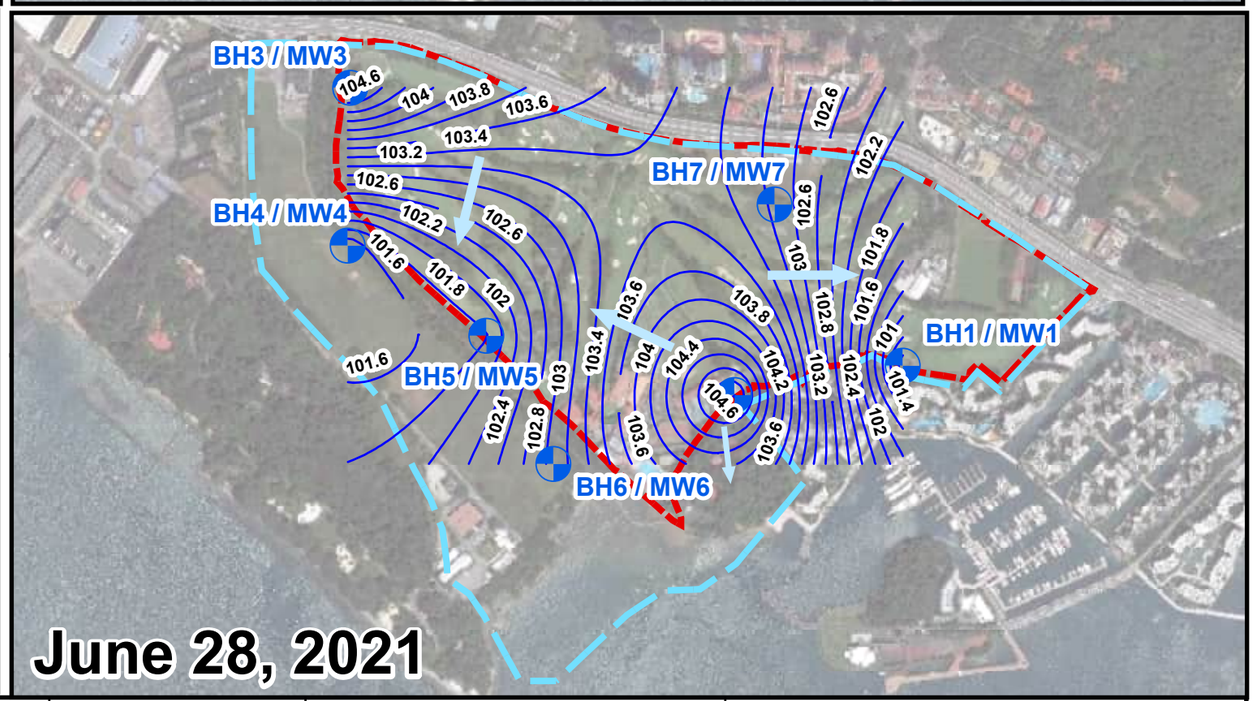
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Figure Title :

Groundwater elevation contour map - low tide conditions (June 2021)

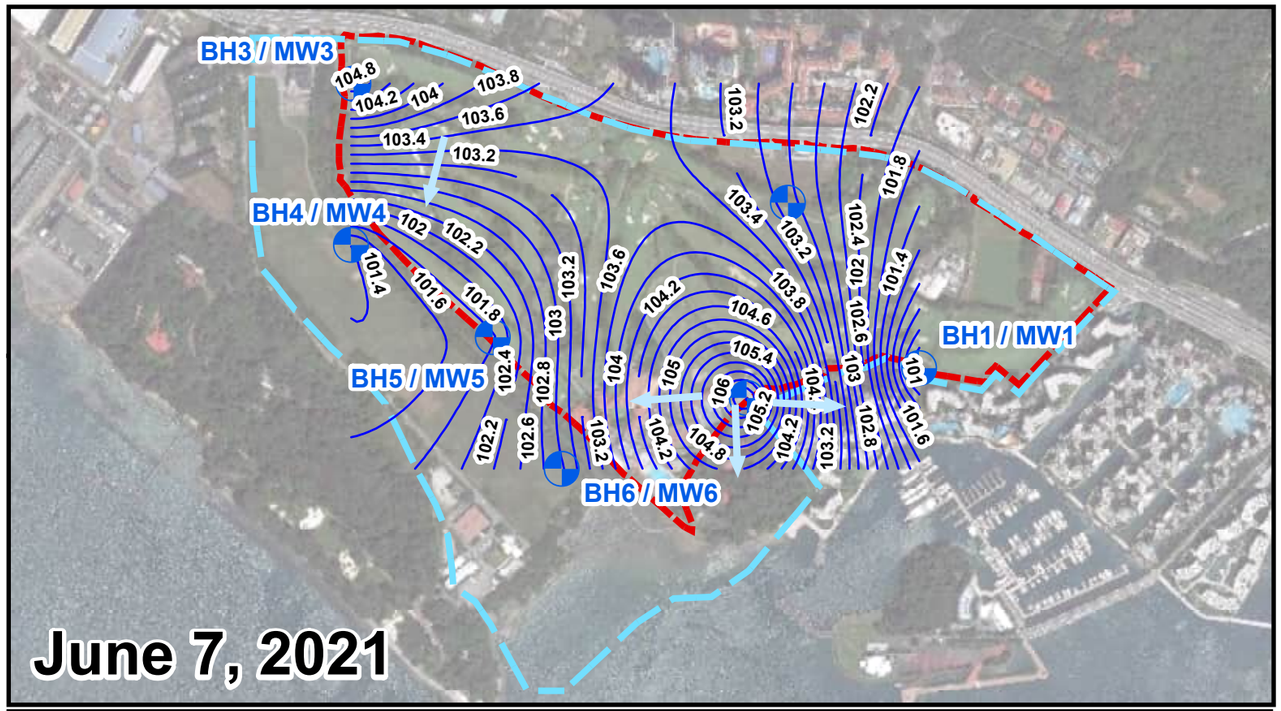
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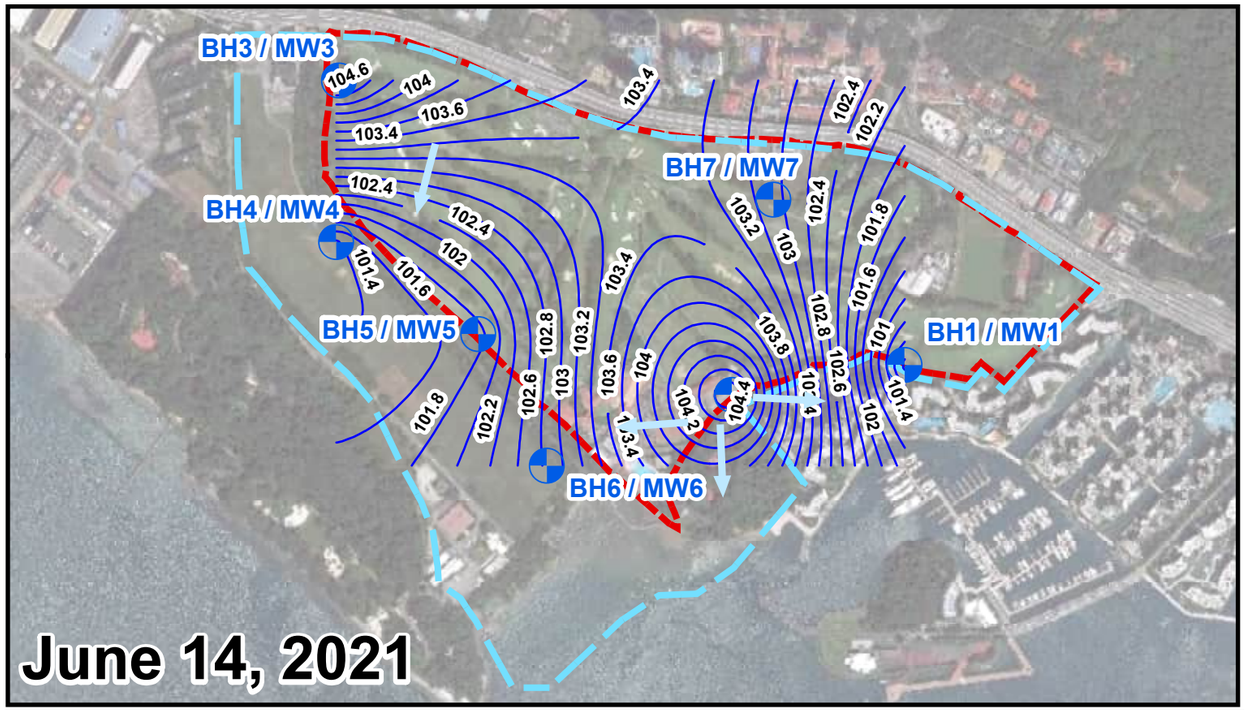
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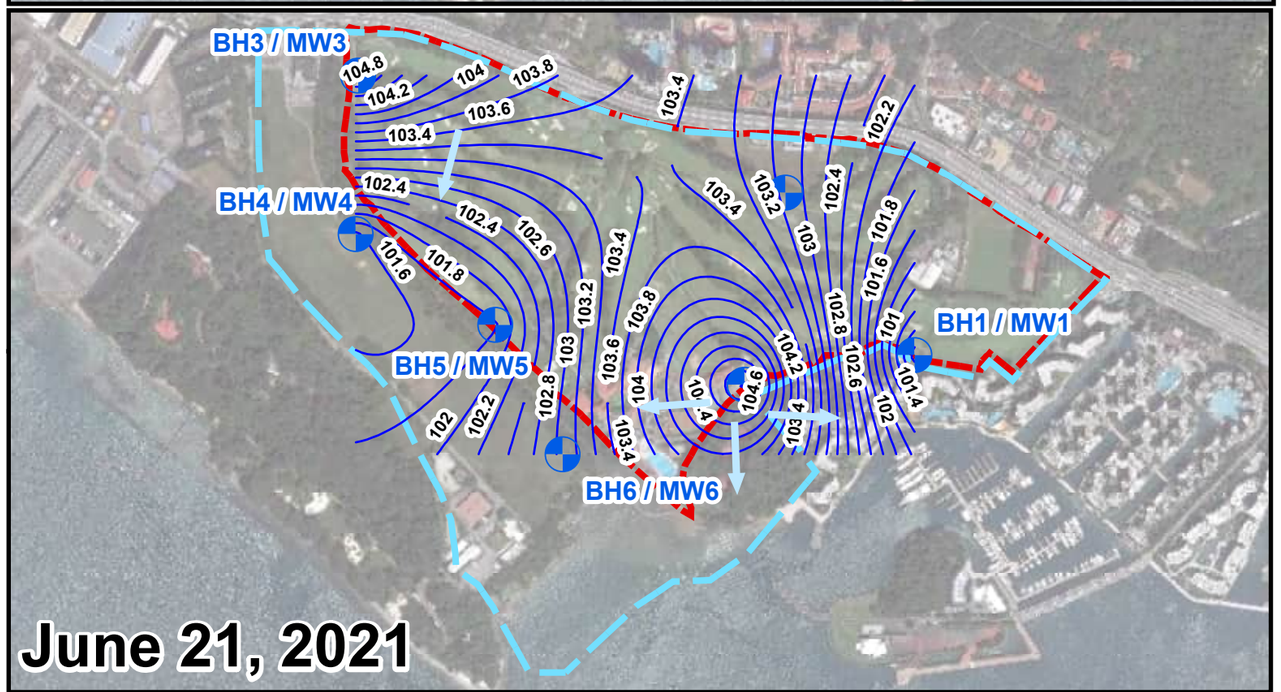
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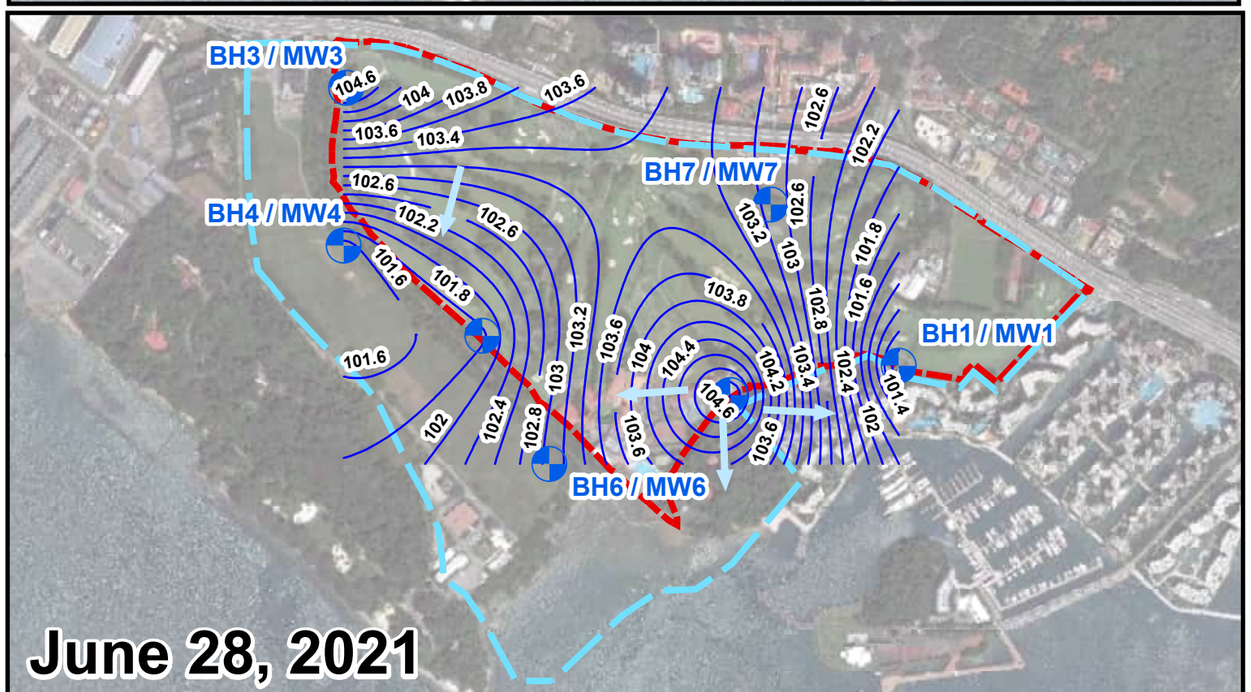
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Figure Title :
Groundwater elevation contour map - high tide conditions (June 2021)

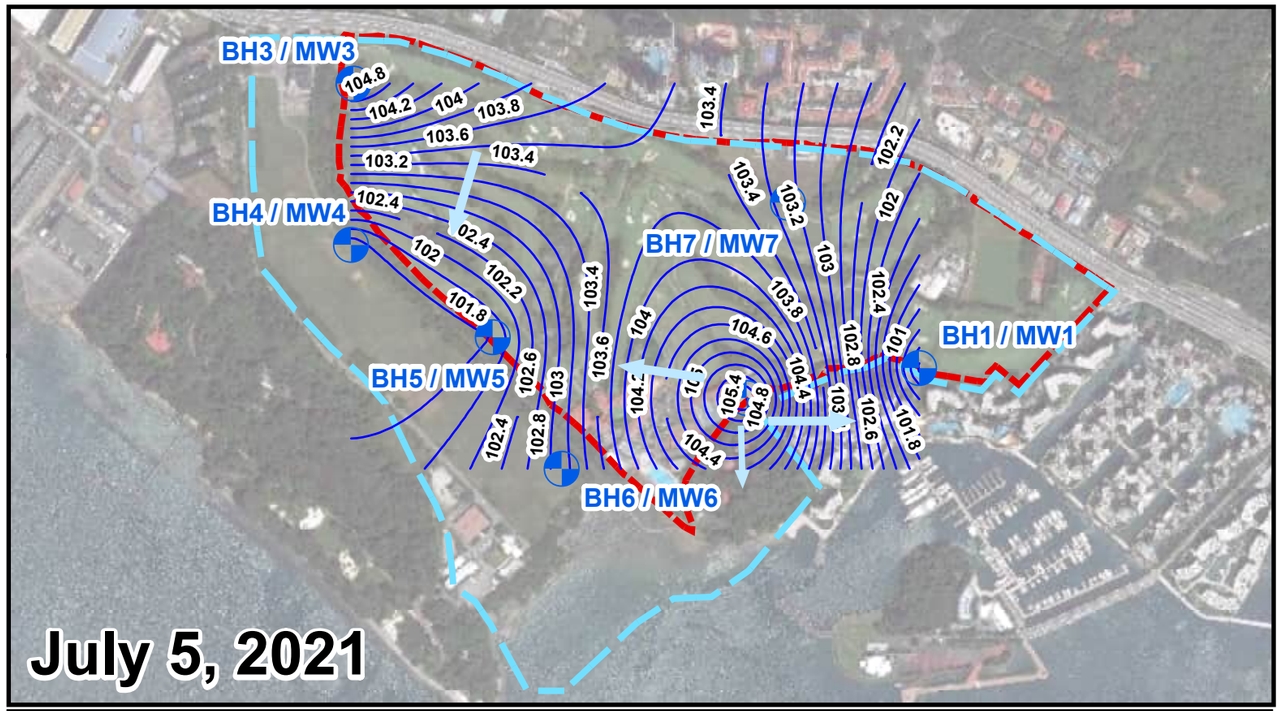
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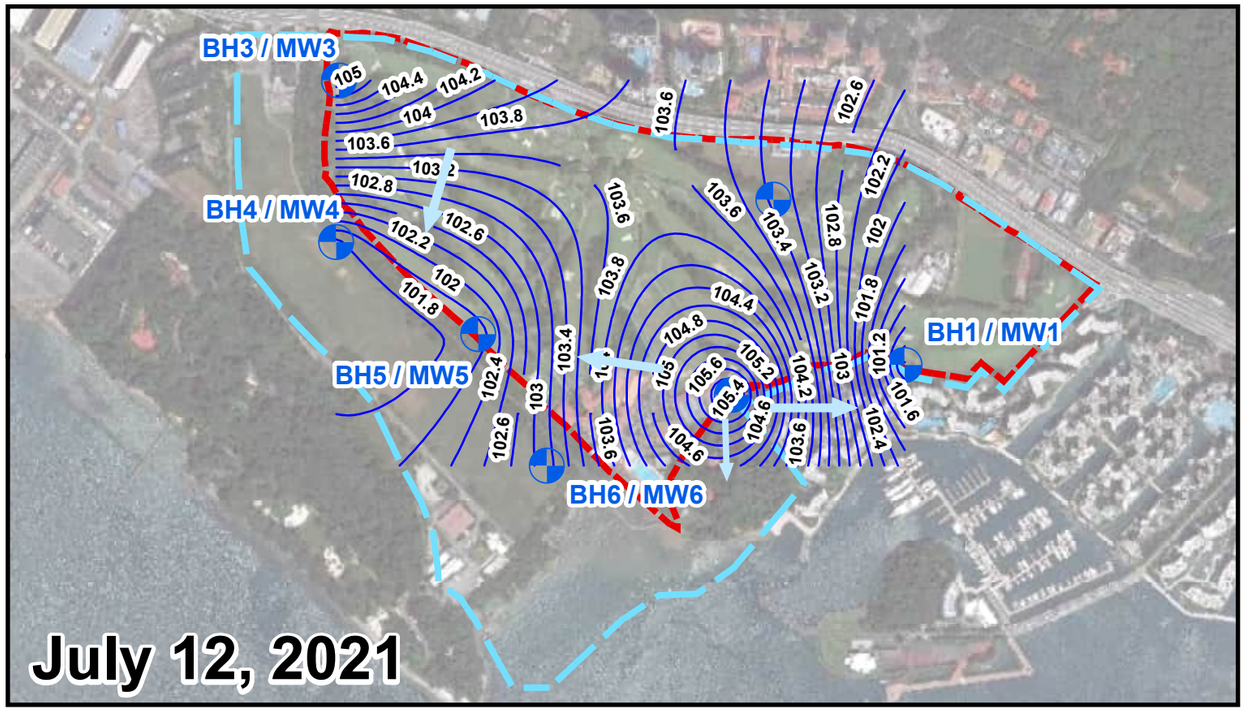
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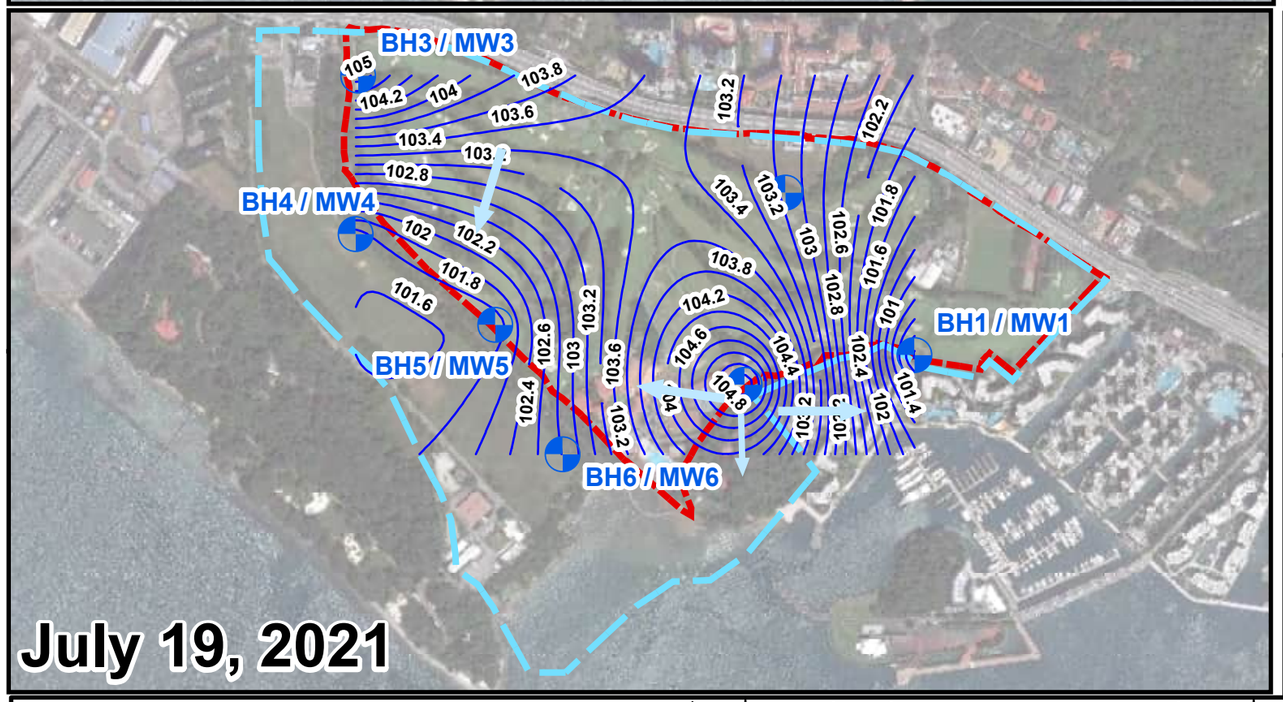
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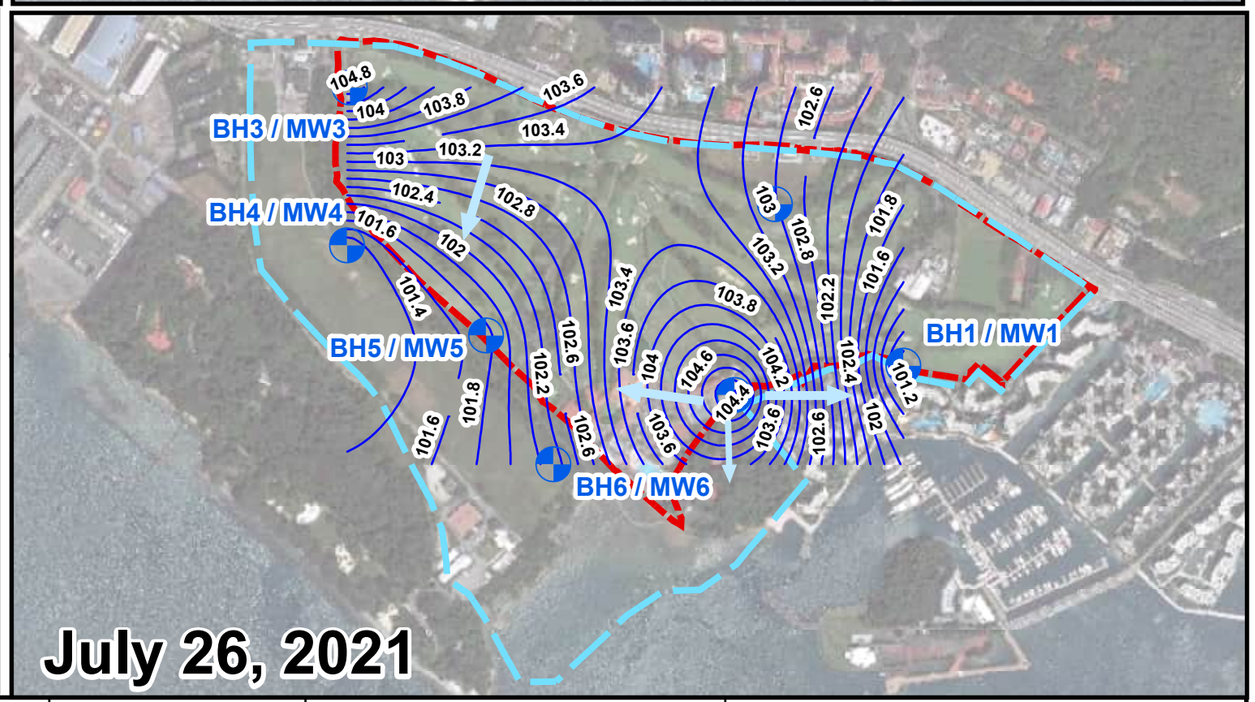
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Figure Title :
Groundwater elevation contour map - low tide conditions (July 2021)

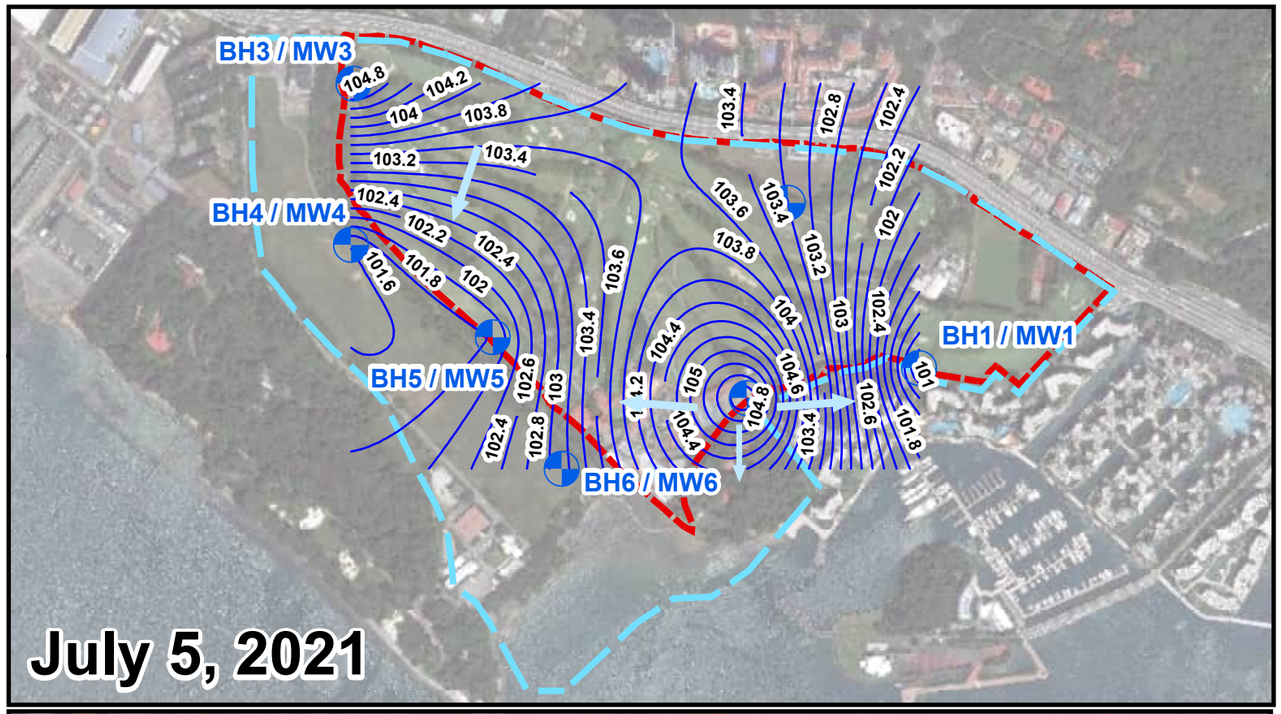
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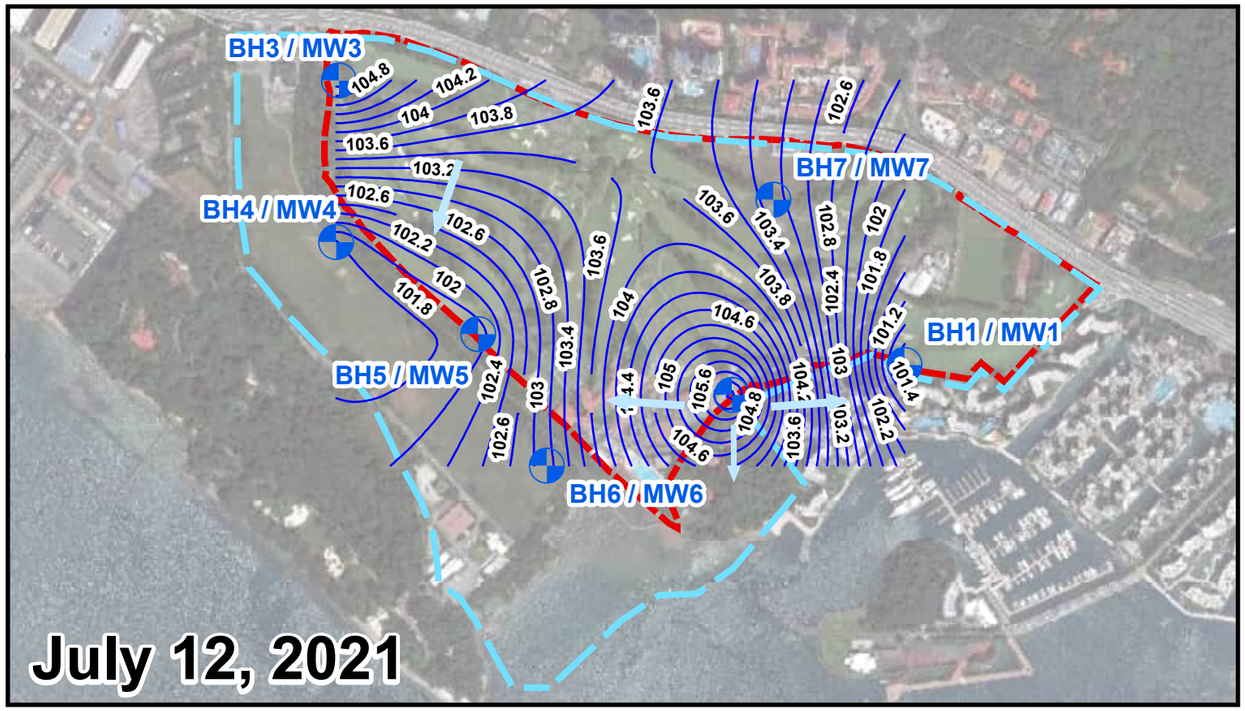
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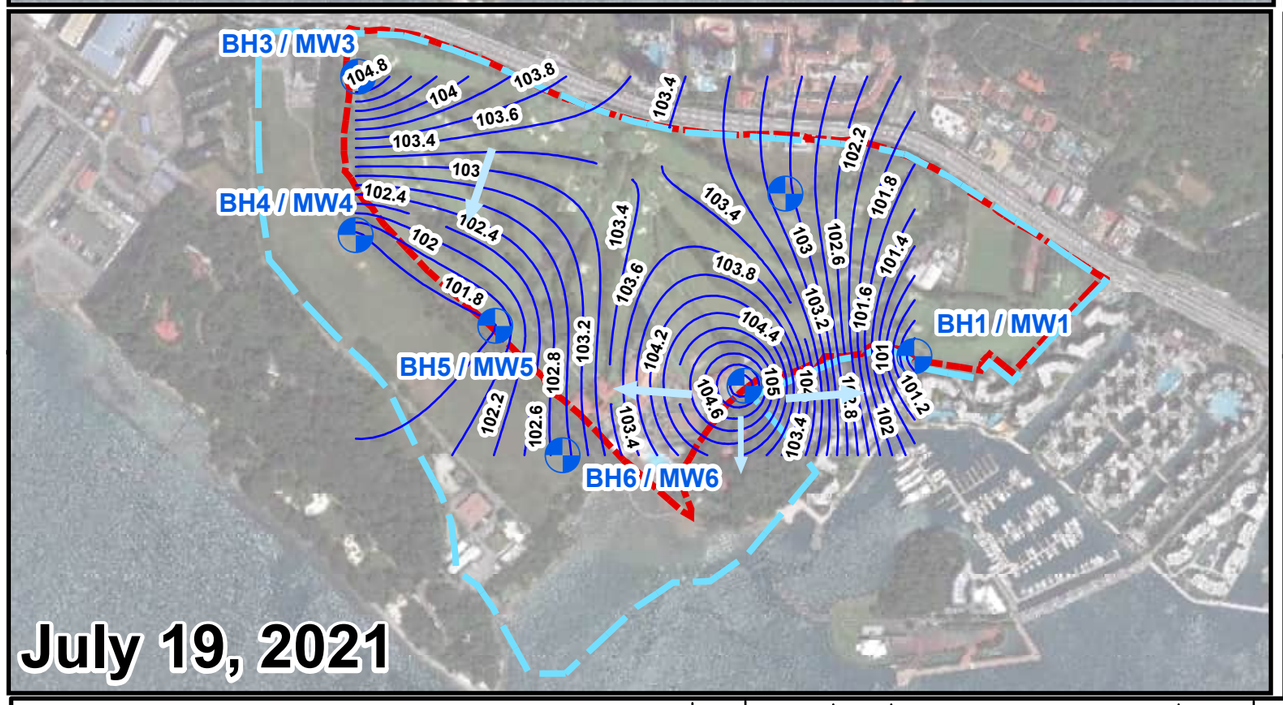
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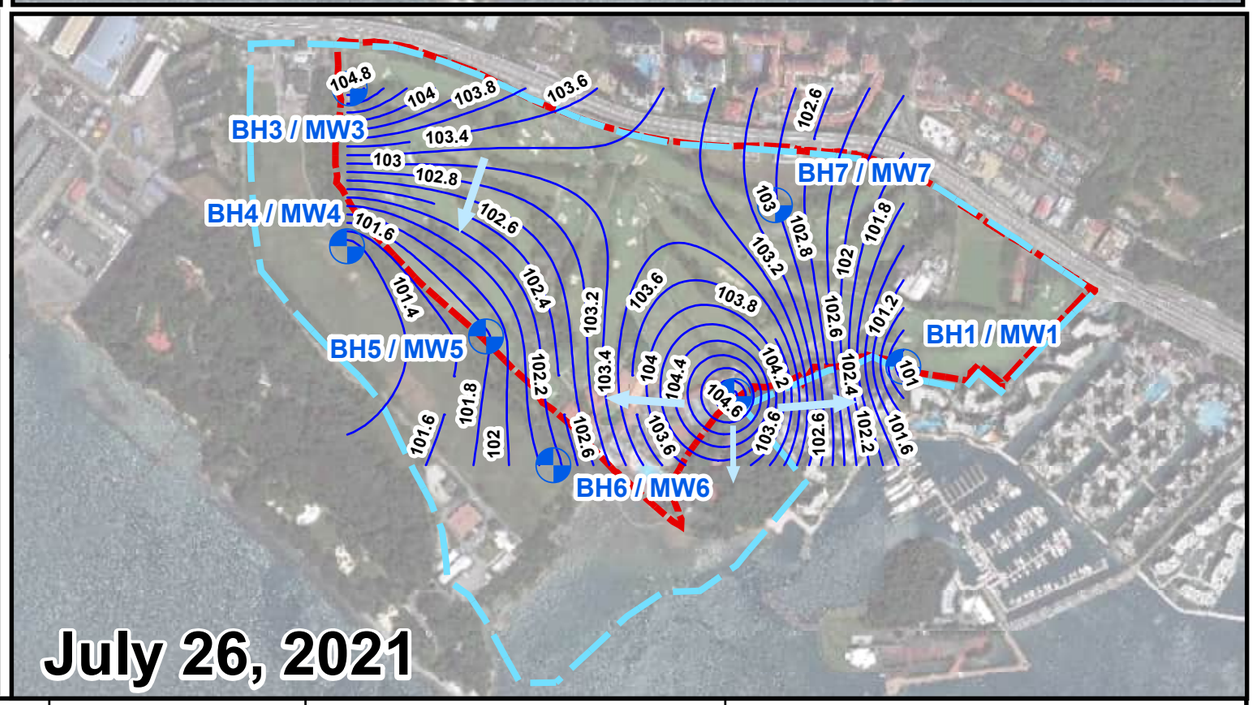
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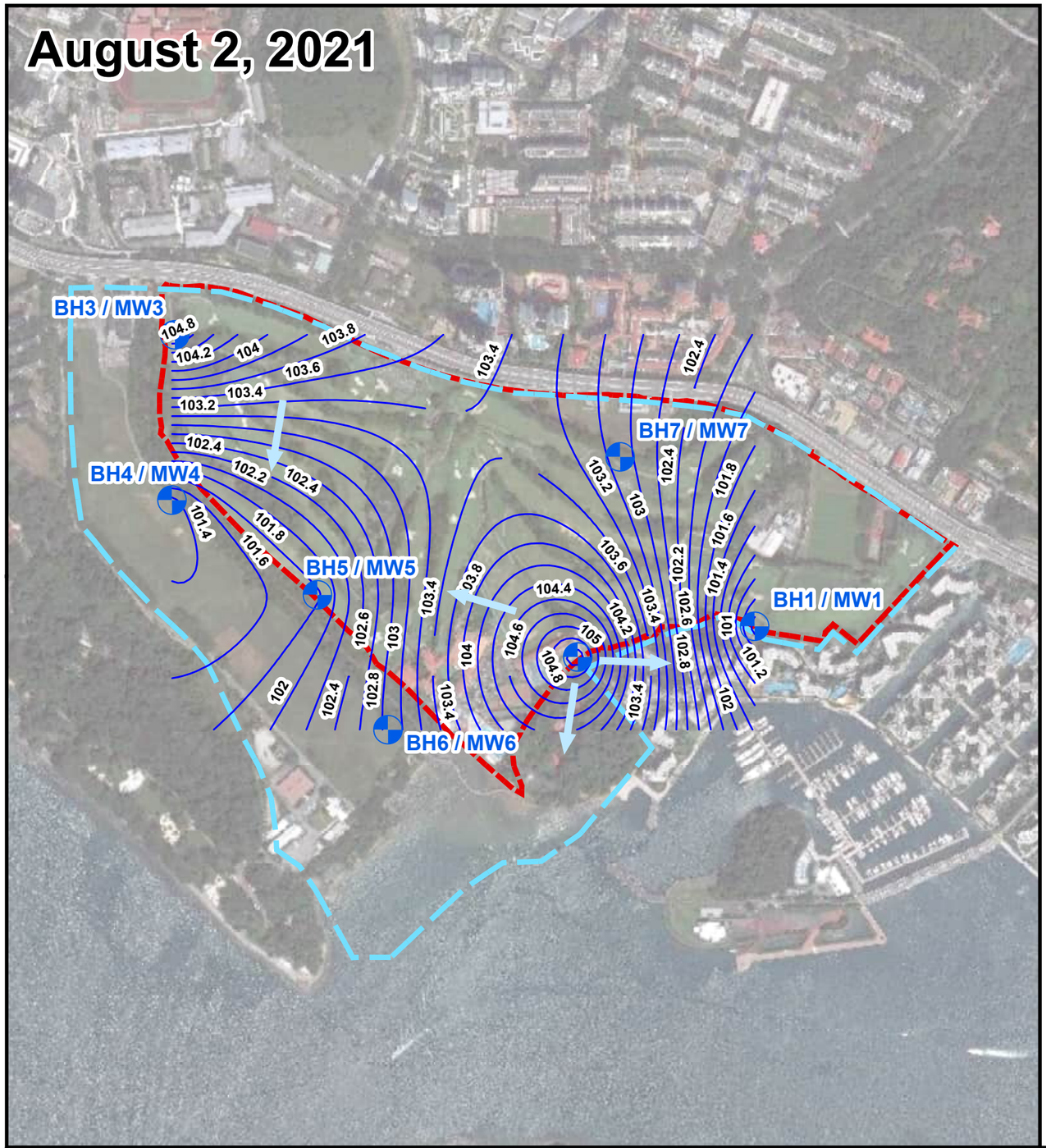
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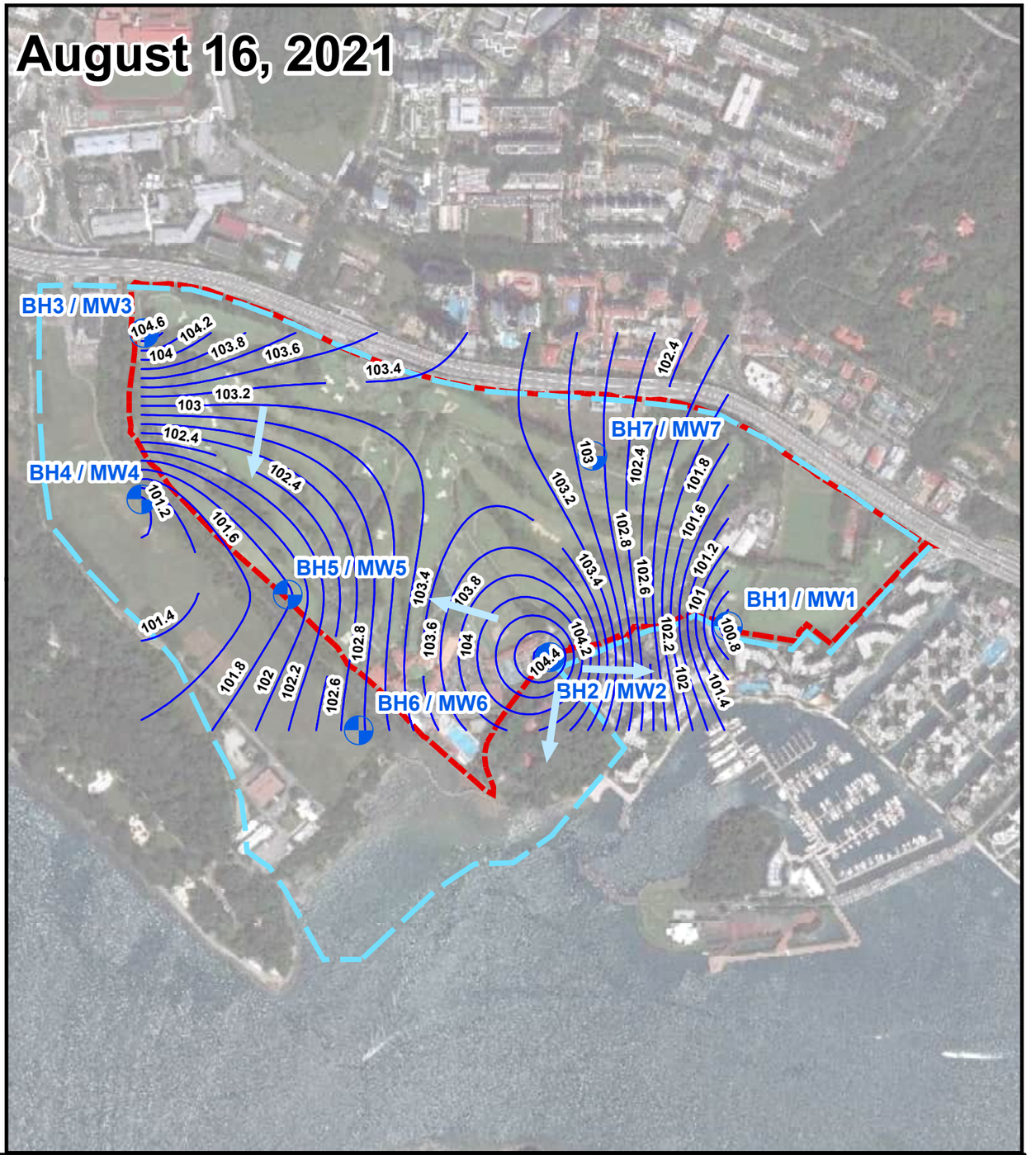
Groundwater elevation contour map - high tide conditions (July 2021)

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Figure Title :

Groundwater elevation contour map - low tide conditions (August 2021)

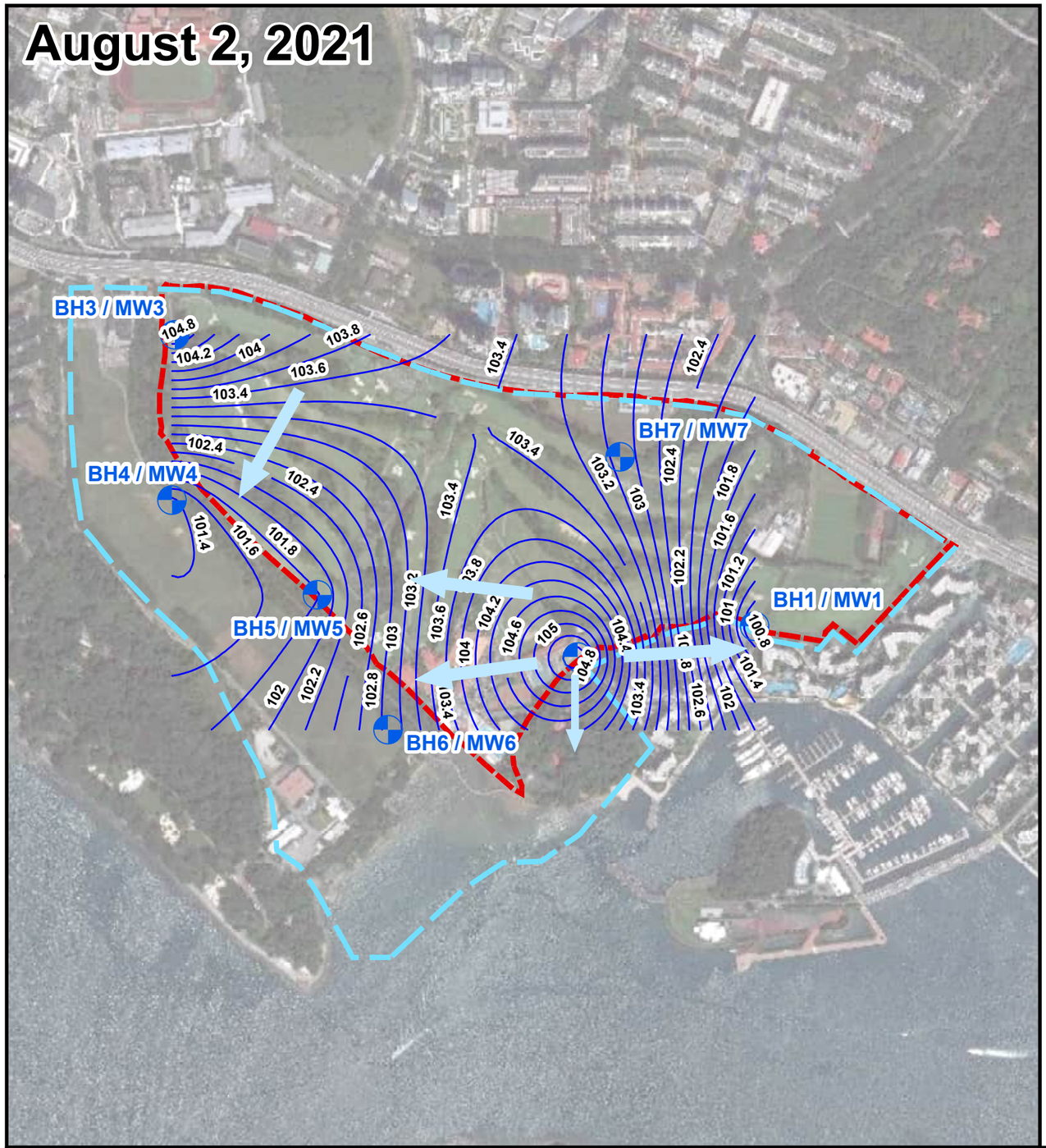
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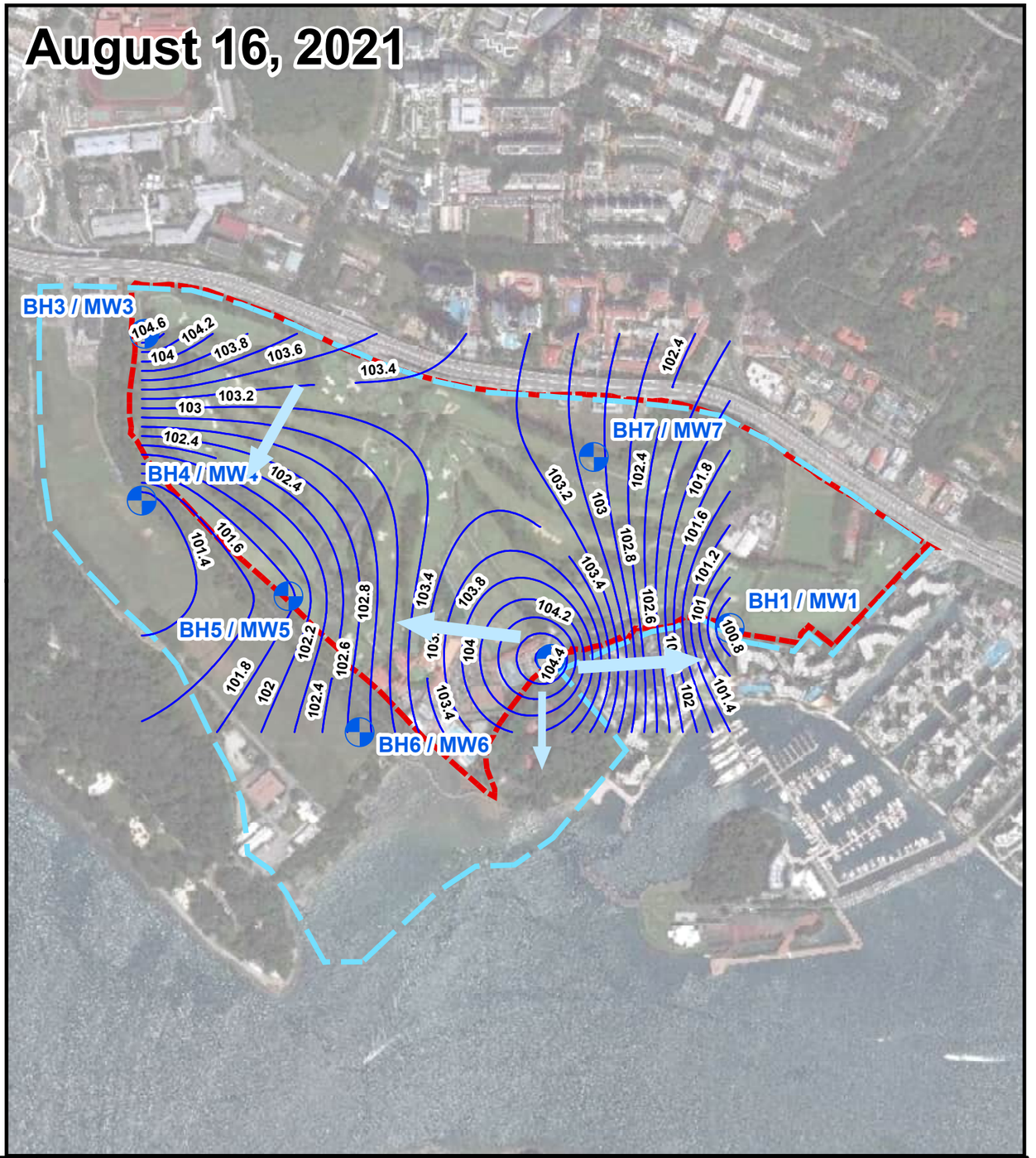
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Figure Title :
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Designed	Checked	Approved	Figure No. :	Rev.	Sheet
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9.4.2.5 Groundwater Quality

The assessed groundwater physicochemical parameters are presented in the table below.

Table 9-9 Summary of In-Situ groundwater physicochemical parameters

Well ID	pH	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	TDS (mg/L)	Temperature (°C)
MW1	6.71	29,737.0	+235.8	5.66	17,741.0	29.6
MW2	5.93	274.0	+42.1	1.42	166.0	29.1
MW3	5.39	194.1	+170.5	4.07	117.0	29.1
MW4	6.42	4,435.0	-99.20	1.82	2,491.0	28.0
MW5	6.68	3,493.0	-127.1	1.06	2,093.0	29.7
MW6	6.93	873.0	-93.80	1.54	536.0	28.0
MW7	6.83	729.0	+1.20	4.10	440.0	29.1

Based on the physicochemical parameters assessed, the following can be observed:

- The groundwater beneath the Study Area can be described as slightly acidic, with conductivity and total dissolved solids indicative of brackish water; and
- Measured redox potential shows that groundwater underlying MW4, MW5 and MW6 have reducing condition, while groundwater underlying MW1, MW2, MW3 and MW7 has oxidising condition.

The major ions analysed in the groundwater from samples collected from MW1 to MW7 were plotted on a Piper plot as shown in the following figure.

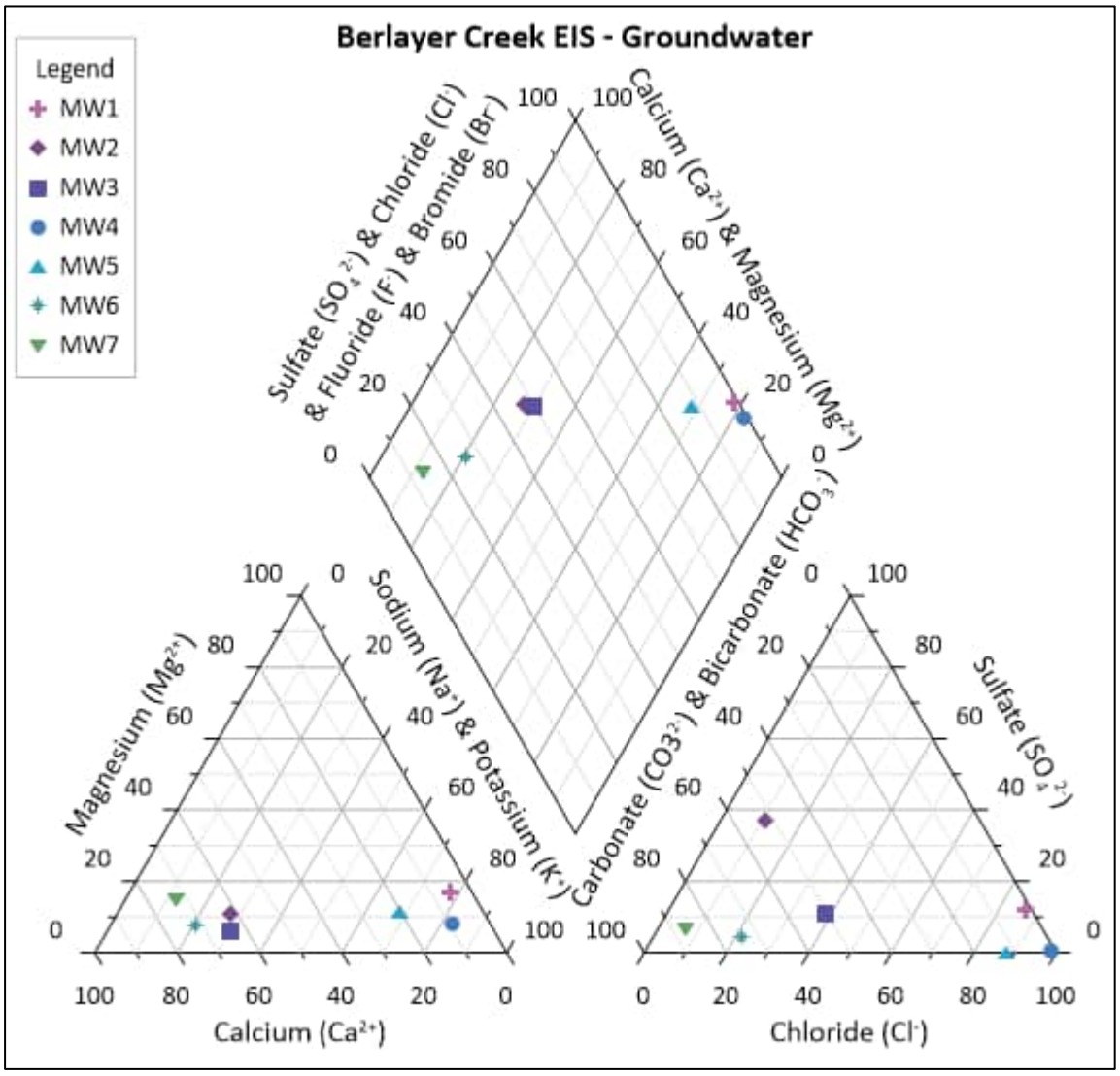


Figure 9-19 Piper plot of major ions analysed in groundwater

Based on the Piper Plot of the groundwater samples collected from the monitoring wells, the hydrochemical facies of groundwater samples MW1, MW4 and MW5 fall within sodium-chloride type and are dominated by sodium and potassium cations and chloride, bromide and fluoride anions. The rest of groundwater samples (i.e. MW2, MW3, MW6 and MW7) are of calcium-carbonate type that are dominated mainly by calcium cations and bicarbonate anions. As mentioned earlier, groundwater at MW1, MW4 and MW5 is of sodium chloride type, indicating saline water, likely influenced by seawater or brackish water. Furthermore, it can be observed that groundwater at MW2 and MW3, although dominated by calcium cations, also has significant concentration of anions, indicating the influence of seawater or brackish water on groundwater.

9.4.2.6 Groundwater Baseline Results

A summary of reported constituents in groundwater and a comparison of the groundwater analytical results with the ANZGFMWQ and DIVs for groundwater are summarized in Table 9-10 and Figure 9-20. A copy of the full laboratory report for the groundwater samples in included in Appendix R.

Table 9-10 Summary of groundwater analytical results

Test Parameters	Unit	ANZGF MWQ (2000)	DIV (2013)	MW1	MW2	MW3	MW4	MW5	MW6	MW7
Metals										
Arsenic	µg/L	13/24[a]	60	1.14	1.25	N.R.	N.R.	N.R.	5.43	N.R.
Antimony	µg/L	I.D.	20	N.R.	N.R.	N.R.	N.R.	N.R.	1.22	N.R.

Test Parameters	Unit	ANZGF MWQ (2000)	DIV (2013)	MW1	MW2	MW3	MW4	MW5	MW6	MW7
Barium	µg/L	Not Available	625	50.83	14.74	8.35	233.95	438.7	65.68	55.83
Cadmium	µg/L	0.2	6	0.26	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Chromium	µg/L	1[b]	30	1.87	0.28	N.R.	0.21	0.10	N.R.	N.R.
Cobalt	µg/L	I.D.	100	N.R.	N.R.	N.R.	1.26	N.R.	N.R.	3.81
Copper	µg/L	1.4	75	2.34	N.R.	N.R.	N.R.	N.R.	N.R.	1.72
Molybdenum	µg/L	I.D.	300	20.18	N.R.	N.R.	N.R.	0.91	19.59	0.76
Nickel	µg/L	11	75	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	6.40
Zinc	µg/L	8.0[d]	800	5.7	16.89	14.97	3.79	3.79	5.1	12.80
Two (2) other metals	µg/L	Various	Various	N.R.	N.R.	N.R.	N.R.	N.R.	N.D.	N.R.
Cyanide										
Cyanide (Total)	µg/L	Not Available	1,500	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Volatile Organic Compounds (VOCs)										
25 Compounds	µg/L	Not Available	Various	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Semi-Volatile Organic Compounds (SVOCs)										
50 Compounds	µg/L	Not Available	Various	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
TPH										
C6-C36 (Sum) / Mineral Oils	µg/L	Not Available	600[e]	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Major Anions and Cations										
Bicarbonate as HCO_3	mg/L	Not Available	Not Available	233.6	63.42	90.26	39.04	215.7	363.96	256.84
Carbonate as CO_3	mg/L	Not Available	Not Available	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Calcium as Ca	mg/L	Not Available	Not Available	252.6	24.68	32.33	98.75	121.1	142.96	100.75
Potassium as K	mg/L	Not Available	Not Available	198.7	4.10	0.27	36.17	22.56	3.59	6.37
Magnesium as Mg	mg/L	Not Available	Not Available	507.6	2.68	1.82	51.96	41.68	9.42	12.48
Sodium as Na	mg/L	Not Available	Not Available	4,259	10.10	17.20	984.3	453.4	45.22	15.67
Nitrate-Nitrogen as NO_3-N	mg/L	Not Available	Not Available	1.02	0.14	0.019	N.R.	0.018	N.R.	0.56
Total Phosphorus as TP	mg/L	Not Available	Not Available	0.086	0.027	0.056	0.062	0.081	0.16	0.064
Miscellaneous Parameters										
BOD	mg/L	Not Available	Not Available	N.R.	3.59	N.D.	4.92	N.R.	N.R.	N.R.
COD	mg/L	Not Available	Not Available	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
TOC	mg/L	Not Available	Not Available	1.83	11.36	3.90	9.38	10.36	9.62	3.07

Test Parameters	Unit	ANZGF MWQ (2000)	DIV (2013)	MW1	MW2	MW3	MW4	MW5	MW6	MW7
Fluoride	mg/L	Not Available	Not Available	0.56	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Chloride	mg/L	Not Available	Not Available	9,579	7.61	40.31	2,236	928.1	61.97	11.90
Bromide	mg/L	Not Available	Not Available	27.57	N.R.	N.R.	7.48	3.67	N.R.	N.R.
Phosphate	mg/L	Not Available	Not Available	0.21	N.R.	0.09	0.14	0.18	0.23	0.10
Sulphate	mg/L	Not Available	Not Available	1,824	35.40	15.3	15.76	2.58	16.82	15.81
Total Ammoniacal Nitrogen	mg/L	Not Available	Not Available	N.R.	0.23	0.03	7.54	5.59	0.61	0.16

Notes:
123 - Exceedance of the ANZGFMWQ (2000)
Not Available- value not specified in standard
N.R. – Not Reported above the LOR
ID - Insufficient data to derive a reliable trigger value
ANZGFMWQ – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Trigger Value for Fresh Water, Level of Protection 95%
DIV – Dutch Intervention Value
a – Trigger value for Arsenic (as III) = 24 µg/L; trigger value for Arsenic (as V) = 13 µg/L
b – Trigger value for Chromium (VI)
c – Trigger value for mercury (organic)
d - Figure may not protect key test species from chronic toxicity
e - Intervention value for mineral oil; This applies to contamination due to mixtures (e.g. gasoline or domestic heating oil), then not only the alkane content but also the content of aromatic and/or polycyclic aromatic hydrocarbons must be determined. This aggregate parameter has been adopted for practical reasons. Further toxicological and chemical disaggregation is under study.

Metals, including barium, chromium, molybdenum and zinc were reported in most of the groundwater samples at concentrations above their respective LORs. Furthermore, arsenic was reported in three (3) samples (i.e. MW1, MW2 and MW6), cobalt was reported in two (2) samples (i.e. MW4 and MW7), copper was reported in two (2) samples (i.e. MW1 and MW7), antimony was reported only in MW6 and cadmium was reported only in MW1. Detections of these metals were all below their respective DIVs. The concentrations of cadmium, chromium and copper in MW1, copper in MW7 and zinc in MW2, MW3 and MW7 were above their respective ANZGFMWQ for freshwater (95% level of protection).

Major anions and cations were reported in all groundwater samples. Bicarbonate was reported at concentrations between 39.04 mg/L and 363.96 mg/L, while carbonate was not reported above its LOR (i.e. 2 mg/L). Calcium was reported between 24.68 mg/L and 252.62 mg/L. Concentration of potassium ranged from 0.27 mg/L to 198.78 mg/L while concentration of magnesium and sodium ranged from 1.82 mg/L to 507.63 mg/L and from 10.10 mg/L to 4,259.05 mg/L, respectively. Nitrate-nitrogen was reported between 0.018 mg/L to 1.02 mg/L. Concentration of TP ranged from 0.027 mg/L to 0.16 mg/L.

BOD was reported only in groundwater samples MW2 and MW4, at concentrations of 3.59 mg/L and 4.92 mg/L, respectively. TOC was reported in all groundwater samples, with concentrations ranging from 1.83 mg/L to 11.36 mg/L. Fluoride was reported only in groundwater sample MW1, at a concentration of 0.56 mg/L. Chloride was reported in all the groundwater samples at concentrations ranging from 7.61 mg/L to 9,579.6 mg/L. Bromide was reported in groundwater samples MW1, MW4 and MW5, at concentrations between 3.67 mg/L and 27.57 mg/L. Phosphate was reported in all the groundwater samples, except in MW2, with concentrations ranging from 0.1 mg/L to 0.23 mg/L. Sulphate was reported in all the samples, at concentrations from 2.58 mg/L to 1,824.2 mg/L. TAN was reported in all the groundwater samples, except in MW1, at concentrations ranging between 0.03 mg/L and 7.54 mg/L.

The remaining groundwater quality parameters were below their respective LORs.

MW1 reported detections of cadmium at 0.26 µg/L, chromium at 1.87 µg/L and copper at 2.34 µg/L, MW7 reported detections of copper at 1.72 µg/L and zinc at 12.80 µg/L, while MW2 and MW3 reported detections of zinc at 16.89 µg/L and 14.97 µg/L, respectively. Although these values exceed the respective ANZGFMWQ for freshwater (95% level of protection) none of the ecological receptors are currently known or reported to be affected by the concentration reported in the soil and groundwater. Available data does not allow for estimation of timing of any effects.

In a previously carried out study at the Study Area in 2016/ 2017 tested groundwater samples also had detections of metals (i.e. antimony, barium, cobalt, molybdenum, nickel and zinc), major anions and cations (i.e. calcium and magnesium), BOD, TOC, fluoride, chloride, bromide, sulphate and TAN. Additionally, detections of SVOCs (i.e. pentachlorophenol, phenol, phthalates [total], bis[2-ethylexyl] phthalate, DDD/DDE/DDT and 4-4'-DDD), TPHs and Chemical Oxygen Demand (COD) were also noted. Concentrations of barium, DDD/DDE/DDT and mineral oil exceed their respective DIVs, concentration of nickel exceed ANZGFMWQ for freshwater (95% level of protection), while concentration of zinc exceeds both DIV and ANZGFMWQ for freshwater (95% level of protection). No such exceedances were reported during current baseline study. A copy of full laboratory report of tested groundwater samples from the previously carried out study is shown in Appendix S.

Summary of reported parameters in this and previous study is shown in the table below.

Table 9-11 Comparison of detected parameters in groundwater in current and previous study within the Study Area

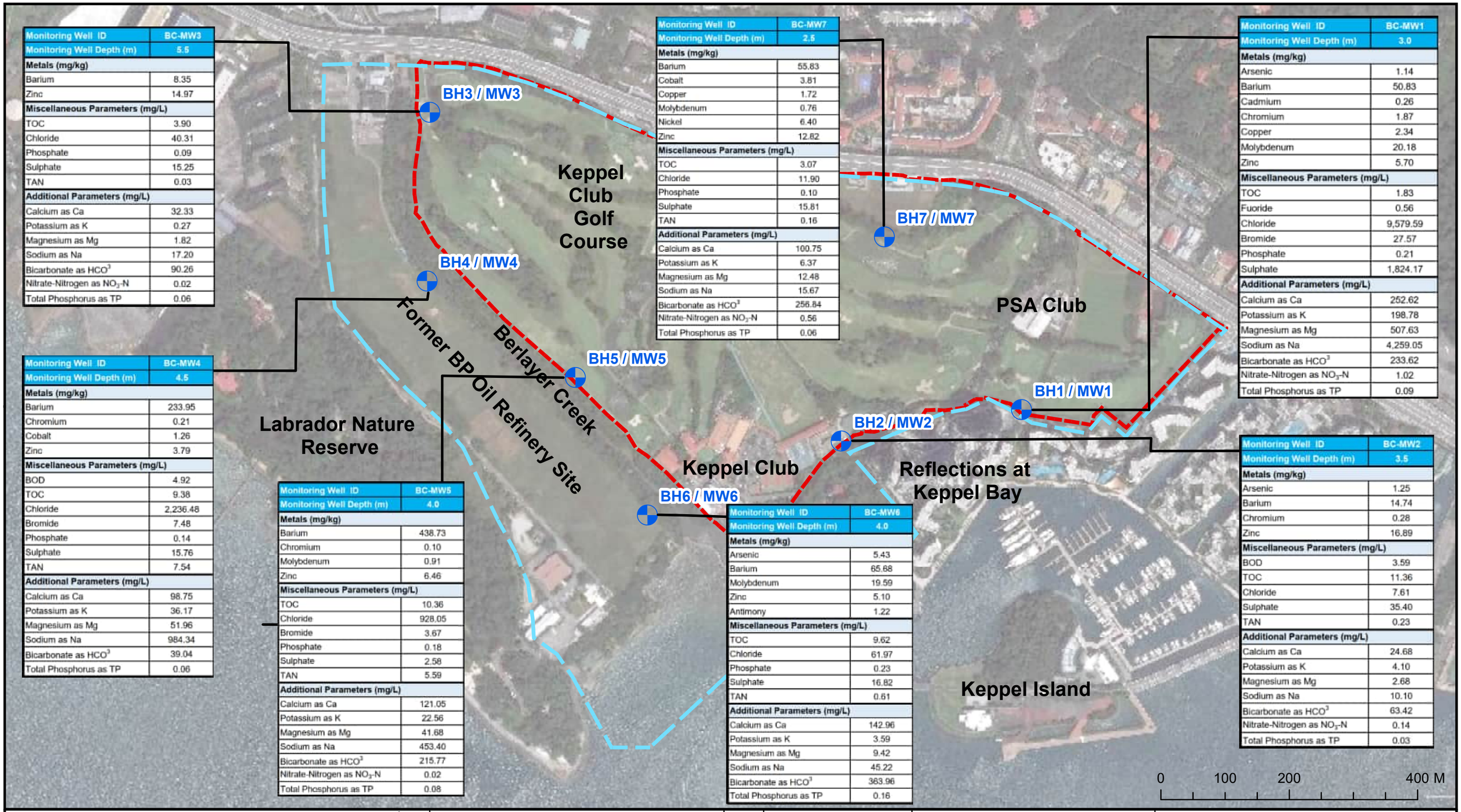
Parameter	Groundwater Baseline Study 2021 (Current Study- whole Study Area)	Groundwater Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Investigation in 2016/2017
Metals			
Arsenic	<1.0 µg/L – 5.4 µg/L	<1.0 µg/L – 5.43 µg/L	<10.0 µg/L
Antimony	<1.0 µg/L – 1.2 µg/L	<1.0 µg/L – 1.22 µg/L	<10 µg/L – 14.4 µg/L
Barium	8.4 µg/L – 438.7 µg/L	65.68 µg/L – 233.95 µg/L	33.3 µg/L – **746.0** µg/L
Cadmium	<0.25 µg/L – **0.26** µg/L	<0.25 µg/L	<5.0 µg/L
Chromium	<0.1 µg/L – **1.87** µg/L	<0.1 µg/L – 0.21 µg/L	<10.0 µg/L
Cobalt	<1.0 µg/L – 3.8 µg/L	<1.0 µg/L – 1.26 µg/L	<10.0 µg/L – 27.0 µg/L
Copper	<1.5 µg/L – **2.3** µg/L	<1.5 µg/L	<10.0 µg/L
Molybdenum	<0.5 µg/L – 20.2 µg/L	<0.5 µg/L – 19.59 µg/L	<10.0 µg/L – 35.4 µg/L
Nickel	<1.5 µg/L – 6.4 µg/L	<1.5 µg/L	<10 µg/L – **28.0** µg/L
Zinc	3.8 µg/L – **16.9** µg/L	3.79 µg/L – 5.10 µg/L	<10.0 µg/L – **100.0** µg/L
Semi-Volatile Organic Compounds (SVOCs)			
Chlorinated Hydrocarbons			
Pentachlorophenol	<4.0 µg/L	<4.0 µg/L	<1.0 µg/L - 1.60 µg/L
Aromatic Compounds			
Phenol	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L – 1.20 µg/L
Other Pollutants			
Phthalates (total)	<2.0 µg/L	<2.0 µg/L	<2.0 µg/L - 36.4 µg/L

Parameter	Groundwater Baseline Study 2021 (Current Study- whole Study Area)	Groundwater Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Investigation in 2016/2017
Bis(2-ethylhexyl) phthalate	N.T.	N.T.	<2.0 µg/L – 36.4 µg/L
Pesticides			
DDD/DDE/DDT[11]	<2.0 µg/L	<2.0 µg/L	<1.0 µg/L - **1.52** µg/L
4.4'-DDD	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L – 1.52 µg/L
Total Petroleum Hydrocarbons (TPH)			
C_6-C_9	<20.0 µg/L	<20.0 µg/L	<5.0 µg/L – 18.0 µg/L
C_{10}-C_{14}	<100.0 µg/L	<100.0 µg/L	<10 µg/L – 460.0 µg/L
C_{15}-C_{28}	<100.0 µg/L	<100.0 µg/L	<50.0 µg/L – 1,720.0 µg/L
C_{29}-C_{36}	<100.0 µg/L	<100.0 µg/L	<50.0 µg/L – 1,150.0 µg/L
C_6-C_{36} (Total) Mineral Oils	<100.0 µg/L	<100.0 µg/L	<115.0 µg/L – 2,890.0 µg/L
Major Anions and Cations			
Bicarbonate as HCO_3	39.0 mg/L – 364.0 mg/L	39.0 mg/L – 363.96 mg/L	N.T.
Carbonate as CO_3	<2.0 mg/L	<2.0 mg/L	358 mg/L - 1,320 mg/L[a]
Calcium as Ca	24.7 mg/L – 253.0 mg/L	98.75 mg/L – 142.96 mg/L	79.8 mg/L - 483.0 mg/L
Potassium as K	0.27 mg/L – 199.0 mg/L	3.59 mg/L – 36.17 mg/L	N.T.
Magnesium as Mg	1.82 mg/L – 507.6 mg/L	9.42 mg/L – 51.96 mg/L	278.0 mg/L - 842.0 mg/L
Sodium as Na	10.1 mg/L – 4,259.0 mg/L	45.22 mg/L – 984.34 mg/L	N.T.
Nitrate-Nitrogen as NO_3-N	<0.015 mg/L – 1.02 mg/L	<0.015 mg/L	N.T.
Total Phosphorus as TP	0.027 mg/L – 0.16 mg/L	0.06 mg/L – 0.16 mg/L	N.T.
Miscellaneous Parameters			
BOD	<2.0 mg/L – 4.9 mg/L	<2.0 mg/L – 4.92 mg/L	<2.0 mg/L – 40.0 mg/L
COD	<50 mg/L	<50 mg/L	30.0 mg/L – 114.0 mg/L
TOC	1.8 mg/L – 11.4 mg/L	9.38 mg/L – 9.62 mg/L	<0.10 mg/L – 26.1 mg/L
Fluoride	<0.5 mg/L – 0.56 mg/L	<0.5 mg/L	<0.10 mg/L – 0.67 mg/L
Chloride	7.6 mg/L – 9,579.6 mg/L	61.97 mg/L – 2,236.48 mg/L	686.0 mg/L – 10,200.0 mg/L

[11] DDD- Dichlorodiphenyldichloroethane; DDE- Dichlorodiphenyldichloroethylene; DDT- Dichlorodiphenyltrichloroethane

Parameter	Groundwater Baseline Study 2021 (Current Study- whole Study Area)	Groundwater Baseline Study 2021 (Current Study – Former BP Oil Refinery site)	Investigation in 2016/2017
Bromide	<1.0 mg/L – 27.6 mg/L	<1.0 mg/L – 7.48 mg/L	0.53 mg/L – 40.5 mg/L
Phosphate	<0.08 mg/L – 0.23 mg/L	0.14 mg/L – 0.23 mg/L	<0.5 mg/L [b]
Sulphate	2.6 mg/L – 1,824.2 mg/L	15.76 mg/L – 16.82 mg/L	<0.50 mg/L – 483.0 mg/L
Total Ammoniacal Nitrogen (TAN)	<0.01 mg/L – 7.54 mg/L	0.61 mg/L – 7.54 mg/L	1.1 mg/L – 34.6 mg/L

Note:
123 – Exceedance of the DIV
123 – Exceedance of the ANZGFMWQ (2000)
123 – Exceedance of both DIV and ANZGFMWQ
N.T. – Not tested
[a] **–** measured as Total Hardness as $CaCO_3$
[b] – measured as Phosphate as PO_4



Monitoring Well ID	BC-MW3
Monitoring Well Depth (m)	5.5
Metals (mg/kg)	
Barium	8.35
Zinc	14.97
Miscellaneous Parameters (mg/L)	
TOC	3.90
Chloride	40.31
Phosphate	0.09
Sulphate	15.25
TAN	0.03
Additional Parameters (mg/L)	
Calcium as Ca	32.33
Potassium as K	0.27
Magnesium as Mg	1.82
Sodium as Na	17.20
Bicarbonate as HCO^3	90.26
Nitrate-Nitrogen as NO_3-N	0.02
Total Phosphorus as TP	0.06

Monitoring Well ID	BC-MW7
Monitoring Well Depth (m)	2.5
Metals (mg/kg)	
Barium	55.83
Cobalt	3.81
Copper	1.72
Molybdenum	0.76
Nickel	6.40
Zinc	12.82
Miscellaneous Parameters (mg/L)	
TOC	3.07
Chloride	11.90
Phosphate	0.10
Sulphate	15.81
TAN	0.16
Additional Parameters (mg/L)	
Calcium as Ca	100.75
Potassium as K	6.37
Magnesium as Mg	12.48
Sodium as Na	15.67
Bicarbonate as HCO^3	256.84
Nitrate-Nitrogen as NO_3-N	0.56
Total Phosphorus as TP	0.06

Monitoring Well ID	BC-MW1
Monitoring Well Depth (m)	3.0
Metals (mg/kg)	
Arsenic	1.14
Barium	50.83
Cadmium	0.26
Chromium	1.87
Copper	2.34
Molybdenum	20.18
Zinc	5.70
Miscellaneous Parameters (mg/L)	
TOC	1.83
Fuoride	0.56
Chloride	9,579.59
Bromide	27.57
Phosphate	0.21
Sulphate	1,824.17
Additional Parameters (mg/L)	
Calcium as Ca	252.62
Potassium as K	198.78
Magnesium as Mg	507.63
Sodium as Na	4,259.05
Bicarbonate as HCO^3	233.62
Nitrate-Nitrogen as NO_3-N	1.02
Total Phosphorus as TP	0.09

Monitoring Well ID	BC-MW4
Monitoring Well Depth (m)	4.5
Metals (mg/kg)	
Barium	233.95
Chromium	0.21
Cobalt	1.26
Zinc	3.79
Miscellaneous Parameters (mg/L)	
BOD	4.92
TOC	9.38
Chloride	2,236.48
Bromide	7.48
Phosphate	0.14
Sulphate	15.76
TAN	7.54
Additional Parameters (mg/L)	
Calcium as Ca	98.75
Potassium as K	36.17
Magnesium as Mg	51.96
Sodium as Na	984.34
Bicarbonate as HCO^3	39.04
Total Phosphorus as TP	0.06

Monitoring Well ID	BC-MW5
Monitoring Well Depth (m)	4.0
Metals (mg/kg)	
Barium	438.73
Chromium	0.10
Molybdenum	0.91
Zinc	6.46
Miscellaneous Parameters (mg/L)	
TOC	10.36
Chloride	928.05
Bromide	3.67
Phosphate	0.18
Sulphate	2.58
TAN	5.59
Additional Parameters (mg/L)	
Calcium as Ca	121.05
Potassium as K	22.56
Magnesium as Mg	41.68
Sodium as Na	453.40
Bicarbonate as HCO^3	215.77
Nitrate-Nitrogen as NO_3-N	0.02
Total Phosphorus as TP	0.08

Monitoring Well ID	BC-MW6
Monitoring Well Depth (m)	4.0
Metals (mg/kg)	
Arsenic	5.43
Barium	65.68
Molybdenum	19.59
Zinc	5.10
Antimony	1.22
Miscellaneous Parameters (mg/L)	
TOC	9.62
Chloride	61.97
Phosphate	0.23
Sulphate	16.82
TAN	0.61
Additional Parameters (mg/L)	
Calcium as Ca	142.96
Potassium as K	3.59
Magnesium as Mg	9.42
Sodium as Na	45.22
Bicarbonate as HCO^3	363.96
Total Phosphorus as TP	0.16

Monitoring Well ID	BC-MW2
Monitoring Well Depth (m)	3.5
Metals (mg/kg)	
Arsenic	1.25
Barium	14.74
Chromium	0.28
Zinc	16.89
Miscellaneous Parameters (mg/L)	
BOD	3.59
TOC	11.36
Chloride	7.61
Sulphate	35.40
TAN	0.23
Additional Parameters (mg/L)	
Calcium as Ca	24.68
Potassium as K	4.10
Magnesium as Mg	2.68
Sodium as Na	10.10
Bicarbonate as HCO^3	63.42
Nitrate-Nitrogen as NO_3-N	0.14
Total Phosphorus as TP	0.03

Legend

- Boreholes Converted Into Monitoring Wells
- Overall EIS Study Area
- Development Area

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client : HOUSING & DEVELOPMENT BOARD / URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Groundwater analytical results

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn: SAG	Date: APR 2022

Figure No. : **9 - 20** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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9.4.2.7 Groundwater Relationship to Surface Water

The in-situ surface water quality parameters are presented in Table 8-15 and the surface water sampling locations are presented in Figure 8-11.

The surface water was found to be slightly basic, with pH ranging from 7.88 to 8.60. According to the analysis of the results, the pH of the surface water within the Study Area did not change significantly either spatially or temporally.

Salinity of surface water ranged from 0.12 PSU to 31.46 PSU, with an average of 12.38 PSU. From further analysis of the results, it can be observed that the salinity was highest at the surface water samples collected at the Marine Area near Berlayer Creek (i.e. WQ4) and at Marine Area near Labrador Nature Reserve (i.e. WQ9) with 29.03 PSU and 31.46 PSU, respectively. Salinity of the samples taken along the Berlayer Creek ranged from 13.60 PSU (at the upstream of Berlayer Creek) to 15.93 PSU at downstream of Berlayer Creek, indicating brackish water conditions. Furthermore, salinity of the water sample taken from drain D5 (i.e. WQ6) and concrete culvert D3 (i.e. WQ5) were 14.83 PSU and 2.65 PSU, also indicating brackish water conditions. Salinities of the rest of surface water samples, taken from the downstream of ponds D4 (i.e. WQ7) and D4 (i.e. WQ8) within Keppel Club as well as from culvert D2 (i.e. WQ7a) (originating from Keppel Club) range from 0.12 PSU to 0.13 PSU and are indicative of freshwater conditions.

The electrical conductivity of surface water ranged from 271 µS/cm to 53,179 µS/cm with an average of 21,312 µS/cm. Highest electrical conductivity was observed in the surface water samples taken from saline watercourses – 53,179 µS/cm at Marine Area near Labrador Nature Reserve (i.e. WQ9) and 49,870 µS/cm at Marine Area near Berlayer Creek (i.e. WQ4). Electrical conductivity of samples taken from watercourses with salinities indicative of brackish water (i.e. WQ1, WQ2, WQ3, WQ5 and WQ6) ranged from 5,136 µS/cm to 27,615 µS/cm. The samples taken from the rest of watercourses had electrical conductivity from 271 µS/cm to 295 µS/cm.

The pH range of the groundwater is from 5.39 to 6.93 which denotes slight acidic to neutral characteristics. The measured electrical conductivity ranged from 194.1 µS/cm to 29,737 µS/cm, which denotes freshwater to brackish water characteristics, similar to the surface water samples taken from non-marine areas. However, the groundwater has relatively lower measured conductivity.

The major ions analysed in the surface water sample collected from Berlayer Creek, Marine Area and concrete drain D5 (refer to Figure 9-21) were plotted on a Piper plot, as shown in Figure 9-22.



Legend

- Surface Water Samples Analysed for Major Ions
- Boreholes Converted Into Monitoring Wells
- Overall EIS Study Area
- Development Area
- Watercourses

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SAG	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: Housing & Development Board; Urban Redevelopment Authority

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Location of collected groundwater and surface water samples analysed for major ions

Designed	Checked	Approved
SAG	NHT	JAG
	Drawn SAG	Date APR 2022

Figure No. : **9 - 21** | Rev. - | Sheet 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

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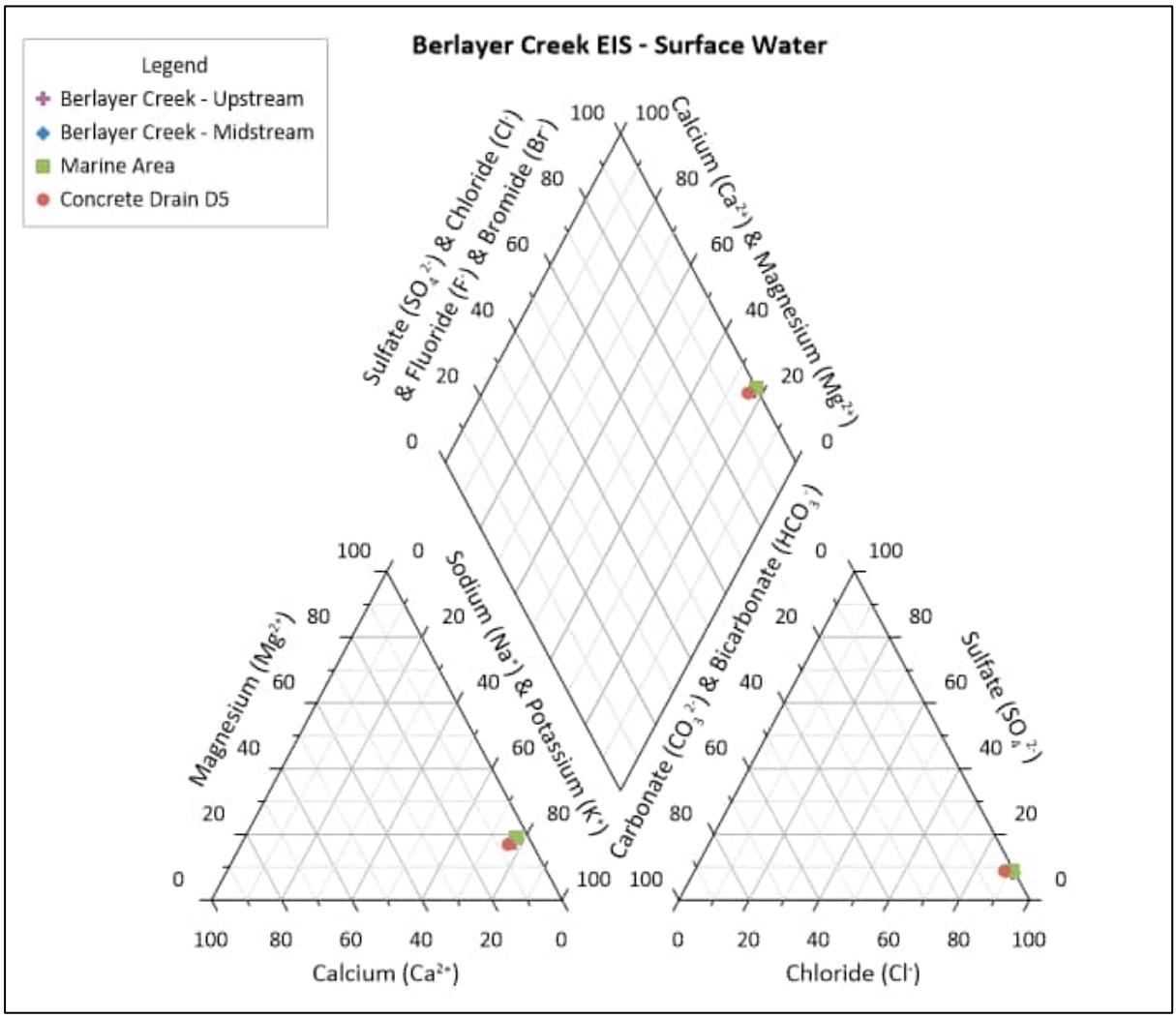


Figure 9-22 Piper plot of major ions analysed in surface water

The Piper Plot indicates that the sampled watercourses (i.e. upstream and midstream of Berlayer Creek, Marine Area and concrete drain D5) are all of sodium-chloride type and are dominated by sodium and potassium cations and chloride anions, characteristic for saline water.

In order to determine the potential relationship between groundwater and surface water, a Piper Plot of the major ions of the groundwater and surface water was developed, as shown in Figure 9-23.

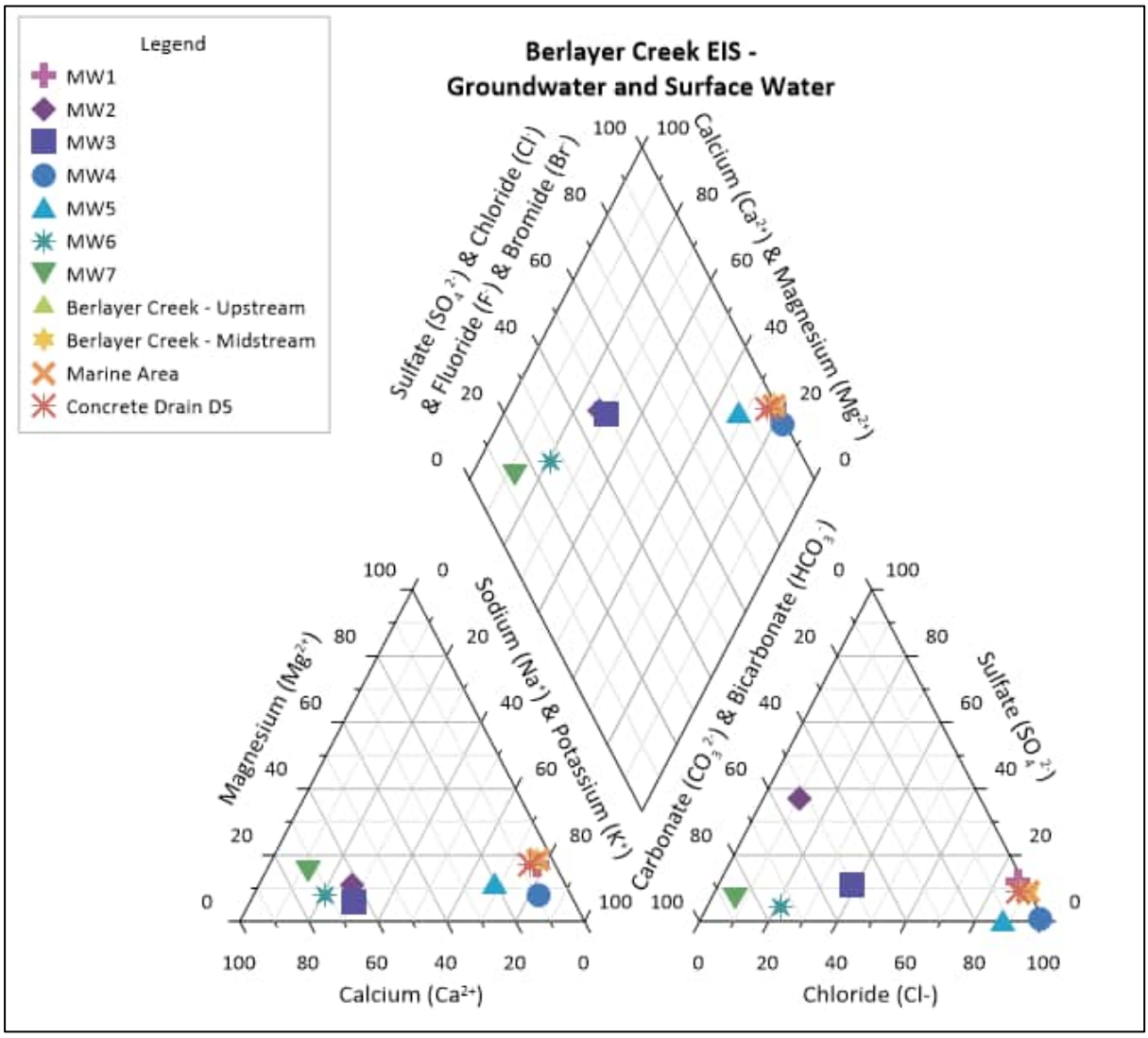


Figure 9-23 Piper plot of major ions analysed in surface water and groundwater

The diagram above shows that surface water is of a distinct sodium-chloride type, while the groundwater has various hydrochemical facies. Groundwater collected from MW1, MW4 and MW5 has the closest hydrochemical signature to surface water (i.e. sodium-chloride type) indicating that the groundwater in these areas is most probably influenced by the seawater. Groundwater from other monitoring wells has more mixed hydrochemical signatures, indicating that the groundwater could be replenishing from other sources such as surface runoff from surrounding and upstream areas.

Review of elevation data obtained from the topography survey and soil and groundwater investigation showed that the groundwater elevation is generally higher than the watercourses' invert levels/ riverbeds. Based on the observed data during site visits and based on the results of hydrodynamic modelling carried out as a part of this Study (refer to Section 8.4.2 and Section 8.7.2, respectively) it is estimated that the water depth along Berlayer Creek ranges from 0.5 m potentially up to 1.5 m. This implies that during low water (e.g. low tide) groundwater will most likely be feeding the stream as the groundwater levels will be higher than the water levels in the stream. During high water, the water level in Berlayer Creek will most likely be higher than the groundwater levels of the surrounding area, meaning that the reverse process will occur. It should be noted that based on groundwater elevation contour maps (refer to Section 9.4.2.4) groundwater flow direction generally follows the topography of the Study Area. Therefore, the influence of brackish water from Berlayer Creek on groundwater is expected to be less prominent at the locations with higher elevation such as the upstream (i.e. around MW3), downstream (e.g. southern portion of Former BP Oil Refinery around MW6) and Bukit Chermin. Given the observed groundwater levels at MW1, invert level of drain D5 and the fact that drain D5 is tidal-influenced (refer to the hydrological baseline study – Section 8.4.2.2 of this Report), saline water intrusion is also expected in this part of the Study Area. Area around MW7 is located relatively further away from the brackish/ saline water and therefore it is expected that freshwater will have a dominant influence on the hydrochemical characteristics of the groundwater.

Table 9-12 Comparison of watercourses' invert levels to groundwater levels

Monitoring Well ID	Average Groundwater Elevation (m RL)	Watercourse's Invert Level/ Riverbed (m RL)	Watercourse
MW1	100.51	*Approx.* 0. 00	Concrete Drain D5
MW2	105.44	N.A.	N.A.
MW3	105.06	*Approx.* 0.4	Upstream of Berlayer Creek
MW4	101.47	*Approx.* 0.35	Upper Midstream of Berlayer
MW5	101.72	*Approx.* 0.35	Lower Midstream of Berlayer
MW6	102.79	*Approx.* 0.00	Downstream of Berlayer
MW7	102.98	*Approx.* 2.00	Pond in northeast of the golf course

Note:
N.A. – Not Applicable- no watercourses in the nearby area

9.5 Identification of Soil and Groundwater Sensitive Receptors

The receptor screening for soil and groundwater was conducted within the Study Area (as defined in Section 6.2.2) and classified based on the methodology outlined in Table 6-2.

9.5.1 Construction Phase

As detailed in Section 3.3, the activities planned for the construction phase of the Project may cause soil and groundwater contamination which can subsequently have adverse effects on human and ecological receptors. Furthermore, during pre-construction activities such as soil excavation there is also a potential of encountering historically contaminated soil. The following table identifies potential soil and groundwater sensitive receptors and summarizes sensitivity of each of the receptors.

Table 9-13 Classification of soil and groundwater sensitive receptors for construction phase

Sensitive Receptor	Receptor Description	Receptor Classification
Human Receptors		
On-site construction workers and permanent off-site residents downgradient of the Study Area	• On-site construction workers within Keppel Club during construction phase of the project may come in direct contact with soil and groundwater during various pre-construction and construction activities that require soil excavation and management and soil dewatering. Possible pathways for exposure of these receptors to soil and groundwater might be dermal contact and incidental ingestion of soils, inhalation of fugitive dust and vapours derived from soil as well as dermal contact and incidental ingestion of groundwater; • Off-site residents during construction phase of the project may be exposed to soil and groundwater during pre-construction and construction activities that require soil excavation and management and soil dewatering. Possible pathways of exposure of these receptors to soil and groundwater might be incidental ingestion of soils,	Priority 2

Sensitive Receptor	Receptor Description	Receptor Classification
	inhalation of fugitive dust and vapours derived from soil as well as dermal contact with groundwater; • The soil and groundwater baseline analytical results show that the concentration of tested parameters are below their respective DIVs and hence do not pose potentially unacceptable risk to human health; • It is assumed that currently in Singapore groundwater is not extracted for any beneficial purposes (i.e. drinking and industrial purposes, irrigation); • It is assumed that the future residents of the proposed development will not move into the new developments until the whole Project has been completed	
Off-site visitors downgradient of the Study Area (i.e. Keppel Bay)	• Off-site visitors during construction phase might be exposed to short-term (i.e. limited to the length of their visit in the vicinity of the Study Area) impact from soil and groundwater. Possible pathways of exposure of these receptors to soil and groundwater might be incidental ingestion of soils, inhalation of fugitive dust and vapours derived from soil as well as dermal contact with groundwater; • The soil and groundwater baseline analytical results show that the concentration of tested parameters are below their respective DIVs and hence do not pose potentially unacceptable risk to human health; • It is assumed that currently in Singapore groundwater is not extracted for any beneficial human purposes (i.e. used for irrigation, drinking and industrial purposes).	Priority 2
Ecological Receptors		
Habitat and biocenosis of Berlayer Creek	• Based on the biodiversity baseline study (Section 7 of this Report) mangrove forest along the Berlayer Creek is a habitat of high ecological value; • Mangrove forests, such as the one along Berlayer Creek, are uncommon in Singapore; • This habitat also harbours the second highest abundance of conservation significant plant and faunal species within the Study Area; • Habitats and biocenosis of Berlayer Creek are highly dependent of the quantity and quality of surface water. However, as explained in the hydrology baseline study (Section 8 of this Report) it seems that the brackish surface water found in this area mostly originates from upstream urban areas and is under tidal influence of the sea, while groundwater only partly supports and maintains the surface water levels.	Priority 2
Habitat and biocenosis of Bukit Chermin	• Based on the biodiversity baseline study findings (Section 7 of this Report), Bukit Chermin is a habitat of high ecological value since it consists of native-dominated secondary forest which are uncommon in Singapore; • Amongst all the habitats assessed as a part of biodiversity study, Bukit Chermin has the highest abundance of conservation significant plant species and consists of low abundance of large and other plant specimens of value; • Numerous faunal species found at Bukit Chermin are highly dependent on native floral hosts or food plants; • Based on the hydrology baseline study findings (Section 8 of this Report) there are no permanent surface water bodies at Bukit Chermin. This suggests that the identified floral species and habitats will be dependent of other water sources such as rainfall, groundwater, etc.	Priority 2

Sensitive Receptor	Receptor Description	Receptor Classification
Urban Vegetation within Keppel Club	• Based on the biodiversity baseline study (Section 7 of this Report), urban vegetation is a habitat of moderate ecological value; • This type of habitat occupies majority of the Study Area and is a common habitat in Singapore, typically comprising of lawns and parks managed by humans; • This habitat has the highest abundance of conservation significant faunal species and is considered to be of moderate value in ecological linkage with surrounding areas of high ecological value.	Priority 3
Man-made Watercourses within Keppel Club	• Based on the biodiversity baseline study (Section 7 of this Report), man-made watercourses (i.e. ponds within Keppel Club) are considered to be habitats of low ecological value; • The ponds are not connected to larger watercourses and hence are considered of low importance in ecological linkage.	Priority 3
Seagrass Meadow	• Based on the biodiversity baseline study (Section 7 of this Report), seagrass meadow is a habitat of high ecological value; • This habitat was observed to have the high abundance of conservation significant flora species; • This habitat is also important for faunal species as it provides nursery and feeding grounds; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area.	Priority 3
Rocky Shore	• Based on the biodiversity baseline study (Section 7 of this Report), rocky shore is the last remaining natural rocky shore on mainland Singapore, making it a habitat of high ecological value; • It provides numerous microhabitats that are used by various faunal species; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area.	Priority 3
Soft Sediment Seabed	• Based on the biodiversity baseline study (Section 7 of this Report), soft sediment seabed is a habitat of moderate ecological value; • As it forms one strata with soft sediment seabed with the Berlayer Creek mangrove forest, it has high value in providing ecological linkage for intertidal and diadromous fauna; • No conservation significant plant species are found in this habitat; • It possesses high abundance of conservation significant faunal species; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area.	Priority 3
Sandy Seabed	• Based on the biodiversity baseline study (Section 7 of this Report), sandy seabed is a habitat of moderate ecological value; • It has high abundance of conservation significant floral and faunal species; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area.	Priority 3

9.5.2 Operational Phase

As the proposed development area becomes operational, it is expected that the human activities will increase within the Study Area. Activities planned for the operational phase of the project, such as landscaping and maintenance activities may potentially cause soil and groundwater pollution and subsequently have adverse impact on human and ecological receptors. The following table identifies potential soil and groundwater sensitive receptors during operational phase and summarizes sensitivity of each of the receptors.

Table 9-14 Classification of soil and groundwater sensitive receptors during operational phase

Sensitive Receptor	Receptor Description	Receptor Classification
Human Receptors		
Maintenance workers	• Maintenance workers and permanent residents of the future development (i.e. at the location of existing Keppel Club) may come in contact with soil during operational phase of the Project. Possible pathways for exposure of these receptors to soil and groundwater might be by dermal contact and incidental ingestion of soils by maintenance workers, inhalation of fugitive dust and vapours derived from soil by maintenance workers and permanent residents, as well as dermal contact and incidental ingestion of groundwater by maintenance workers; • It is assumed that currently in Singapore groundwater is not extracted for any beneficial human purposes (i.e. used for irrigation, drinking and industrial purposes).	Priority 2
Visitors of future development and visitors and permanent residents in the vicinity of the proposed development	• Visitors of future development and visitors and permanent residents in the vicinity will may come in contact with soil during the operational phase of the Project. Possible pathway for exposure of these receptors might be by inhalation of fugitive dust and vapours derived from the soil during maintenance activities within the development; • It is assumed that currently in Singapore groundwater is not extracted for any beneficial human purposes (i.e. used for irrigation, drinking and industrial purposes);	Priority 2
Ecological Receptors		
Habitat and biocenosis of Berlayer Creek	• Based on the biodiversity baseline study (Section 7 of this Report) mangrove forest along the Berlayer Creek is a habitat of high ecological value; • Mangrove forests, such as the one along Berlayer Creek, are uncommon in Singapore; • This habitat also harbours the second highest abundance of conservation significant plant and faunal species within the Study Area; • Based on the proposed plan of future developments (as detailed in the Section 3.2 of this Report) Berlayer Creek is planned to be preserved and enhanced with linear park along the eastern bank of the Creek; • Habitats and biocenosis of Berlayer Creek are highly dependent of the quantity and quality of surface water. However, as explained in the hydrology baseline study (Section 8 of this Report) it seems that the brackish surface water found in this area mostly originates from upstream urban areas and is under tidal influence of the sea, while groundwater only partly supports and maintains the surface water levels; • It is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level.	Priority 2
Habitat and biocenosis of Bukit Chermin	• Based on the biodiversity baseline study findings (Section 7 of this Report), Bukit Chermin is a habitat of high ecological value since it consists of native-	Priority 2

Sensitive Receptor	Receptor Description	Receptor Classification
	dominated secondary forest which are uncommon in Singapore; • Amongst all the habitats assessed as a part of biodiversity study, Bukit Chermin has the highest abundance of conservation significant plant species and consists of low abundance of large and other plant specimens of value; • Numerous faunal species found at Bukit Chermin are highly dependent on native floral hosts or food plants; • Based on the proposed plan of future developments (as detailed in the Section 3.2 of this Report) Bukit Chermin is planned to be preserved as a reserve site; • Based on the hydrology baseline study findings (Section 8 of this Report) there are no permanent surface water bodies at Bukit Chermin. This possibly implies high dependency of identified floral species and habitats to groundwater.	
Proposed Urban Vegetation within Study Area	• Based on the proposed plan of future developments parks and other open spaces are planned to surround the future residential developments; • Similarly to the existing urban vegetation within Keppel Club, future urban vegetation is also considered to be a habitat of moderate ecological value;	Priority 3
Seagrass Meadow	• Based on the biodiversity baseline study (Section 7 of this Report), seagrass meadow is a habitat of high ecological value; • This habitat was observed to have the high abundance of conservation significant flora species; • This habitat is also important for faunal species as it provides nursery and feeding grounds; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area; • It is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level.	Priority 3
Rocky Shore	• Based on the biodiversity baseline study (Section 7 of this Report), rocky shore is the last remaining natural rocky shore on mainland Singapore, making it a habitat of high ecological value; • It provides numerous microhabitats that are used by various faunal species; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area; • It is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level.	Priority 3
Soft Sediment Seabed	• Based on the biodiversity baseline study (Section 7 of this Report), soft sediment seabed is a habitat of moderate ecological value; • As it forms one strata with soft sediment seabed with the Berlayer Creek mangrove forest, it has high value in providing ecological linkage for intertidal and diadromous fauna; • No conservation significant plant species are found in this habitat; • It possesses high abundance of conservation significant faunal species;	Priority 3

Sensitive Receptor	Receptor Description	Receptor Classification
	• It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area; • It is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level.	
Sandy Seabed	• Based on the biodiversity baseline study (Section 7 of this Report), sandy seabed is a habitat of moderate ecological value; • It has high abundance of conservation significant floral and faunal species; • It is expected that the biocenosis found in this habitat will be highly dependent in surface water and not on groundwater within the Study Area; • It is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level.	Priority 3

9.6 Minimum Control Measures

This section proposed minimum controls or standard practices commonly implemented in Singapore for similar developments that have been assumed to be implemented for the purposes of impact assessment during both construction and operational phases of the Project.

9.6.1 Construction Phase

Table 9-15 sets out the minimum controls that have been identified for the Project during construction phase. Regular inspections and workers' training must be conducted to ensure these measures are inculcated in the behaviour and practice of all the staff at the site.

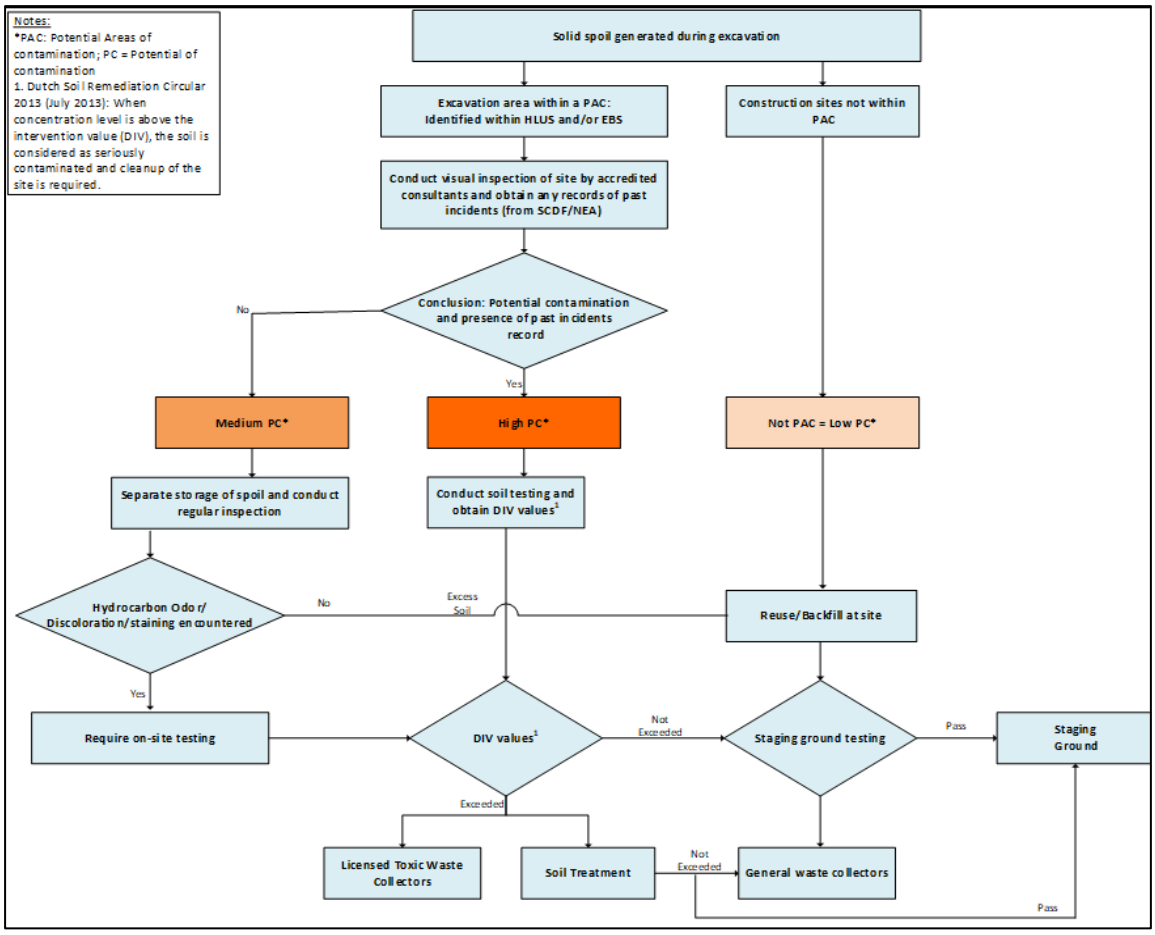
Table 9-15 Minimum controls during construction phase (soil and groundwater)

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
Groundwater Level	• Decreased infiltration into the ground due to increased runoff from hard standing surfaces • Groundwater extraction during construction activities that require soil dewatering	• Install piezometers to monitor the changes in groundwater level in compliance with Building Control Regulations 2003 as part of its instrumentation and monitoring plan to be endorsed by the Qualified Professional (QP) • Proper Earth Retaining Stabilising Structures (ERSS) should be selected and designed to limit groundwater settlement • Plan soil dewatering in phases to avoid as much as practicably possible groundwater drawdown
• Soil quality • Groundwater quality	• Seepage of contaminants from excavated contaminated soil (if encountered) into the underlying soil and groundwater • Soil erosion of exposed soil from excavations and stockpiles • Seepage of contaminants from extracted contaminated groundwater (if encountered) into the	• Identify all types of solid waste and implement comprehensive waste management system at the site in order to ensure proper disposal and prevent pollution to the environment. This contractor should conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site. • Use approved materials, of the same or better quality as the surrounding area, for backfilling works.

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
	underlying soil and groundwater	All backfilled material shall be free of debris, and of good material soil. • Handle and dispose excavated soil following the procedure shown in Figure 9-24. This flow chart explains how to handle excavated soils, and identify potential areas of contamination as well as potential of contamination (POC) in excavated soils. If the POC soils are tested for exceedance in DIVs, the soils can be disposed of to toxic waste collectors or undergo soil treatment. If contaminated soils were sent for treatment to an acceptable standard such as the DIV, the treated soil can be disposed in the staging ground or through a general waste collector, depending on the level of the contaminants during the staging ground testing. • Upon receipt of results on the tested parameters (chemicals, heavy metals) exceeding the regulatory limits, the construction contractor should further assess the potential inhalation and dermal contact impacts of the exceeded parameters to the site workers exposed to areas where soil and/or groundwater contamination is identified. The risk assessment should be conducted before the commencement of construction activities and the findings incorporated into the contractors' construction risk assessment and health, safety and environment plan. If health impacts to workers are foreseen, necessary precautionary measures, as per the respective chemical SDS, should be implemented on site. • A site management plan should include plans of safe handling, transfer and storage of excavated soils following the procedure in Figure 9-24. • Discharge of extracted groundwater shall be to an area approved for such disposal by the NEA and the proposed location as identified in Figure 9-24 and following the process set out in Figure 9-25. Based on the results of the soil and groundwater baseline study, the detected concentrations in groundwater do not exceed the DIVs. However, it is recommended that the construction contractor to be vigilant of site conditions and extracted groundwater to be tested at regular intervals, especially for extracted groundwater with oily sheens or noticeable odour. If a contaminant concentration in excess of the DIV is detected, the contractor shall assess the potential inhalation and dermal impacts of the chemical identified and assess potential health and safety considerations for exposure to groundwater before commencement of construction activities. Such contaminated wastewater may need to be disposed of to a licenced toxic waste collector. • Bentonite slurry used in the TBM will be pumped into the slurry treatment plant for recycling, cleaning and removal of native cut material. Treatment methodologies in the slurry treatment plant will include de-sanding (e.g., cyclones) and filtration. Handling and disposal of spoils for disposal after the treatment shall follow the procedure in Figure 9-24.

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
	• Discharge of toxic chemical waste • Discharge or leakage of chemicals used for refuelling and maintenance of vehicles, machinery and equipment	• Identify all types of toxic chemical waste and implement comprehensive waste management system at the site in order to ensure proper disposal and prevent pollution to the environment. This contractor should conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site. • Inspect all equipment prior to entering the site for fuel/hydraulic lines, leaking tanks, and other potential faulty parts that could potentially cause contamination to soil or groundwater. • Dispose all construction debris (under category C&D) at the gazetted Government dumping grounds or at such other sites or locations as directed by NEA. • Store generated toxic chemical waste under shelter within concrete bund walls or in storage containers with good ventilation. Spill trays shall be provided for all waste containers Spill trays shall be regularly maintained to prevent rain from washing out the pollutive substances. • Note that the Earth Control Measures (ECM) is for the containment and treatment of silty discharge due to the impact of rainwater. ECM is not meant for the treatment of wastewater due to construction activities (such as pipe-jacking and bore-piling works) which shall be treated to comply with the requirements under prevailing legislation. • The wastewater from construction activities should be stored and removed for treatment and disposal off-site by an approved Waste Management Contractor. • Remove any hazardous substance or chemical if there are safer alternatives. • Ensure all hazardous substance and chemical containers are labelled its movement is recorded and returned to the designated storage areas when not in use. • Assess the SDS of all the hazardous substances and chemicals prior to its entry to site for its suitability in terms of SHE hazards and consider safer alternatives. • Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land. • Ensure all activities involving repair, servicing, engine overhaul works, etc. shall be carried out on an area which is appropriately contained (e.g. concreted area and with proper containment/sumps) and all wastes are channelled for appropriate treatment or disposal to meet the regulations. • Store chemicals stored under shelter within concrete bund walls or in storage containers with good ventilation. Spill trays shall be provided for all drums, plants and machinery and potential pollutive

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
		substances used on site. Spill trays shall be regularly maintained to prevent rain from washing out the pollutive substances. • Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits.



Note: DIV standards were developed to assess the acceptability of impacted sites in the Netherlands in support of the Dutch Soil Protection Act. Therefore, it is based on local Dutch ecotoxicology, soil (consisting of 10% organic clay or 25% clay) and climate conditions for residential usage which may not be applicable to conditions in Singapore.

Figure 9-24 Screening and disposal of excavated soils

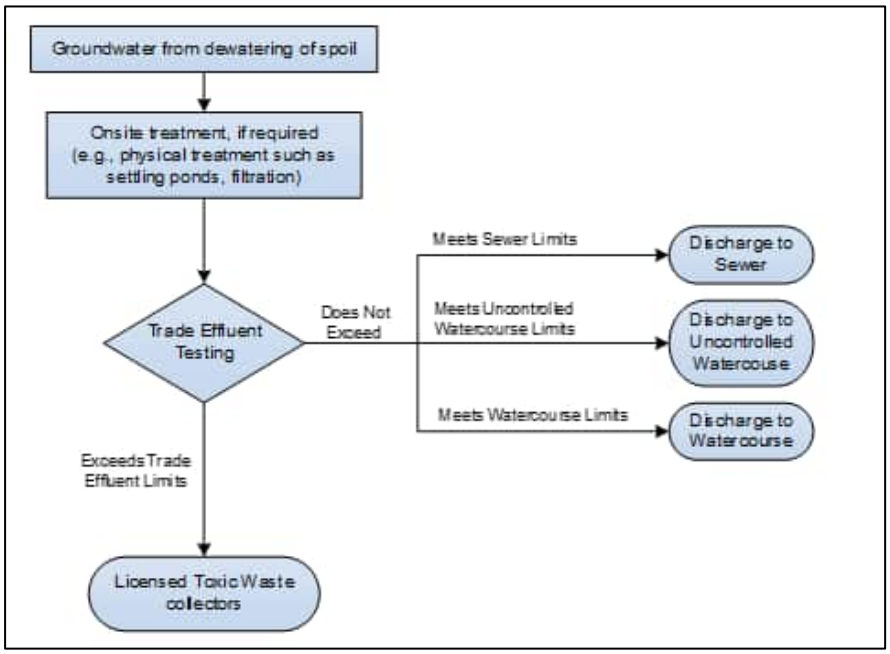


Figure 9-25 Disposal of the groundwater generated through dewatering or inflow into excavations

9.6.2 Operational Phase

Table 9-16 sets out the minimum controls that have been identified for the Project during operational phase.

Table 9-16 Minimum controls during operational phase (soil and groundwater)

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
Groundwater Level	• More areas with impervious surfaces in the new development	• Incorporate more pervious surfaces in the development plan • Installation of recharge wells, if necessary
• Soil quality • Groundwater quality	• Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater	• Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land.
	• Discharge or leakage of waste and chemicals into the soil	• Conduct regular inspections on waste storage system within the Project to prevent system's clogging and leachate entering the underlying soil • Store all toxic waste and hazardous substances/chemicals (if any) at designated sheltered area provided with access-controlled entrance and concrete bund walls or in storage of containers with good ventilation. Spill trays shall be provided for all chemical drums and potentially pollutive substances. Spill trays shall be regularly maintained to prevent the rain from washing out the pollutive substances • Dispose all toxic waste chemicals to licensed Toxic Industrial Waste (TIW) collectors for treatment • Ensure all hazardous chemicals/substances (if stored on site) are labelled, its movement is recorded and returned to the designated storage areas when not in use

Potentially Affected Environmental Parameter	Potential Sources of Impacts	Minimum Control Measures
		• Ensure all activities involving the use of hazardous chemicals/substances are carried out on an area which is appropriately contained (e.g. concreted area and with proper containment/sumps). • Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits

9.7 Prediction and Evaluation of Soil and Groundwater Impacts

This section details prediction and evaluation of soil and groundwater impacts identified to arise from construction and operational phase of the Project.

9.7.1 Construction Phase

Construction phase of the Project is expected to last approximately 7 to 10 years during which the Study Area will go through significant changes. As a part of pre-construction activities (as described in Section 3.3.1) existing structures (e.g. buildings, facilities and infrastructure) as well as vegetation located within the Keppel Club area will be demolished and removed from the site. Subsequently, undulating terrain of the golf course will be subjected to earthworks during which the required platform levels will be obtained by means of soil excavation and filling. Following the pre-construction activities, foundation works, superstructure works as well as landscaping works will be carried out at the site.

Beforementioned activities could potentially impact soil and groundwater quality as well as groundwater level. Subsequently, this might have adverse effects on identified sensitive receptors. The following sub-sections provide qualitative assessment and evaluation of soil and groundwater impacts during the construction phase of the Project.

9.7.1.1 Impacts due to Groundwater Level Decrease

Certain pre-construction activities (e.g. earthworks) and construction activities (e.g. foundation works) that are planned to be carried out within Keppel Club will require extraction of groundwater from the soil. This will enable dry ground conditions of the excavation areas which is a pre-requisite for safe and successful earthworks. Consequently, soil dewatering might have an impact on current groundwater levels by lowering the water table to required depths. Furthermore, as the pre-construction and construction works progress, more areas at Keppel Club which are currently vegetated (and hence pervious) will be replaced with various structures (e.g. buildings, platforms, roads) which are impervious. This might reduce the infiltration of surface water and rainfall into the soil, potentially reducing the current groundwater level.

It is understood that currently groundwater in Singapore is not extracted for any beneficial purposes (i.e. drinking and industrial purposes, irrigation). Hence, it is **Unlikely** that the potential groundwater level decrease will have any impact on the human receptors and the overall impact significance is assessed to be **Negligible**.

The potential importance of groundwater level to ecological receptors is twofold – it may feed the surface watercourses and hence support natural habitats and it also may be the main source of water for various plant species that are dependent of groundwater due to the lack of surface water sources.

The identified ecological receptors (i.e. habitats and biocenosis) are mostly located around main watercourses found within the site - Berlayer Creek, five (5) man-made ponds located within the golf course and the Marine Area located in the southern part of site. Additionally, Bukit Chermin and urban vegetation within Keppel Club have also been identified as potential ecological receptors.

Berlayer Creek is a natural stream positioned between the Keppel Club and Former BP Oil Refinery site, surrounded from both sides by mangrove forest. It is a habitat of high ecological value as mangrove forests are uncommon in Singapore and species of conservation significance have been identified during biodiversity baseline

study (refer to the Section 7.4 of this Report). The findings of surface water and groundwater relationship analysis (as detailed in the Section 9.4.2.7) show that groundwater may partially be feeding the stream. However, hydrological analysis (refer to Section 8.4.2.1 of this Report) showed that the main contributor to Berlayer Creek's water quantity is surface water originating from upstream catchments and is highly influenced by tidal fluctuations of the sea (i.e. flowing upstream during flood tide and flowing downstream during ebb tide). Given its high dependency on the surface water sources and limited dependency on groundwater, this ecological receptor is categorised as **Priority 2**.

Ponds within Keppel Club are man-made watercourses which mostly receive surface runoff and rainfall from the surrounding areas and potentially baseflow contribution from groundwater. However, they do not provide habitats for species of conservation significance. Furthermore, they are not connected to larger watercourses (i.e. Berlayer Creek, sea) and hence are considered to be of low importance in terms of ecological linkage. Therefore, this ecological receptor is categorised as **Priority 3**.

The Marine Area located in the south of the Study Area is an area with several distinctive habitats with ecological significance ranging from moderate (i.e. soft sediment seabed and sandy seabed) to high (i.e. seagrass meadow and rocky shore). However, it is expected that habitats and biocenosis found in this area will be highly dependent on surface (marine) water conditions and not on groundwater conditions. Hence, the ecological receptors in the Marine Area are assessed to be **Priority 3** ecological receptors.

Bukit Chermin is located in the southeast part of the site and it represents a habitat of high ecological value (i.e. native-dominated secondary forest). Furthermore, Bukit Chermin has the highest abundance of conservation significant plant species out of all habitats present within the Study Area. Based on the hydrology baseline study, there are no permanent watercourses at Bukit Chermin. This implies that the biodiversity found in this area might be partly dependent on the groundwater levels, besides other water sources, such as rainfall. Hence, the sensitivity of this ecological receptor (i.e. habitat and biocenosis of Bukit Chermin) is assessed to be **Priority 2**.

Urban vegetation within the Keppel Club (i.e. turf, shrubs, trees) occupies majority of the Study Area and it is a habitat that is commonly found in Singapore, comprising of parks, lawns and other types of vegetation managed and maintained by humans. However, due to its regional position (i.e. in the proximity of Southern Ridges) it is considered to be of moderate ecological significance, mostly due to its moderate importance in ecological linkage of the surrounding areas of higher ecological value. This ecological sensitive receptor has been assessed as **Priority 3**.

Impact intensity due to proposed pre-construction and construction activities is assessed to be **Low**, under the assumption that the proposed minimum control measures are successfully implemented. Therefore, impact consequence is assessed to be **Very Low** (for Priority 3 ecological sensitive receptors i.e. ponds within Keppel Club, Marine Area habitats and biocenosis and urban vegetation within the Keppel Club) to **Low** (for Priority 2 ecological sensitive receptors i.e. habitats and biocenosis of Berlayer Creek and Bukit Chermin**)**. Given the necessity of soil dewatering for certain pre-construction and construction activities (i.e. earthworks, foundation works) likelihood of groundwater level decrease during the construction phase of the Project is assessed to be **Possible/ Occasional**. Hence, the overall impact significance of the groundwater level decrease on the ecological sensitive receptors is assessed to be **Minor.** Therefore, no further mitigation measures were required.

The summary of assessment of impacts due to groundwater level decrease during the construction phase of the Project is shown in Table 9-17.

9.7.1.2 Impacts due to Soil and Groundwater Contamination

Based on available historical land use data (refer to Section 4.1 of this Report), the potential contamination severity from past uses of area which is currently Keppel Club (i.e. nutmeg plantations, mangrove forest, residential developments) is likely to be low. Furthermore, soil baseline analytical results did not show signs of contamination within the Keppel Club.

The activities planned for the construction phase of the Project are expected to generate large amounts of spoil material. The quantity of solid waste stored on site (e.g. excavated soil, debris resulting from demolition activities, construction debris, etc.) is expected to be limited, given the periodical disposal by licenced general and toxic waste contractors as part of minimal controls (as shown in Section 9.6). Handling and storing of soil may expose workers to historically contaminated soil, if any. In the event that contaminated soil or groundwater are encountered during excavations, implementation of the measures detailed in Figure 9-24 and Figure 9-25 will ensure that the contaminated soil and/or groundwater is properly managed and disposed.

Besides historical contamination, another potential mechanism to soil and groundwater contamination is through leakage and seepage of contaminants originating from toxic waste that is stored on site as well as from chemicals used and stored on site. The quantity of toxic waste stored on-site is expected to be limited, with the assumption that generated waste will be periodically removed and disposed off-site by licensed Toxic Industrial Waste (TIW) contractors during the construction phase. Chemicals used during the construction phase will be stored at designated sheltered area with access-controlled entrance and concrete bund walls or in storage containers with good ventilation or on spill pallets. In the event of chemical spillage, spill kits will be available on site to be operated by an emergency response team competent in their use.

The overall sensitivity of identified human receptors in the Study Area is considered as **Priority 2**. Ecological receptors have been categorized as **Priority 2** (i.e. habitats and biocenosis of Berlayer Creek and Bukit Chermin) and **Priority 3** (i.e. habitats and biocenosis of Marine Area, man-made watercourses within the Keppel Club and urban vegetation within the Keppel Club), based on their ecological significance and dependence of groundwater.

Given the historical land use and assuming that proposed minimum controls are successfully implemented (and approved by the relevant Agencies, where applicable) it is unlikely that discharge, spillage and/or leakage from spoil, toxic waste and chemicals will be in quantity that may adversely impact the environment (i.e. soil and groundwater). Furthermore, if the potential contamination occurs, it will most likely cause localised impacts to soil and groundwater quality which are unlikely to extend beyond the Study Area and which will be possible to remediate. Therefore, the impact intensity is considered to be **Low.** The impact consequence for human sensitive receptors is assessed to be **Low**, while the impact consequence for ecological sensitive receptors is assessed to be from **Very Low** to **Low.** With the assumption that the proposed minimum control measures have been implemented, proper mandatory training for workers regarding environmental management and spill management has been conducted and regular site inspections are carried out, the likelihood of occurrence during the construction phase is expected to be **Occasional**. It should be noted that, based on the estimated groundwater flow direction, Bukit Chermin is located upgradient from the rest of the site. Therefore, it is **Unlikely** that the potential contamination from construction site might spread to groundwater underlying Bukit Chermin.

Overall, based upon the assessment of the likelihood and consequences, and considering the routine, standard industry practices implemented during the construction phase of the Project, the potential impacts on human sensitive receptors due to soil and groundwater contamination are assessed to be **Minor**. The overall impact on ecological receptors is assessed to be **Negligible** to **Minor**. Therefore, no further mitigation measures were required.

It should be noted that previously carried out soil investigation study at Former BP Oil Refinery showed exceedances of arsenic, DDD/DDE/DDT in soil and barium, zinc, DDD/DDE/DDT and mineral oils in groundwater above their respective DIVs (refer to the Section 9.4.2). However, as no activities are planned at the Former BP Oil Refinery during the construction phase of the Project and it is not expected that visitors of Berlayer Creek will come in contact with soil/groundwater originating from the Former BP Oil Refinery, the likelihood of potential contamination is considered to be **Unlikely**. Hence, the overall impact significance is assessed to be **Negligible**.

The summary of assessment of impacts due to soil and groundwater contamination during the construction phase of the Project is shown in Table 9-17.

Table 9-17 Summary of soil and groundwater impact assessment for the construction phase of the Project

Impact	Source of Impact	Environmental Parameter Affected	Sensitive Receptor Affected	Receptor Sensitivity	Impact Intensity	Impact Consequence	Impact Likelihood	Impact Significance
Human Receptors								
Groundwater Level Decrease	• Decreased infiltration into the ground due to increased runoff from hard standing surfaces • Groundwater extraction during pre-construction and construction activities that require soil dewatering	• Groundwater Level	Humans within and in the vicinity of the site	Priority 3	Low	Very Low	Unlikely	Negligible
Adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater	• Seepage of contaminants (if encountered) from excavated soil and extracted groundwater, soil erosion of exposed soil • Discharge of toxic chemical waste and/or leakage of chemicals used for refuelling and maintenance of vehicles,	• Soil Quality • Groundwater Quality	On-site construction workers and permanent off-site residents downgradient of the Study Area	Priority 2	Low	Low	Possible/ Occasional	Minor
			Off-site visitors downgradient of Study Area	Priority 2	Low	Low	Possible/ Occasional	Minor

Impact	Source of Impact	Environmental Parameter Affected	Sensitive Receptor Affected	Receptor Sensitivity	Impact Intensity	Impact Consequence	Impact Likelihood	Impact Significance
	machinery and equipment							
Ecological Receptors								
Disturbances in habitats and/or reduction in size of species' population and threat to species' long-term viability	• Decreased infiltration into the ground due to increased runoff from hard standing surfaces • Groundwater extraction during construction activities that require soil dewatering	Groundwater Level	Habitat and biocenosis of Berlayer Creek	Priority 2	Low	Low	Possible/ Occasional	Minor
			Habitat and biocenosis of Bukit Chermin	Priority 2	Low	Low	Possible/ Occasional	Minor
			Urban Vegetation within Keppel Club	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Man-made Watercourses within Keppel Club	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Seagrass Meadow	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Rocky Shore	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Soft Sediment Seabed	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Sandy Seabed	Priority 3	Low	Very Low	Possible/ Occasional	Minor
	• Seepage of contaminants (if encountered) from excavated soil and extracted	• Soil Quality • Groundwater Quality	Habitat and biocenosis of Berlayer Creek	Priority 2	Low	Low	Possible/ Occasional	Minor
			Habitat and biocenosis of Bukit Chermin	Priority 2	Low	Low	Unlikely	Negligible

Impact	Source of Impact	Environmental Parameter Affected	Sensitive Receptor Affected	Receptor Sensitivity	Impact Intensity	Impact Consequence	Impact Likelihood	Impact Significance
	groundwater, soil erosion of exposed soil • Discharge of toxic chemical waste and/or leakage of chemicals used for refuelling and maintenance of vehicles, machinery and equipment		Urban Vegetation within Keppel Club	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Man-made Waterbodies within Keppel Club	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Seagrass Meadow	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Rocky Shore	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Soft Sediment Seabed	Priority 3	Low	Very Low	Possible/ Occasional	Minor
			Sandy Seabed	Priority 3	Low	Very Low	Possible/ Occasional	Minor

9.7.2 Operational Phase

After the construction phase has been completed, it is expected that human activity will increase within the Study Area. As described in the Section 9.3.2 of this Report, permanent land use change (i.e. increase in impervious surfaces) might cause decreased infiltration of surface water and rainfall into the ground. Furthermore, chemicals used during the maintenance and landscaping activities might accidentally leak into the ground, affecting underlying soil's and groundwater's quality. The detailed impact assessment for the operational phase of the Project is given in the following sub-sections.

9.7.2.1 Impacts due to Groundwater Level Decrease

Based on the footprint of the future development, majority of the existing golf course will be converted into high-rise building developments and road. This will increase the percentage of impervious surfaces, consequently reducing the infiltration of surface water and rainfall into the ground which could possibly impact the groundwater levels on site. Furthermore, high-rise developments might require deep foundations which could also impact the groundwater levels and baseflow to the surrounding watercourses such as Berlayer Creek. However, it is anticipated that after the construction phase, the water table in the long-term will equilibrate to its new groundwater level. Furthermore, parks and open spaces that will surround the future residential development and two ponds in the central and northern part of the site are expected to have positive impact on the stabilisation of the future groundwater level. Therefore, the impact intensity of the future proposed developments on the groundwater levels is assessed to be **Low**.

As groundwater is currently not used for any beneficial purposes (i.e. drinking and industrial, irrigation) in Singapore, it is **Unlikely** that the potential groundwater level decrease will affect human receptors. Hence, the overall impact on human receptors due to the groundwater level decrease is assessed to be **Negligible**.

Ecological receptors identified in the surrounding area for the operational phase of the Project might potentially be affected by the groundwater level decrease due to the permanent land use change. The future urban vegetation within the Study Area and marine habitats and biocenosis are identified as **Priority 3** sensitive receptors while the habitats and biocenosis of Berlayer Creek and Bukit Chermin are categorised as **Priority 2.** Therefore the impact consequence on ecological receptors is assessed to be **Very Low** to **Low** (based on the impact consequence matrix [refer to the Table 6-7]). Given that the decreased groundwater level is expected only in the early stages of the operational phase (until the groundwater level equilibrates long-term) and during dry weather conditions, likelihood is assessed to be **Occasional**. Therefore, the overall impact (i.e. impact significance) of the groundwater level decrease on the ecological sensitive receptors is assessed to be **Minor**.

The summary of assessment of impacts due to groundwater level decrease during the operational phase of the Project is shown in Table 9-18.

9.7.2.2 Impacts due to Soil and Groundwater Contamination

As the area becomes operational, increased human activity (both from permanent future residents and visitors) will possibly lead to higher generation of solid and liquid waste. Furthermore, the maintenance of proposed green areas, open spaces and parks might require the usage of certain chemicals (e.g. pesticides) which may or may not be stored on the site. If not managed properly, leachate from waste generated and collected on the site and accidental leakage of chemicals stored and used on site may infiltrate the ground, potentially affecting soil and groundwater quality. However, it is expected that during the operational phase, the Study Area will have little use of hazardous substances and chemicals. Furthermore, small localised contamination that may happen in certain areas as a result of accidental spillages and leakages will most likely cause limited impacts to soil and groundwater quality and are unlikely to extend beyond the Study Area. Therefore, the impact intensity is considered to be **Low.**

Maintenance workers at the Study Area may come in contact with the potentially contaminated soil and/or groundwater during maintenance activities. Given that the human receptors are categorised as Priority 2 (refer to the Section 9.5.2) and that the impact intensity is **Low**, the impact consequence is assessed to be **Low**. As accidental spills and leaks are expected to occur **Rarely**, the overall impact significance of potential soil and groundwater contamination on human sensitive receptors is assessed to be **Minor**.

Ecological receptors have been categorized as **Priority 2** (i.e. habitats and biocenosis of Berlayer Creek and Bukit Chermin) and **Priority 3** (i.e. habitats and biocenosis of Marine Area, future urban vegetation within the Keppel Club), based on their ecological significance and dependence of groundwater. As the impact intensity is assessed to be **Low**, the impact consequence will be **Very Low** for Priority 3 ecological sensitive receptors and **Low** for

Priority 2 ecological sensitive receptors (based on the impact consequence matrix [refer to the Table 6-7]). The potential accidental spills and leaks of chemicals are expected to occur **Rarely** on the site. It should be noted that Bukit Chermin is located upgradient of the rest of the Study Area (refer to the Section 9.4.2 of this Report). Hence, it is **Unlikely** that the potential contamination might spread to the underlying groundwater of Bukit Chermin. Based on the assessed impact consequences and their likelihoods, the overall impact significance of potential soil and groundwater contamination during the operational phase of the project on ecological sensitive receptors is assessed to be **Negligible** to **Minor**.

The summary of assessment of impacts due to groundwater level decrease during the operational phase of the Project is shown in Table 9-18.

Table 9-18 Summary of soil and groundwater impact assessment for the operational phase of the Project

Impact	Source of Impact	Environmental Parameter Affected	Sensitive Receptor Affected	Receptor Sensitivity	Impact Intensity	Impact Consequence	Impact Likelihood	Impact Significance
Human Receptors								
Groundwater Level Decrease	• Decreased infiltration into the ground due to more areas with impervious surfaces in the new development	• Groundwater Level	Humans within and in the vicinity of the site	Priority 3	Low	Very Low	Unlikely	Negligible
Adverse impact on human health due to direct or indirect exposure to contaminated soil and groundwater	• Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater • Leakage of solid waste leachate into the underlying soil and/or groundwater • Discharge or leakage of waste and chemicals into the soil and groundwater	• Soil Quality • Groundwater Quality	Maintenance workers and future residents of the proposed development	Priority 2	Low	Low	Less Likely/ Rare	Minor
			Visitors of future development and visitors and permanent residents in the vicinity of the proposed development	Priority 2	Low	Low	Less Likely/ Rare	Minor
Ecological Receptors								
Disturbances in habitats and/or reduction in size of species' population and	• Decreased infiltration into the ground due to more areas with impervious	Groundwater Level	Habitat and biocenosis of Berlayer Creek	Priority 2	Low	Low	Less Likely/ Rare	Minor
			Habitat and biocenosis of Bukit Chermin	Priority 2	Low	Low	Less Likely/ Rare	Minor

Impact	Source of Impact	Environmental Parameter Affected	Sensitive Receptor Affected	Receptor Sensitivity	Impact Intensity	Impact Consequence	Impact Likelihood	Impact Significance
threat to species' long-term viability	surfaces in the new development		Proposed Urban Vegetation within Study Area	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Seagrass Meadow	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Rocky Shore	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Soft Sediment Seabed	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Sandy Seabed	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
	• Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater • Leakage of solid waste leachate into the underlying soil and/or groundwater • Discharge of toxic chemical waste and/or leakage of chemicals used for refuelling and maintenance of vehicles, machinery and equipment	• Soil Quality • Groundwater Quality	Habitat and biocenosis of Berlayer Creek	Priority 2	Low	Low	Less Likely/ Rare	Minor
			Habitat and biocenosis of Bukit Chermin	Priority 2	Low	Low	Unlikely	Negligible
			Proposed Urban Vegetation within Study Area	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Seagrass Meadow	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Rocky Shore	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Soft Sediment Seabed	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible
			Sandy Seabed	Priority 3	Low	Very Low	Less Likely/ Rare	Negligible

9.8 Recommended Mitigation Measures

In this section, no mitigation measures are proposed to further minimise the adverse impacts on the environment as none of the impacts on the sensitive receptors have been assessed to be Moderate or Major.

9.9 Residual Impacts

No residual impact assessment has been undertaken as no Moderate or Major impact significance on sensitive receptors were assessed.

9.10 Summary of Key Findings

A soil and groundwater baseline study was carried out as part of the EIS to determine the soil profile and hydrogeological conditions of the Study Area, and also to ascertain the presence of possible pollutants in the underlying soil and groundwater that may impact local vegetation and downstream watercourses.

Based on the information obtained during the soil investigation study, the soil profile encountered at the Study Area generally consisted of silty clay. Furthermore, layers of clay, sandy clay as well as layer of small sawdust alike wood pieces were also encountered within the Study Area.

Soil samples collected from the Study Area reported detections of metals (i.e. arsenic, antimony, barium, cadmium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel and zinc), PAHs (i.e. phenanthrene, fluoranthene, benzo[a] anthracene, chrysene, benzo(a)pyrene, benzo[ghi] perylene, benzo[k] fluoranthene, indeno[1,2,3cd] pyrene), phthalates (total), pyridine and TPHs. These detections were all below the Dutch Intervention Values (DIV).

Based on the gauging records of MW1 through MW7, measured weekly between May 24, 2021 to August 16, 2021, the average stabilized water level (SWL) ranged from 0.50 m reduced level (mRL) (i.e. 2.196 m bgs) in MW1 to 5.39 mRL (i.e. 1.94 m bgs) in MW2. By examining groundwater elevation data, it can be seen that the groundwater level in majority of the wells show limited oscillations and variations over time. Furthermore, no significant difference between groundwater levels during low and high tide conditions was observed. Based on the groundwater elevation contour maps, groundwater flow within Study Area follows the topography of the site and generally is inferred to be flowing towards major watercourses within the Study Area (i.e. Berlayer Creek and Marine Area).

Groundwater samples collected from the Study Area reported detections of metals (i.e. arsenic, antimony, barium, chromium, cobalt, copper, molybdenum and zinc). The concentrations of these metals were all below their respective DIVs and Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZGFMWQ) for freshwater (95% level of protection), except for concentrations of cadmium, chromium and copper in MW1, copper in MW7 and zinc in MW2, MW3 and MW7, where exceedances of the ANZGFMWQ were detected.

Previously carried out soil investigation study within Former BP Oil Refinery site showed concentrations of arsenic and DDD/DDE/DDT in soil samples above their respective DIVs. Groundwater samples collected during this study reported cconcentrations of barium, DDD/DDE/DDT and mineral oil that exceeded their respective DIVs, concentration of nickel exceeded ANZGFMWQ for freshwater (95% level of protection), while concentration of zinc exceeded both DIV and ANZGFMWQ for freshwater (95% level of protection). No such exceedances were reported during the current baseline study, with the exception of zinc which reported exceedance of the ANZGFMWQ in MW2, MW3 and MW7.

The relationship between surface water and groundwater within Study Area was analysed by comparison of observed and estimated surface and groundwater levels (taking into consideration their fluctuations) as well as by comparing their individual hydrochemical signatures. This analysis showed that the influence of brackish water from Berlayer Creek is the highest at its midstream where hydrochemical facies of surface water and groundwater are the most similar. This is probably due to relatively low groundwater levels of the surrounding area which allows the intrusion of braskish water of the Berlayer Creek, especially during high tides. Intrusion of saline water was also observed in easternmost part of the site, in the vicinity of the tidal-influenced drain D5. Groundwater underlying areas with higher elevations has shown hydrochemical signature that resembles more of freshwater (i.e. calcium-carbonate type) which indicates that the groundwater in this area could be replenishing from freshwater sources such as surface runoff and rainfall.

The soil and groundwater analytical results showed that the groundwater does not pose potentially unacceptable risks to future construction workers and residents of the proposed developments as all of the parameters reported

were below their respective DIVs. It is understood that presently groundwater in Singapore is not extracted for beneficial purposes (i.e. as a source for potable water, industrial water or for irrigation purposes). Therefore, human receptors were classified as Priority 3 with regards to impacts from potential groundwater level changes and as Priority 2 with regards to potential soil and groundwater quality changes during construction and operation phase of the Project.

Based on the assessment of the ecological value of the habitats and biocenosis of the Study Area as well as on their dependency of the groundwater, identified ecological receptors were classified as Priority 3 and Priority 2 receptors. Given the moderate ecological value of urban vegetation within Keppel Club and low ecological value of man-made watercourses within Keppel Club, these receptors were classified as Priority 3. Although majority of marine habitats have been identified to have high ecological value (i.e. seagrass meadow, rocky shore, soft sediment bed) they have been also classified as Priority 3 receptors as it is expected that they will not be dependent on groundwater conditions. Habitats and biocenosis of Berlayer Creek and Bukit Chermin were identified to have high ecological value. Furthermore, soil and groundwater baseline study has showed that groundwater may be potentially feeding into the streams and supporting the habitats. Therefore, these two ecological receptors were classified as Priority 2.

The potential impacts on soil and groundwater resources associated with the activities conducted during the construction phase of the Project include groundwater level decrease due to groundwater extraction and decreased infiltration into the ground due to increase of impervious surfaces. Soil and groundwater quality could also be affected due to seepage of contaminants from excavated contaminated soil (if encountered) and extracted groundwater, soil erosion as well as leakage of toxic chemical waste and chemicals.

During the operational phase of the Project, it is anticipated that the impact on soil and groundwater quality will be limited as use of chemicals and generation of toxic chemical waste is expected to be of limited quantities. Increase of impervious surfaces within the Study Area are expected to have an impact on groundwater levels. However, it is anticipated that after the construction phase the water table in the long-term will equilibrate to its new groundwater level. The potential impact from the groundwater level decrease is additionally reduced as proposed future landscape features such as ponds will most likely have positive impact on groundwater stabilisation.

Based upon implementation of the minimum controls, the prediction and evaluation exercise of soil and groundwater impacts showed that there will be **Negligible** to **Minor** impact during both construction and operational phase of the Project. Therefore, no additional mitigation measures have been proposed to further minimise the adverse effects on the environment.

Table 9-19 Summary of soil and groundwater impact assessment

Potential Source of Impact	Impact Significance with Minimum Control	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase		
Decrease of groundwater level due to pre-construction and construction activities and land use change	Negligible to Minor	N.A.
Soil and groundwater contamination due to seepage of contaminants originating from excavated soil, chemicals and waste stored on the site	Negligible to Minor	N.A.
Operational Phase		
Decrease of groundwater level due to permanent land use change	Negligible to Minor	N.A.
Soil and groundwater contamination due to seepage and leakage of contaminants originating from generated waste and chemicals stored and/or used on the site	Negligible to Minor	N.A.
Note: NA – Not Applicable; no Moderate or Major Impacts have been identified		

10 Air Quality

10.1 Introduction

This section presents the air quality impact assessment for the construction and operational phases of the Project following the general EIS methodology described in Section 6. Air quality impact tends to impact sensitive receptors such as schools, medical institutions, residential area in the vicinity of the Study Area, therefore the Assessment Area for air quality is well beyond the Study Area and focused largely on the sensitive receptors (see Section 6.2.1). In line with the applicable legislation detailed in Section 5, the key steps for conducting the air quality impact assessment are as follows:

- Review existing baseline monitoring data (if any) and to conduct and evaluate existing air quality in the Assessment Area;
- Identify and classify sensitivity of the area around the construction worksite or project footprint;
- Understand the proposed activities during construction and operational phases;
- Conduct an impact assessment to qualitatively assess air quality impacts during construction and operation of the Project;
- Evaluate qualitative air quality impacts against nominated assessment criteria;
- Specify mitigation measures to be implemented;
- Determine the overall significance of the residual air quality impacts after implementation of mitigation measures; and
- Recommend a suitable monitoring and management plan.

10.2 Methodology and Assumptions

The sections below outline the methodology used in the air quality impact assessment for both construction and operational phases, including the determination of Assessment Area and baseline collection methodology.

10.2.1 Assessment Area and Screening of Air Sensitive Receptors

The Assessment Area for air quality impact assessment is recommended as 350 m and 50 m from the construction worksite areas for human and ecological receptors respectively during construction phase in accordance with UK IAQM guidance [R-32] and 250 m around the project footprint for operational phase. During the scoping phase for this EIS, an initial screening of receptors in the Assessment Area was conducted as per Section 6.2.2 and detailed in Section 10.4, in order to determine the areas which are sensitive to potential construction impacts detailed in Section 10.3.

10.2.2 Air Quality Baseline Study

Baseline air quality monitoring includes primary data collection in the form of baseline ambient air quality monitoring in the Assessment Area. Of the criteria pollutants generally measured as part of ambient air monitoring, such as CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$, this baseline monitoring only focuses on dust levels i.e. PM_{10} and $PM_{2.5}$, since these are the major pollutants that are likely to have the biggest impact on the ambient air quality as a result of the Project. The purpose of the baseline monitoring is to understand what the natural conditions of these air quality parameters are, so that in the event that a repeat monitoring event is to be conducted during the construction and/or operational phases of the Project, this monitoring data can be used as a reference of the existing baseline prior to any disturbance in the Assessment Area.

Air quality has both short-term and long-term targets which vary from a 1-hr target to an annual target. Owing to the timeframe of the Project, annual monitoring cannot be accommodated in this study; however, a short-term monitoring baseline will be established. With varying seasonal fluctuations, it is understandable that wind flow and direction will vary throughout the year, and hence short-term baselines shall also fluctuate. However, a correlation, be it direct or indicative between the site baseline and NEA's central area monitoring data, will be useful for future

monitoring as it provides a reliable context for any future comparisons based on the relation between the two datasets. Hence, secondary data, such as NEA's long-term air quality data, hourly Pollution Standard Index (PSI), and meteorological data observed in the vicinity of the Assessment Area have been collected from publicly available sources.

10.2.2.1 Secondary Data Collection (Review of Background Data)

Desktop research consists of a review of secondary data (including existing land use and development activities, satellite images, etc.) which aids in determining the baseline air monitoring location. The information retrieved during the desktop research comprised of publicly available data from government and technical agencies, existing available data, relevant articles, and other online sources.

10.2.2.1.1 NEA Long Term Ambient Air Quality

NEA carries out routine monitoring of ambient air quality through the Telemetric Air Quality Monitoring and Management System (TAQMMS). This system comprises 22 monitoring stations (refer to Figure 10-1) which are located around Singapore and linked into a Central Control System (CCS). The air quality monitoring stations are distributed amongst urban, industrial, suburban, coastal, and roadside locations. General NEA ambient air monitoring results for Singapore over the period 2015 – 2019 have been presented and compared with Singapore Long Term Ambient Air Quality Targets in Section 10.5.2.1.1. Air pollution control in Singapore is governed by legislation listed in Section 5.



Figure 10-1 NEA ambient air quality monitoring stations in Singapore [R-45]

10.2.2.1.2 Hourly Pollution Standards Index (PSI) and 24-hour PM10 and PM2.5 Concentrations

PSI (Pollutant Standards Index) is an index to provide accurate and easily understandable information about daily levels of air quality. The concentration levels of particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulphur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), and carbon monoxide (CO) monitored by air monitoring locations located in different parts of Singapore are used to determine the PSI. The PSI value gives an indication of the air quality as shown in Table 10-1. 24-hr $PM_{2.5}$ and PM_{10} PSI readings were available on data.gov.sg for the South Region of Singapore. These data were collected during the same period of primary data collection period and discussed in Section 10.5.2.1.2.

Table 10-1 General air quality descriptor based on PSI value [W-38]

PSI Value	Air Quality Descriptor
0 – 50	Good
51 – 100	Moderate
101 -200	Unhealthy
201 – 300	Very unhealthy
Above 300	Hazardous

10.2.2.1.3 Other Parameters (Rainfall, Temperature, Wind Speed)

Rainfall, temperature, and wind speed can significantly affect the distribution of pollutants. Kampong Bahru is the nearest monitoring station to the Assessment Area, located approximately 1.5km from the Study Area. However, this monitoring location only recorded rainfall data up to October 2016. Hence, only rainfall data up to October 2016 was presented for Kampong Bahru station. Collection of more rainfall data, temperature and wind speed was conducted for the next nearest weather monitoring location, Sentosa Island, located approximately 2km from the Study Area. This weather monitoring station recorded rainfall, temperature and wind speed data. These are discussed in Section 10.5.2.1.3.



Figure 10-2 NEA weather monitoring stations in Singapore [W-36]

10.2.2.2 Primary Data Collection (Survey & Sampling)

Air quality monitoring services were provided by ALS Technichem (S) Pte. Ltd. (ALS). A total of one (1) air monitoring locations were proposed (at the Inception stage), based on the following considerations:

- Identification of ASRs (hospitals, schools, childcare facilities, old age homes, residences, flora and habitats of high ecological value) nearest to the construction worksite areas / project footprint boundary;
- Other ASRs away from the assessment area were eliminated;
- ASRs with areas having ongoing construction were avoided; and
- The closest ASR to the assessment area was selected.

Air quality monitoring was conducted at the monitoring locations for one week on 22 – 29 March 2021, to collect air quality samples for the following air quality parameters:

- Particulate matter smaller than 2.5µm, $PM_{2.5}$; and
- Particulate matter smaller than 10 µm, PM_{10}.

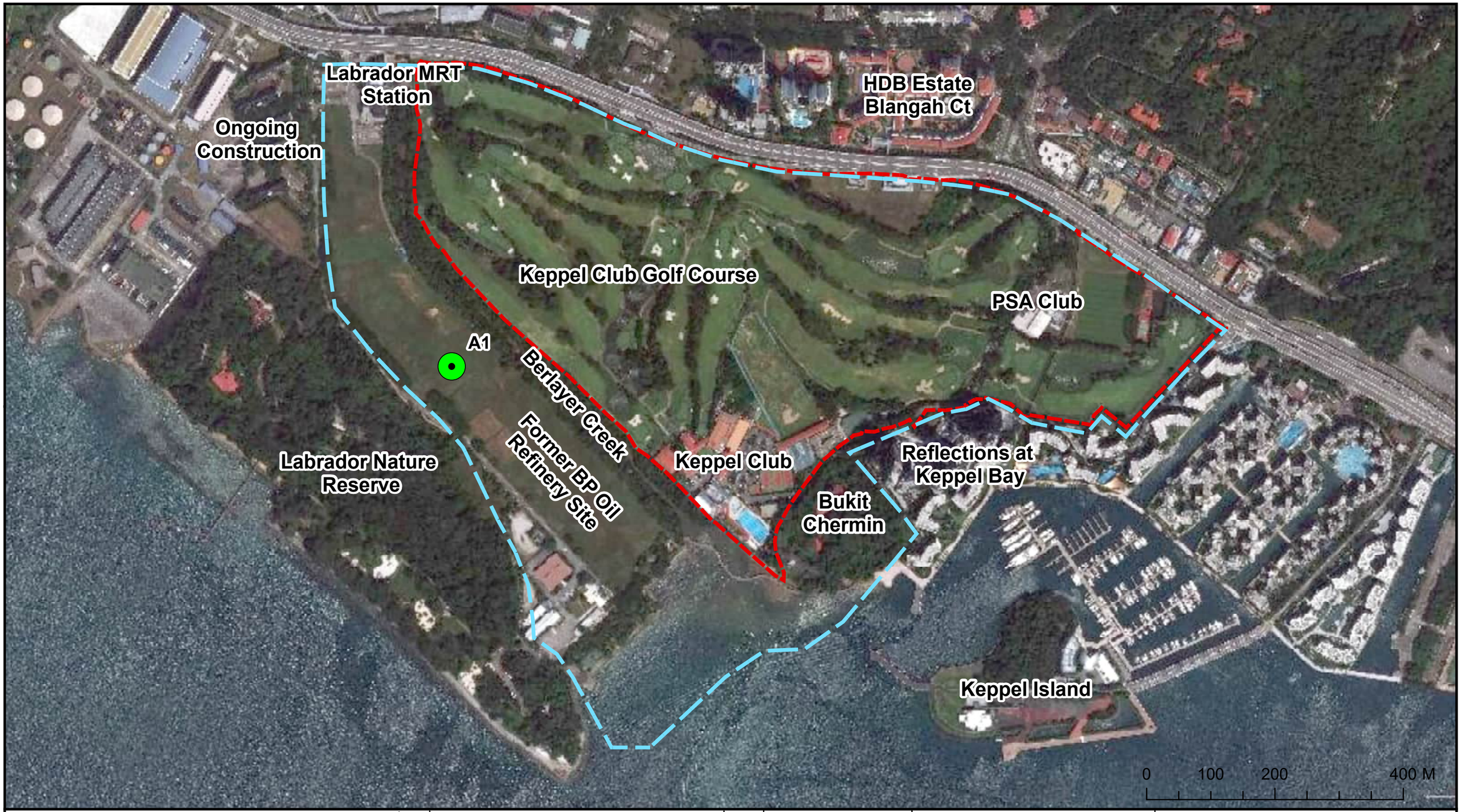
Air quality monitoring was conducted for 1 week within the Assessment Area in order to establish a baseline for existing air quality levels. Following the site survey conducted on 2 December 2020, one (1) monitoring location was identified to represent the site. The Assessment Area is generally quite uniform in its use currently, consisting largely of open green land such as the Former BP Oil Refinery site and Keppel Club golf course with the Berlayer Creek in between. The assessment area is therefore considered to be the natural baseline environment and is contained within one large airshed owing to its uniform landuse; as such, 1 monitoring location was identified to represent the site. The monitoring location is also located in close proximity to the Labrador Nature Reserve, which houses flora, fauna species and habitats of high ecological value. This is the one of the rare areas within the assessment area with clear sky view which is an USEPA best practices requirement for air quality monitoring. This has been proposed and accepted in the Inception Report.

The monitoring location was chosen so that the equipment was more than 1 metre from any buildings or structures, and not shaded by structures or trees. This is necessary to ensure adequate airflow. The indicative air quality monitor was installed at 1.8m from ground level in the breathing zone. Baseline air monitoring locations are provided in Table 10-2 and Figure 10-3.

TSI Environmental DustTrak Monitoring System was used for the purpose of PM_{10} and $PM_{2.5}$ monitoring. Concentrations of PM_{10} and $PM_{2.5}$ are measured by the light scattering laser photometer principle using an Environmental DustTrak Monitoring System coupled with a heated inlet for 5-minute interval data logging over a 7-day continuous sampling period. The photometer uses an ellipsoidal reflector and simple optical components to collect the laser-scattered light and to focus it onto a photodiode array. The mass and particle size are determined by detecting how the particles scatter light. For further details of the Air Quality Monitoring, please refer to Appendix T

Table 10-2 Rationale for the selection of proposed air quality monitoring locations with photos

S/N	Monitoring Location	Justification	Photo of Monitoring Location
A1	Former BP Oil Refinery site	The ambient air quality in the assessment area will be affected by low traffic along Labrador Villa Road and Port Road, and also West Coast Highway and Telok Blangah Road in the north. The assessment area is contained within 1 large airshed and hence, 1 monitoring location is considered representative. This is the one of the rare areas within the assessment area with clear sky view which is an USEPA best practices requirement for air quality monitoring.	



Legend

- Air Quality Monitoring Location
- Overall EIS Study Area
- Development Area

N

Rev.	Date	By	Description	Chk'd	App'd
-	DEC 2021	HHL	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: Housing & Development Board; Urban Redevelopment Authority

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

Proposed Air Quality Monitoring Location

Designed	Checked	Approved
LAL	NHT	JAG
	Drawn: HHL	Date: APR 2022

Figure No. : **10-3** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

Note: Source of basemap - Google Earth Map

THIS DRAWING IS COPYRIGHT

10.2.3 Prediction and Evaluation of Impact Assessment

The air quality impact assessment includes evaluation of air quality impacts from construction and operational activities.

10.2.3.1 Construction Phase

Air quality impacts are assessed using the methodology outlined in the document entitled “Guidance on the Assessment of Dust from Demolition and Construction” which was published by the UK IAQM in 2014 for impacts during construction phase. This methodology has been adapted to the general methodology outlined in this EIS.

10.2.3.1.1 Identification of Potential Sources of Air Quality Impacts

It is important to identify potential sources of air quality impact in the vicinity of the Assessment Area. While conducting the assessment, a typical construction machinery is assumed to be used during the construction equipment and activities. These have been detailed in Section 10.3.1.

10.2.3.1.2 Identification of Sensitive Receptors

Identification of Air Sensitive Receptors (ASRs) in the Assessment Area was subsequently undertaken. IAQM identifies an entire area around one continuous stretch of construction footprint as a category or sensitive receptor. It does not distinguish between each unit, household or block present in the area as a separate ASR but designates the whole area as same category of sensitivity based on an overall location, number, proximity and scale to the construction activity. This approach thereby adopts a conservative principle to air quality. A further discussion on Receptor Sensitivity is presented in Section 10.4.1.

Sensitive areas identified as Priority 1, Priority 2, and Priority 3 for air quality during the screening process have been examined in the Impact Assessment in this EIS in order to provide a more refined classification for Receptor Sensitivity. Sensitivity of the area has been determined based on the usage, number of receptors, distance from the construction footprint, and the current context of sensitive buildings in Singapore.

10.2.3.1.3 Understanding of Baseline Air Quality

Primary and secondary data were collected to understand the baseline air quality of the Assessment Area. NEA’s PSI data available from the nearest monitoring station was also reviewed for the Assessment Area. In addition, baseline air quality data was collected for representative location near the construction footprint. The baseline air quality review and data measured is discussed in Section 10.5.2.

10.2.3.1.4 Impact Intensity Definition

The impact intensity was determined by reviewing the scale of construction activities and classifying them as Low, Medium or High. The IAQM Guidance document provides example definitions for determining impact intensity for earthworks (based on construction footprint, heavy duty vehicles movement, formation of bunds, and material moved), for construction (based on total building volume, on-site concrete batching), for trackout (based on heavy duty vehicle outward movement, surface material, and unpaved road lengths), and for demolition (based on total demolition volume, construction material, on-site crushing of material, and height of demolition activity). The definition of parameters is defined in Table 6-6 in Section 6.4.2. It should be noted that in each case, not all criteria need to be met and that determination of magnitude is also based on the professional judgment of the air quality consultant. If the areas around the construction footprint are rated as High for one activity and Medium or Low for the other activities, the overall impact intensity result is classified as High for that site as those multiple activities may be occurring concurrently.

10.2.3.1.5 Classification of Overall Consequence

The dust impact assessment therefore evaluates the overall consequence prior to the implementation of mitigation. The work site has been assessed by considering both the impact intensity and the Receptor Sensitivity to obtain an overall consequence rating. Since the definition of impact intensity is different for each activity, the overall consequence for each activity is explained in matrices shown in Table 10-3 to Table 10-6. Each activity for the work site has been rated as being High, Medium, Low, or Imperceptible in terms of overall consequence based upon pre-mitigation measures.

Table 10-3 Overall consequence of the air impact analysis (Earthworks)

Receptor Sensitivity / Impact Intensity	Priority 3	Priority 2	Priority 1
Negligible	-	-	-
Low	Imperceptible	Low	Low
Medium	Low	Medium	Medium
High	Low	Medium	High

Table 10-4 Overall consequence of the air impact analysis (Construction)

Receptor Sensitivity / Impact Intensity	Priority 3	Priority 2	Priority 1
Negligible	-	-	-
Low	Imperceptible	Low	Low
Medium	Low	Medium	Medium
High	Low	Medium	High

Table 10-5 Overall consequence of the air impact analysis (Trackout)

Receptor Sensitivity / Impact Intensity	Priority 3	Priority 2	Priority 1
Negligible	-	-	-
Low	Imperceptible	Imperceptible	Low
Medium	Low	Low	Medium
High	Low	Medium	High

Table 10-6 Overall consequence of the air impact analysis (Demolition)

Receptor Sensitivity / Impact Intensity	Priority 3	Priority 2	Priority 1
Negligible	-	-	-
Low	Imperceptible	Low	Medium
Medium	Low	Medium	Medium
High	Medium	High	High

10.2.3.1.6 Establishing Impact Significance

Impact Significance is evaluated by considering both the overall Consequence and the Likelihood of occurrence of significant adverse impacts. The Likelihood of occurrence may be defined as remote, rare, occasional, regular, and continuous as per criteria listed in Table 6-8. Impact Significance has been evaluated in accordance with the matrix presented below in Table 10-7. The IAQM methodology does not differentiate between imperceptible and very low Consequences, due to the nature of air impacts as perceived by humans. In order to align the IAQM methodology with the methodology of this report, imperceptible and very low Consequences were consolidated.

Table 10-7 Impact significance matrix for air quality

Likelihood \ Consequence	Imperceptible / Very Low	Low	Medium	High
Remote	Negligible	Negligible	Negligible	Negligible
Rare	Negligible	Minor	Minor	Minor
Occasional	Minor	Minor	Moderate	Moderate
Regular	Minor	Moderate	Moderate	Major
Continuous	Minor	Moderate	Major	Major

10.2.3.1.7 Mitigation Measures Recommendations

Mitigation measures have been proposed for implementation when the Impact Significance is predicted to be Moderate or Major. Where mitigation measures are required, specific mitigation measures have been proposed based on the level of overall Consequence (High, Medium, and Low) as per the IAQM guidance. This is the most efficient way of prescribing dust mitigation measures so that high Consequence areas have the most comprehensive mitigation measures implemented whilst avoiding unnecessary implementation of complex mitigation measures in low Consequence areas.

10.2.3.1.8 Establishing Residual Impact Significance

Following implementation of mitigation measures prescribed in the EIS at the proposed construction footprint, the residual Impact Significance is evaluated using the matrix outlined in Table 10-7. Ideally, the mitigation measures required should be specified within the conditions given for planning permission and should be stipulated in construction contracts.

10.2.3.2 Operational Phase

This methodology below has been used to assess the air quality impact during operational phase of the Project.

10.2.3.2.1 Identification of Potential Sources of Air Quality Impacts

It is important to identify potential sources of air quality impact in the vicinity of the Assessment Area. While conducting the assessment, an increase in traffic volume in the vicinity of the Project during operational phase is assumed. These have been detailed in Section 10.3.2.

10.2.3.2.2 Identification of Sensitive Receptors

Identification of Air Sensitive Receptors (ASRs) in the Assessment Area within 250 m around the Project Footprint was subsequently undertaken. A further discussion on Receptor Sensitivity is presented in Section 10.4.2.

Sensitive areas identified as Priority 1, Priority 2, and Priority 3 for air quality during the screening process have been examined in the Impact Assessment in this EIS in order to provide a more refined classification for Receptor Sensitivity. Sensitivity of the area has been determined based on the usage and the current context of sensitive buildings in Singapore.

10.2.3.2.3 Understanding of Baseline Air Quality

Primary and secondary data were collected to understand the baseline air quality of the Assessment Area. NEA's PSI data available from the nearest monitoring station was also reviewed for the Assessment Area. In addition, baseline air quality data was collected for representative location near the Project Footprint. The baseline air quality review and data measured is discussed in Section 10.5.2.

10.2.3.2.4 Impact Intensity Definition

The impact intensity was determined by reviewing the scale of increase in air quality levels due to traffic volume increase in the vicinity of the Project Footprint by comparing the baseline and predicted traffic volume. The impact intensity is then classified as Low, Medium or High.

10.2.3.2.5 Classification of Overall Consequence

The air quality impact assessment therefore evaluates the overall consequence prior to the implementation of mitigation. The work site has been assessed by considering both the impact intensity and the Receptor Sensitivity to obtain an overall consequence rating. The overall consequence has been rated as being High, Medium, Low, or Imperceptible in terms of overall consequence based upon pre-mitigation measures.

10.2.3.2.6 Establishing Impact Significance

Impact Significance is evaluated by considering both the overall Consequence and the Likelihood of occurrence of significant adverse impacts. The Likelihood of occurrence may be defined as unlikely, rare, occasional, regular, and continuous as per criteria listed in Table 6-8. Impact Significance has been evaluated in accordance with the matrix presented in Table 10-7.

10.2.3.2.7 Mitigation Measures Recommendations

Mitigation measures have been proposed for implementation when the Impact Significance is predicted to be Moderate or Major.

10.2.3.2.8 Establishing Residual Impact Significance

Following implementation of mitigation measures prescribed in the EIS at the proposed Project Footprint, the residual Impact Significance is evaluated using the matrix outlined in Table 10-7. Ideally, the mitigation measures required should be specified within the conditions given for planning permission and should be stipulated in construction contracts.

10.3 Potential Sources of Air Quality Impact

Fugitive particulate emissions from construction and operational activities have the potential to result in adverse impacts on air quality and therefore, public and ecosystem health. Particulate emissions may also generate significant nuisance to receptors near the heavy use construction footprint.

10.3.1 Construction Phase

For human receptors, dust emissions could potentially result in adverse impacts on air quality and public health causing respiratory problems on human. For ecological receptors, dust generated during construction works can have adverse effects upon vegetation restricting photosynthesis, respiration and transpiration. Furthermore, it can lead to phytotoxic gaseous pollutants penetrating the plants. The overall effect can be a decline in plant productivity, which may then have indirect effects on the quality of the affected habitats and associated fauna. Table 10-8 listed potential sources of air quality impact during construction phase of the project.

Table 10-8 Potential air quality impacts during the construction stage

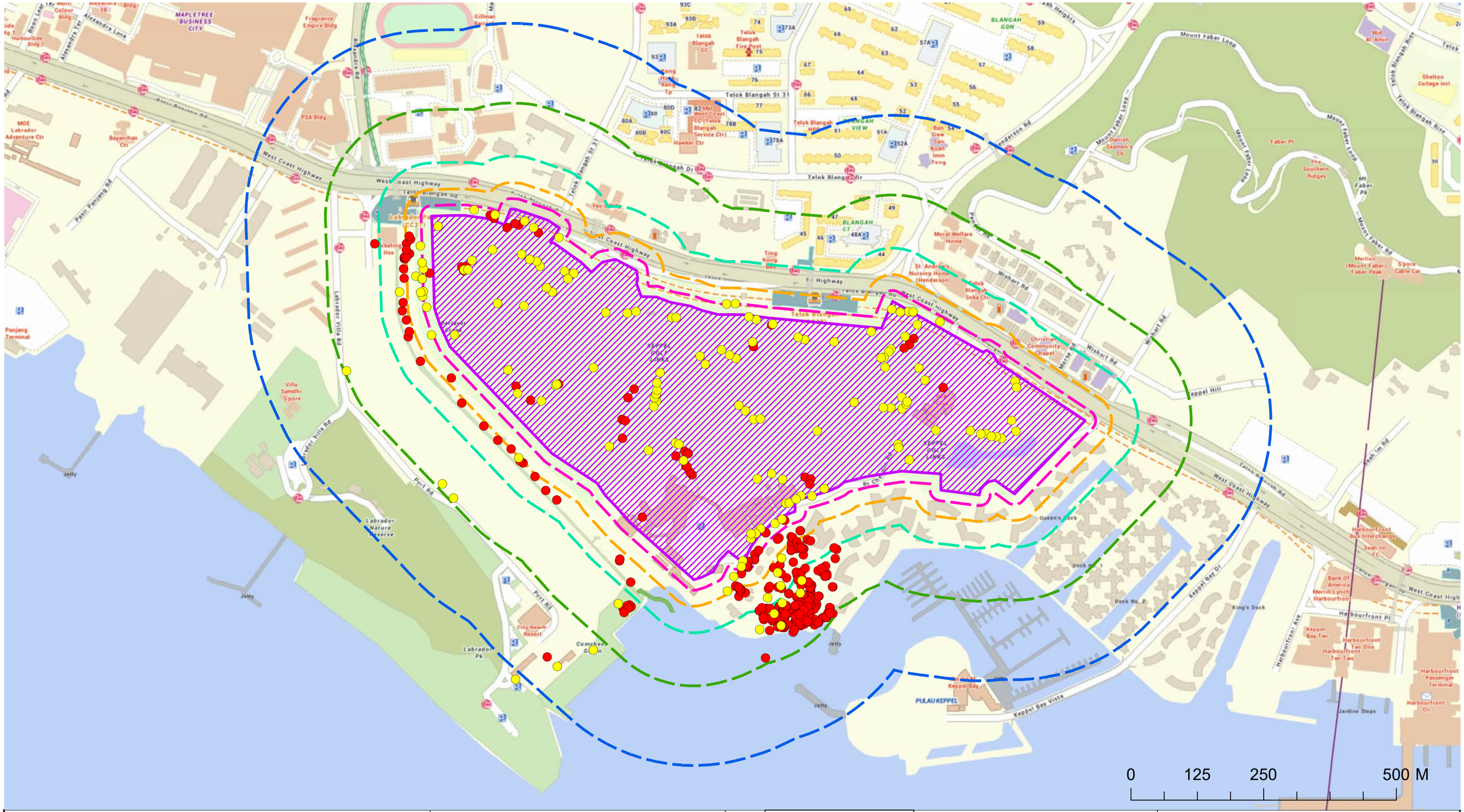
Potential Source of Impacts	Potential Associated Impacts
Dust emissions generated by earthworks processes, including land clearance, soil-stripping, ground levelling, excavation, stockpiling of spoil and landscaping.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.
Dust emissions generated by the construction of new structures, including holding areas and site offices.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.
Dust emissions generated from potential demolition works, if any.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors, including the biodiversity, located nearby heavy construction worksite areas.

Potential Source of Impacts	Potential Associated Impacts
Dust emissions from transport of dust and dirt by dumper trucks for transporting spoil within the site and from the site onto public road network, where it may be deposited and resuspended by vehicles using the network.	Dust emissions could potentially result in adverse impacts on air quality and public health and may also generate significant nuisance at receptors nearby haulage routes.
Gaseous emissions from vehicle exhaust due to movement of construction vehicles and equipment, including spoil disposal	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of construction worksites.
Gaseous emissions from off-road diesel engines on-site such as generators, if any	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of construction worksites.

At this early stage, no detailed plan regarding the footprint and exact location of the proposed buildings is available, however land use plan is available. Therefore, the worst-case emission source for earthworks comprises the whole area planned for development, including interim drainage, but excluding roads, parks, and canals. This area has been referred as earthworks footprint for the purpose of air quality impact assessment (refer to Figure 10-4). The earthworks activity includes some extent of soil-cutting, excavation, piling and excavation works, while the construction activity includes the construction of the proposed buildings. Given the area of the earthworks footprint, it is assumed that the spoil amount will be greater than 100,000 tonnes based on at least 0.1 m depth excavation works across the earthworks footprint.

The worst-case emission source for construction has been assumed to comprise the whole area planned for development, including interim drainage, roads, parks and canals. This area has been referred as construction footprint for the purpose of air quality impact assessment (refer to Figure 10-5). It is also assumed that no concrete batching plant to be located within the construction footprint.

The trucks carrying spoil to and from the construction footprint on access roads are also considered as a potential source of emission (referred to as trackout activity) as shown in Figure 10-6. The number of outward trucks movement has been conservatively assumed to be >50 HDVs per day. The road construction works may not be completed and paved before the construction of other development commences. Hence, length of unpaved roads has been assumed to be >100 m in the assessment. Impact prediction and evaluation were detailed in Section 10.7.1.



Legend

- Large Specimens
- Species of Conservation Significance
- Earthworks Footprint
- 20m from Source
- 50m from Source
- 100m from Source
- 200m from Source
- 350m from Source

Sensitive Receptors

- Public Housing
- Commercial/ Recreational Building
- Place of Worship
- Educational Institution
- Unclassified Building (incl. Landed Properties and Condominium)

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	HHL	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

AIR EMISSION SOURCES AND RECEPTORS (EARTHWORKS)

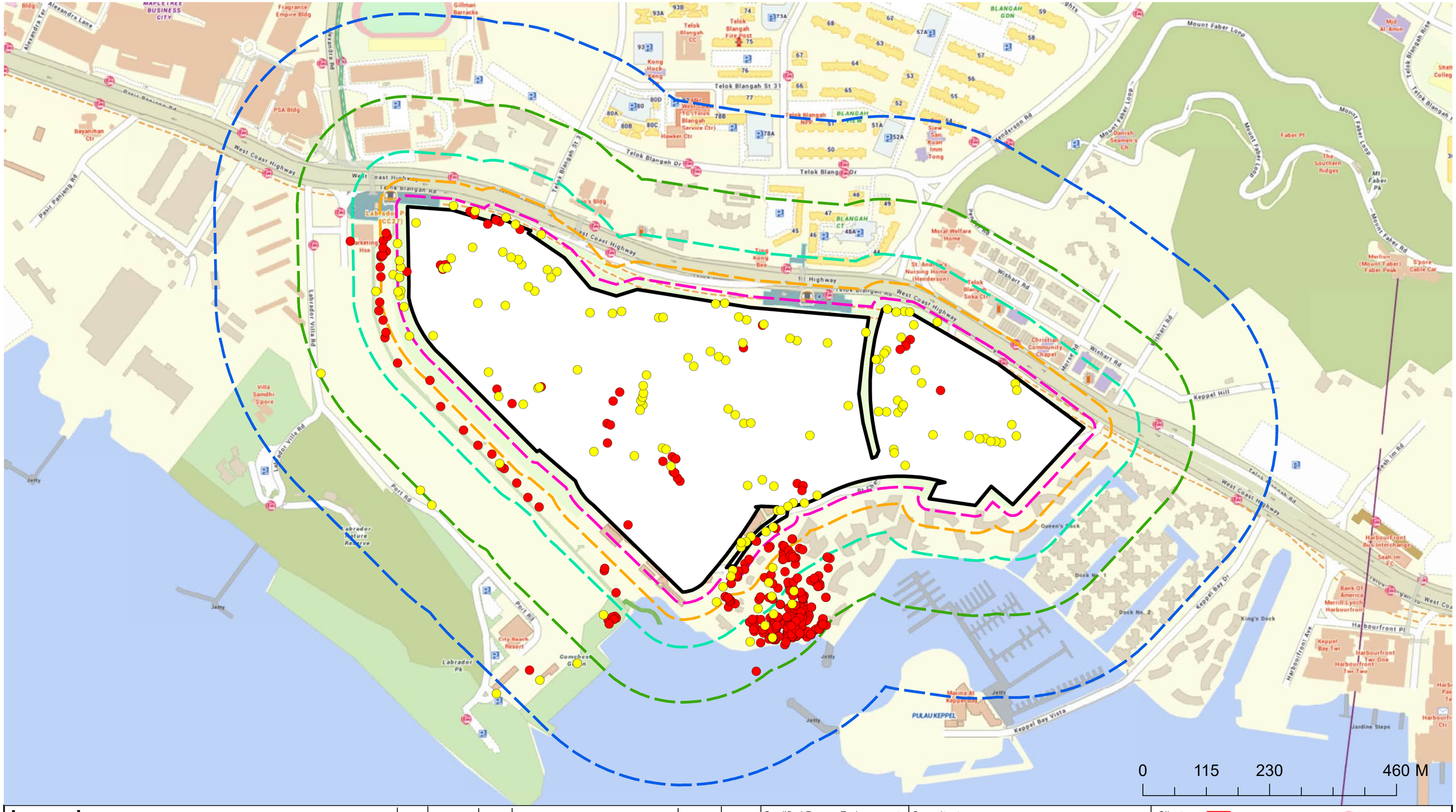
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	Drawn: HHL	Date: APR 2022

Figure No. : **10-4** | Rev. : - | Sheet : 1 of 1

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Legend

- Large Specimens
- Species of Conservation Significance
- Construction Footprint
- 20m from Source
- 50m from Source
- 100m from Source
- 200m from Source
- 350m from Source

Sensitive Receptors

- Public Housing
- Commercial/ Recreational Building
- Place of Worship
- Educational Institution
- Unclassified Building (incl. Landed Properties and Condominium)

N

Rev.	Date	By	Description	Chk'd	App'd
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Consultant : AECOM

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Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :

AIR EMISSION SOURCES AND RECEPTORS (CONSTRUCTION)

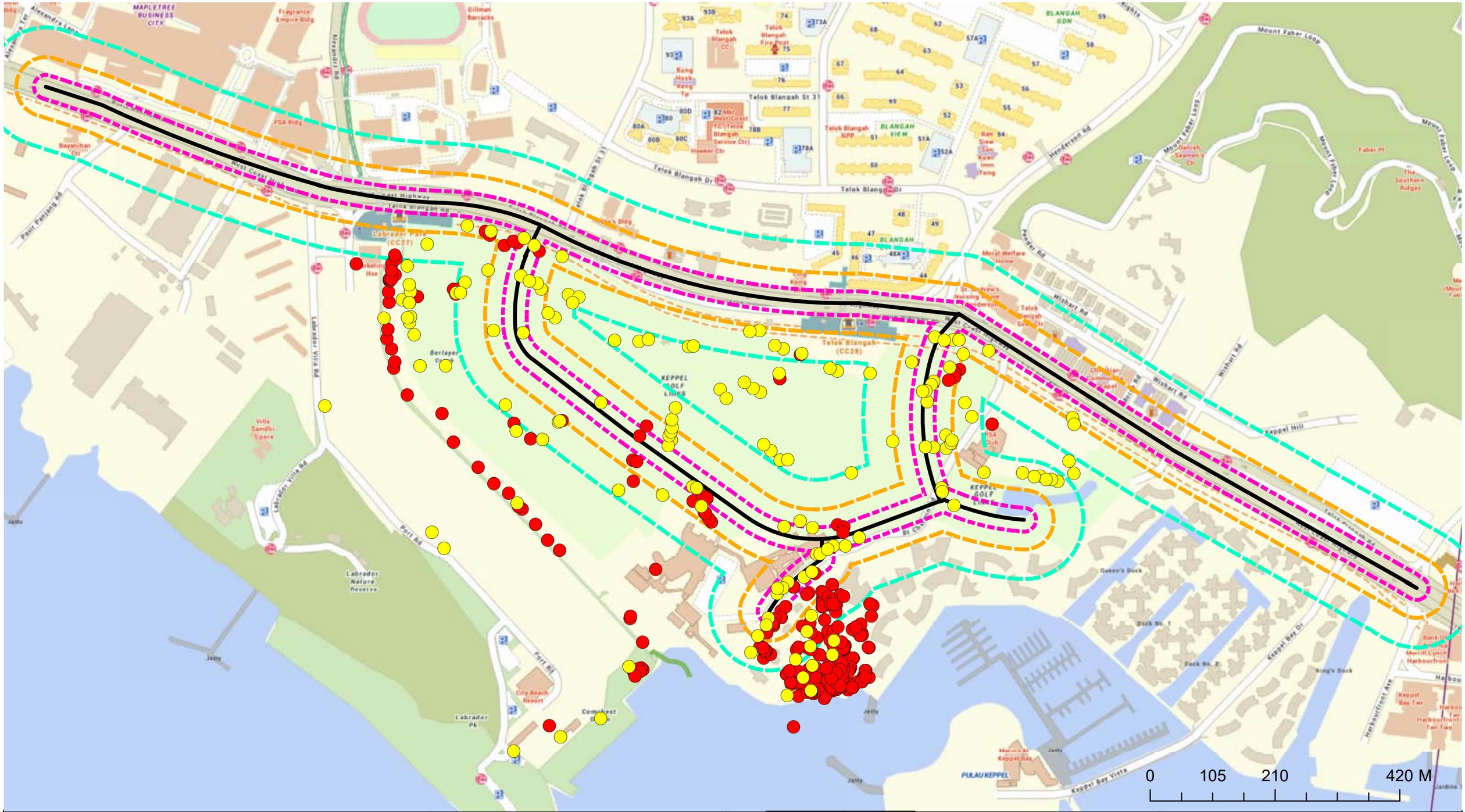
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	Drawn: HHL	Date: APR 2022

Figure No. : **10-5** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

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Legend

- Potential Access Road
- 20m from Source
- 50m from Source
- 100m from Source
- Large Specimens
- Species of Conservation Significance

Sensitive Receptors

- Public Housing
- Commercial/ Recreational Building
- Place of Worship
- Educational Institution
- Unclassified Building (incl. Landed Properties and Condominium)

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	HHL	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD / URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
AIR EMISSION SOURCES AND RECEPTORS (TRACKOUT)

Designed	Checked	Approved
LIA	NHT	JAG
	Drawn: HHL	Date: APR 2022

Figure No. : **10-6** | Rev. : - | Sheet : 1 of 1

CAD File Name : NA | A3

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10.3.2 Operational Phase

As presented in Table 10-9, potential air quality impact during operational phase of the Project would be vehicular emissions due to increased traffic in the vicinity of the Project. For human receptors, gaseous and particulate emissions from the increased traffic could potentially result in adverse impacts on air quality and public health causing respiratory problems on human. For ecological receptors, the main air pollutants affecting vegetation and ecosystems are nitrogen oxides (NOx), sulphur dioxide (SO_2) and ammonia (NH_3) [R-46]. In the context of this project, the air pollutant of concern will be NOx which are produced from road traffic emission. SO_2 is not relevant for this project as low sulphur content fuel will be used by vehicles in Singapore. NH_3 is mainly produced from agricultural activities and therefore, not relevant for the purpose of this project. There is no published evidence for any direct toxic effect of NOx on animals and therefore effects on animals are not included in ecological impact assessment [R-46].

As per the NEA website, since 1 September 2017, all new petrol vehicles have had to meet the Euro 4 emission standard, and since 1 January 2018, all new diesel vehicles have had to meet the Euro 6 emission standard. The new standards will tighten fine particulate emissions from direct-injection petrol engines in addition to the other pollutants. Since 1 January 2018, the emission standard for all three-wheeled (Cat L5e) and large motorcycles with an engine capacity more than 200cc have been tightened to Euro 4 standard, while smaller motorcycles with an engine capacity of 200cc and below will see the Euro 4 emission standard implemented from 1 January 2020. Compared to the Euro 3 emission standard, the tighter Euro 4 emission standard will help reduce emissions of hydrocarbons and nitrogen oxides (NOx), which are precursors to ozone. The emission standards for various vehicle classes have been summarized in Table 10-10.

Table 10-9 Potential air quality impacts during the operational stage

Potential Source of Impacts	Potential Associated Impacts
Gaseous and particulate emissions from vehicle exhaust due to the increased traffic in vicinity of the project due to project operation.	Exhaust emissions (NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$) could potentially impact the air quality in the vicinity of the project.

Table 10-10 Emission standard of various vehicle classes

No	Implementation Date	Vehicle Classes	Emission Standard
1	1 September 2017	New petrol vehicles	Euro 6
2	1 January 2018	New diesel vehicles	Euro 6
3	1 January 2018	Three-wheeled (Cat L5e) and large motorcycles with engine capacity more than 200cc	Euro 4
4	1 January 2020	Smaller motorcycles with engine capacity of 200cc and below	Euro 4

10.4 Identification of Air Quality Sensitive Receptors

10.4.1 Construction Phase

Ecological Receptors

The construction activities at the construction worksite pose a potential risk of dust emissions that may impact upon target habitat areas lying within the zone of influence of the construction site. In line with the IAQM Guidance, a Assessment Area of 50 m was considered for ecological impacts during construction phase. Table 10-11 below summarizes the sensitivity of each construction phase for earthworks, construction, and trackout. Earthworks

footprint, construction footprint and access roads are located within or in close proximity to ecologically sensitive receptors. Based on the distances of emission sources to the identified receptors presented in Figure 10-4 to Figure 10-6, the Sensitivity of the Area was determined to range from Priority 1. In line with the IAQM Guidance, Priority 1 refers to emission source located <20 m to the nearest ecologically sensitive receptors, while Priority 2 refers to construction worksites with emission source located within 20-50m from the nearest ecologically sensitive receptors. Flora species of high value identified within the air quality assessment area are presented in Table 10-12.

Table 10-11 Receptor sensitivity for air quality impact assessment – construction phase (ecological receptor)

Distance	Identified Receptors	Sensitivity of the Area
For Earthworks:		
Within 20 m	-	-*
Between 20 m to 50 m	-	
For Construction:		
Within 20 m	Berlayer Creek	Priority 1
Between 20 m to 50 m	Berlayer Creek Labrador Nature Reserve	
For Trackout:		
Within 20 m	-	-*
Between 20 m to 50 m	-	
Note: * As observed from Figure 10-4 and Figure 10-6, any ecological receptor (i.e. Berlayer Creek, Labrador Nature Reserve) is located > 50 m from the earthworks footprint and indicative potential access road. Therefore, in line with the IAQM Guidance, the Trackout and Earthworks activities is expected to have insignificant impact on the ecological receptors. However, it shall be noted that impact on ecological receptors is still expected from Construction activities.		

Table 10-12 Flora Species of High Value Identified within the Air Quality Assessment Area

Distance	Identified Species	Status	Number of Species Identified
Conservation Species			
Within 20 m	*Amphineuron opulentum*	Endangered	1
	Ardisia elliptica	Endangered	11
	Bridelia stipularis	Vulnerable	1
	Calophyllum inophyllum	Critically Endangered	2
	Calophyllum tetrapterum	Vulnerable	3
	Centotheca lappacea	Critically Endangered	3
	Dalbergia junghunii	Critically Endangered	10
	Dibridsonia conferta	Endangered	5
	Ficus globose	Endangered	1
	Ficus vasculosa	Endangered	19
	Garcinia nigrolineata	Critically Endangered	1
	Goniophlebium percussum	Vulnerable	2
	Guioa pubescens	Vulnerable	16
	Lasianthus hirsutus	Critically Endangered	5
	Lindsaea orbiculata	Presumed Extinct	6
	Linostoma pauciflorum	Endangered	1
	Lygodium longifolium	Vulnerable	7
	Memecylon edule	Endangered	11
	Neolitsea cassia	Vulnerable	2
	Nypa fruticans	Vulnerable	9
	Olea brachiata	Vulnerable	19

Distance	Identified Species	Status	Number of Species Identified
	Oncosperma tigillarium	Vulnerable	18
	Oxyceros longiflorus	Vulnerable	18
	Palaquium obovatum	Vulnerable	54
	Planchonella obovata	Vulnerable	27
	Rapanea porteriana	Vulnerable	8
	Rhizophora stylosa	Vulnerable	10
	Rourea fulgens	Vulnerable	7
	Sandoricum koetjape	Endangered	1
	Streblus elongatus	Vulnerable	25
	Symplocos adenophylla	Endangered	4
	Syzygium claviflorum	Critically Endangered	1
	Syzygium syzygioides	Vulnerable	16
Between 20 m to 50 m	*Amphineuron opulentum*	Endangered	2
	Ardisia elliptica	Endangered	3
	Centotheca lappacea	Critically Endangered	1
	Ficus vasculosa	Endangered	3
	Guioa pubescens	Vulnerable	5
	Lygodium longifolium	Vulnerable	1
	Nypa fruticans	Vulnerable	1
	Olea brachiata	Vulnerable	5
	Palaquium obovatum	Vulnerable	3
	Planchonella obovata	Vulnerable	3
	Rapanea porteriana	Vulnerable	1
	Rhizophora stylosa	Vulnerable	1
	Streblus elongatus	Vulnerable	3
	Syzygium syzygioides	Vulnerable	2
Large Specimens			
Within 20 m	*Adenanthera pavonine*	Naturalised	2
	Alstonia angustiloba	Common	1
	Bambusa vulgaris	Casual	2
	Casuarina equisetifolia	Common	17
	Cyrtophyllum fragrans	Common	8
	Dimocarpus longan	Casual	1
	Elaeis guineensis	Cultivated Only	2
	Falcataria moluccana	Naturalised	10
	Ficus benjamina	-	5
	Ficus microcarpa	Common	10
	Ficus religiosa	Naturalised	2
	Khaya senegalensis	Cultivated Only	1
	Lannea coromandelica	Cultivated Only	1
	Mangifera indica	Casual	2
	Nypa fruticans	Vulnerable	1
	Oncosperma tigillarium	Vulnerable	1
	Parkia timoriana	Cultivated Only	2
	Peltophorum pterocarpum	Critically Endganered	5
	Pithecellobium dulce	Casual	1
	Pterocarpus indicus	Casual	28
	Samanea saman	Casual	11
	Streblus elongatus	Vulnerable	1
	Swietenia macrophylla	Casual	2

Distance	Identified Species	Status	Number of Species Identified
	Syzygium grande	Common	4
	Tabebuia rosea	Casual	1
	Tamarindus indica	Casual	1
	Terminalia catappa	Common	1
	Thyrsostachys siamensis	Casual	2
Between 20 m to 50 m	Adenanthera pavonine	Naturalised	1
	Calophyllum inophyllum	Critically Endangered	1
	Falcataria moluccana	Naturalised	4
	Ficus microcarpa	Common	3
	Pterocarpus indicus	Casual	4
	Samanea saman	Casual	3
	Swietenia macrophylla	Casual	1
	Syzygium lineatum	Common	2
	Syzygium polyanthum	Vulnerable	1
	Thyrsostachys siamensis	Casual	1
	Vitex pinnata	Common	2

Human Receptors

Assessment Area of 350 m was considered for human health impacts during construction phase. Based on Table 6-2, in line with the IAQM Guidance, Priority 1 is defined as having sensitive receptors (i.e. residentials, hospitals, schools) within 20 m of construction worksite or >100 sensitive receptors within 50 m of construction worksite. While Priority 2 is defined as having commercial receptors within 20 m of construction worksite, having 1-100 sensitive receptors between 20-50 m of construction worksite or having >100 sensitive receptors between 50-100 m of construction worksite. All other buildings within the 350 m Assessment Area will be considered as Priority 3.

Therefore, based on the distances of emission sources to the identified receptors presented in Figure 10-4 to Figure 10-6, the Sensitivity of the Area for each construction worksite was determined to be ranging from Priority 1 to Priority 2 as summarized in Table 10-11 for earthworks, construction, and trackout. Due to the extensive list of the identified sensitive receptors for construction phase, this is elaborated and presented in Appendix U.

Table 10-13 Receptor sensitivity for air quality impact assessment – construction phase (human receptors)

Activities	Sensitivity of the Area
Earthworks	Priority 1
Construction	Priority 1
Trackout	Priority 1

10.4.2 Operational Phase

Potential air quality impact during operational phase of the Project would be vehicular emissions due to increased traffic to the proposed development. Potential human and ecological sensitive receptors which might be impacted by the increased traffic (within 250 m assessment area) are presented in Table 10-14 below.

Table 10-14 Receptor sensitivity for air quality impact assessment – operational phase

No	Receptor Name	Receptor Type	Sensitivity Classification
1	HDB Estate Blangah Court	Residential	Priority 1
2	HDB Estate Telok Blangah Towers	Residential	Priority 1
3	Skyline Residences	Residential	Priority 1

No	Receptor Name	Receptor Type	Sensitivity Classification
4	Harbour View Towers	Residential	Priority 1
5	The Foresta @ Mount Faber	Residential	Priority 1
6	Caribbean at Keppel Bay Condominium	Residential	Priority 1
7	Reflections at Keppel Bay Condominium	Residential	Priority 1
8	Moral Welfare Home	Nursing Home	Priority 1
9	St. Andrew's Nursing Home (Henderson)	Nursing Home	Priority 1
10	Christian Community Chapel	Place of Worship	Priority 3
11	Pasir Panjang Tamil Methodist Church	Place of Worship	Priority 3
12	Grace Methodist Church	Place of Worship	Priority 3
13	Telok Ayer Chinese Methodist Church	Place of Worship	Priority 3
14	Tiong Kong Beo Temple	Place of Worship	Priority 3
15	PSA Building	Commercial	Priority 3
16	Telok Blangah SP Power Grid Depot	Commercial	Priority 3
17	Yeo's Building	Commercial	Priority 3
18	West Coast TC	Commercial	Priority 3
19	Telok Blangah Soka Centre	Commercial	Priority 3
20	Villa Samdhi Singapore	Commercial	Priority 3
21	Fragrance Hotel	Commercial	Priority 3
22	Labrador Park	Recreational	Priority 2
23	Labrador Nature Reserve	Recreational / Ecological	Priority 1

10.5 Baseline Air Quality

10.5.1 Baseline Monitoring Personnel

The assessment and site surveys were conducted by the following personnel:

- Ms. Jagriti Dawra, AECOM (EIS Specialist)
- Mr. Hanzel Lalitan, AECOM (Air Quality Consultant)
- Mr. Edmundo II Casapao, ALS Technichem (S) Pte Ltd
- Mr. Kyaw Min Thu, ALS Technichem (S) Pte Ltd

Site reconnaissance was conducted on 2 December 2020. Subsequently, the primary baseline air quality data collection has been conducted on 22 – 29 March 2021.

10.5.2 Baseline Findings

10.5.2.1 Secondary Data Collection (Review of Background Data)

10.5.2.1.1 NEA Long Term Ambient Air Quality

Table 10-15 provides the general NEA ambient air monitoring results for Singapore over the period 2015 – 2019 and compares them with the Singapore Long Term Ambient Air Quality Targets. The Singapore Long Term Air Quality Targets have been adopted in this report and are generally more stringent than the USEPA National Ambient Air Quality Standards (NAAQS).

It can be observed from Table 10-15 that the NEA monitoring results for background particulate matter less than 10 µm (PM_{10}), particulate matter less than 2.5 µm ($PM_{2.5}$), and ozone (O_3) have consistently exceeded the Singapore Long Term Air Quality Targets over the period 2015 - 2019. Carbon monoxide (CO) and nitrogen dioxide (NO_2) were below the Singapore Ambient Air Quality Long Term Targets between 2015 and 2019. The elevated PM_{10}, $PM_{2.5}$, and O_3 concentrations in Singapore are partly attributable to the intermittent haze periods resulting

from forest fires in neighbouring countries, although other significant contributors to the background levels may also be domestic emissions from industries, shipping and motor vehicles.

Table 10-15 NEA long term ambient air quality monitoring [R-47]

Pollutants	Averaging Period	2015 results (µg/m^3)	2016 results (µg/m^3)	2017 results (µg/m^3)	2018 results (µg/m^3)	2019 results (µg/m^3)	Average results 2015 – 2019 (µg/m^3)	Singapore Ambient Air Quality Long Term Targets (µg/m^3)
PM_{10}	99th %ile of 24-Hour Averages	**186**	**61**	**57**	**59**	**90**	**90.6**	*50*
	Annual Mean	**37**	**26**	**25**	**29**	**30**	**29.4**	*20*
$PM_{2.5}$	99th %ile of 24-Hour Averages	**145**	**40**	**34**	**32**	**62**	**62.6**	*25*
	Annual Mean	**24**	**15**	**14**	**15**	**16**	**16.8**	*10*
CO	Maximum 1-Hour Average	3,500	2,700	2,300	2,500	2,300	2,700	*30,000*
	Maximum 8-Hour Average	3,300	2,200	1,700	2,000	1,700	2,200	*10,000*
NO_2	Maximum 1-Hour Average	99	123	158	147	156	136.6	*200*
	Annual Mean	22	26	25	26	23	24.4	*40*
SO_2	24-Hour Average	**75**	**61**	**59**	**65**	**57**	**63.4**	*50*
	Annual Mean	12	13	12	9	8	10.8	*15*
O_3	8-Hour Average	**152**	**115**	**191**	**150**	**125**	**146.6**	*100*

Note: Values in Bold exceed the Singapore Ambient Air Quality Long Term Targets

10.5.2.1.2 Hourly Pollution Standard Index (PSI) and 24-hour PM_{10} and $PM_{2.5}$ Concentrations Readings

According to NEA's website [W-38], PM_{10} and $PM_{2.5}$ data are subsumed into PSI. Hourly historical PSI, 24-hr PM_{10} and $PM_{2.5}$ readings available on data.gov.sg for South Region of Singapore were collected during the same period as primary data collection period for comparison against primary baseline monitoring results.

Figure 10-7 below shows the variation of hourly historical PSI readings in the West Region of Singapore during the primary data collection period, which was on 22 – 29 March 2021. The hourly PSI readings recorded over these days ranged from 31 to 56. The PSI readings during this period are considered Good to Moderate. It is to be noted that these PSI readings cover the entire South Region of Singapore, and hence might not have similar trend to what is monitored on site.

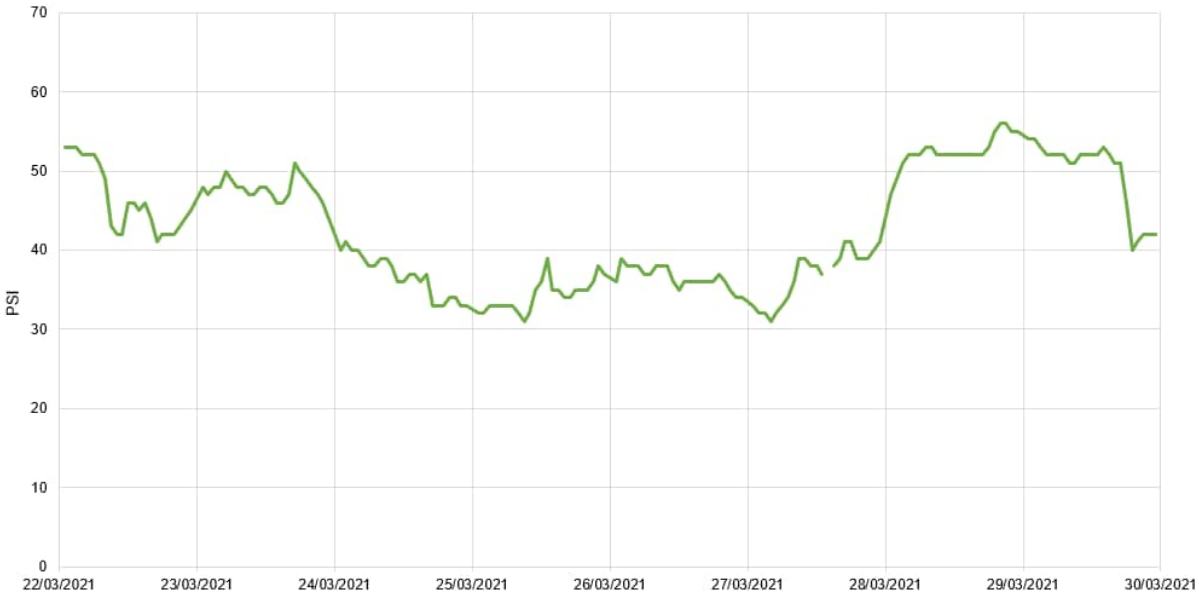


Figure 10-7 Hourly PSI reading of South Singapore [W-41]

A review was also conducted for 24-hr $PM_{2.5}$ and PM_{10} readings available on data.gov.sg for South Singapore during the monitoring period (22 – 29 March 2021). Figure 10-8 and Figure 10-9 show the variation of PM_{10} and $PM_{2.5}$ concentrations recorded by the NEA during the primary baseline data collection period. It is to be noted that these PSI readings cover the entire South Region of Singapore, and hence might not have similar trend to what is monitored on site.

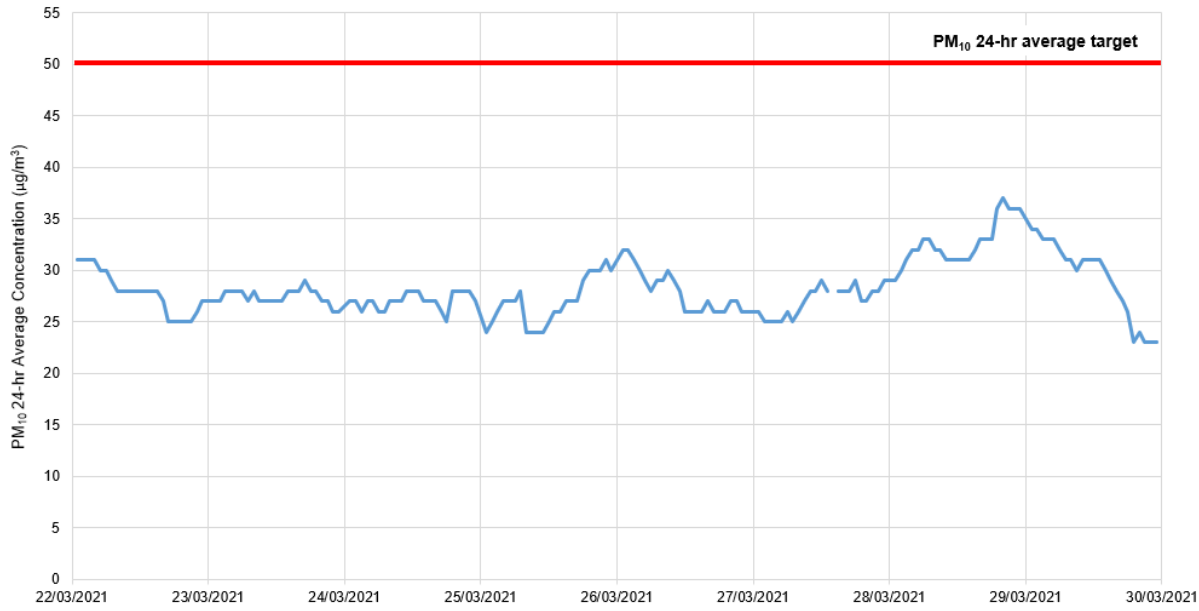


Figure 10-8 24-hr PM_{10} concentrations reading of South Singapore [W-41]

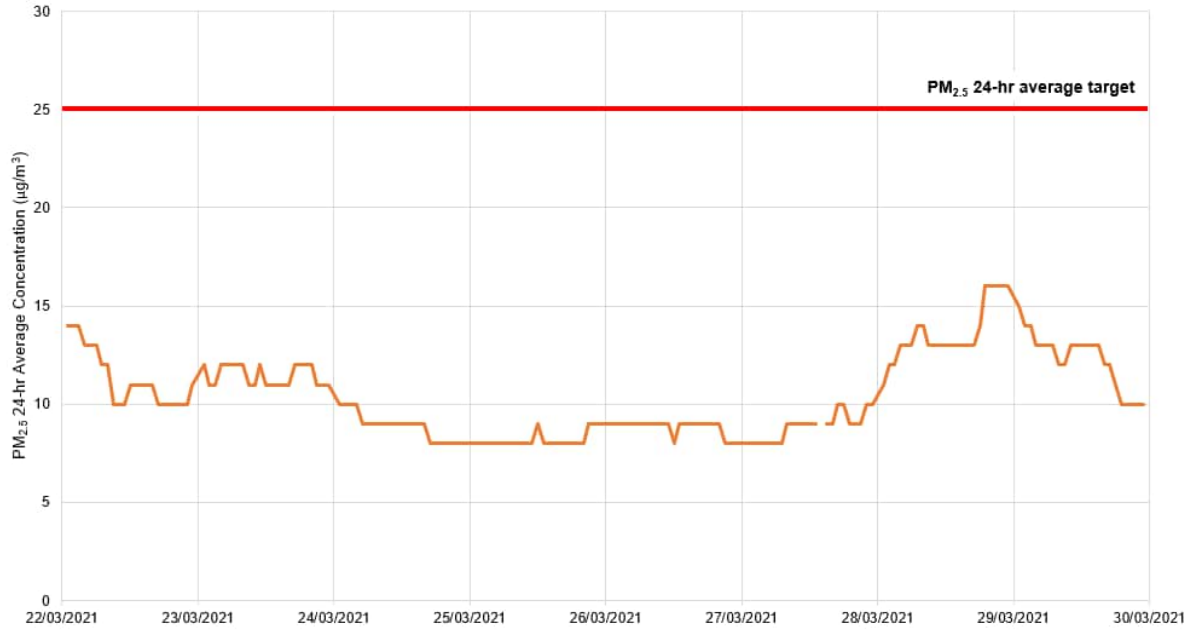


Figure 10-9 24-hr $PM_{2.5}$ Concentrations Reading of South Singapore [W-41]

10.5.2.1.3 Other Parameters (Rainfall, Temperature, Wind Speed)

Figure 10-10, Figure 10-11, and Figure 10-12 below present the trend of daily total rainfall, mean temperature and mean wind speed observed at Kampong Bahru and Sentosa Island weather monitoring stations, from January 2016 to April 2021.

From Figure 10-10, an average of approximately 6.24 mm and 5.74 mm of daily rain was observed from Kampong Bahru and Sentosa Island monitoring stations, respectively. This calculates to approximately 2,300 mm and 2,100 mm of rain annually for Kampong Bahru and Sentosa Island respectively. With regards to mean temperature and mean wind speed, the temperature and wind speed recorded at Sentosa Island station is relatively constant with average 28.3°C mean temperature and 5.9 km/h mean wind speed. It should be noted that Kampong Bahru station only recorded rainfall data up to October 2016 and is no longer in operation since then.

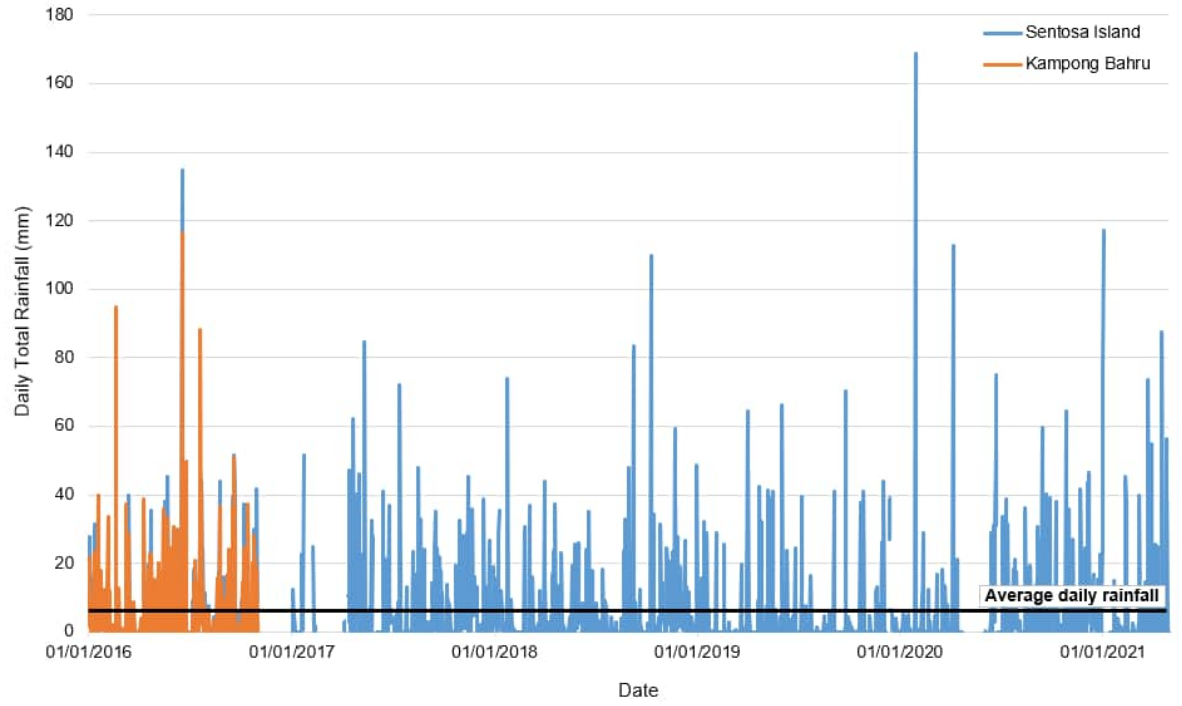


Figure 10-10 Daily rainfall monitored at Kampong Bahru and Sentosa Island monitoring stations [W-42]

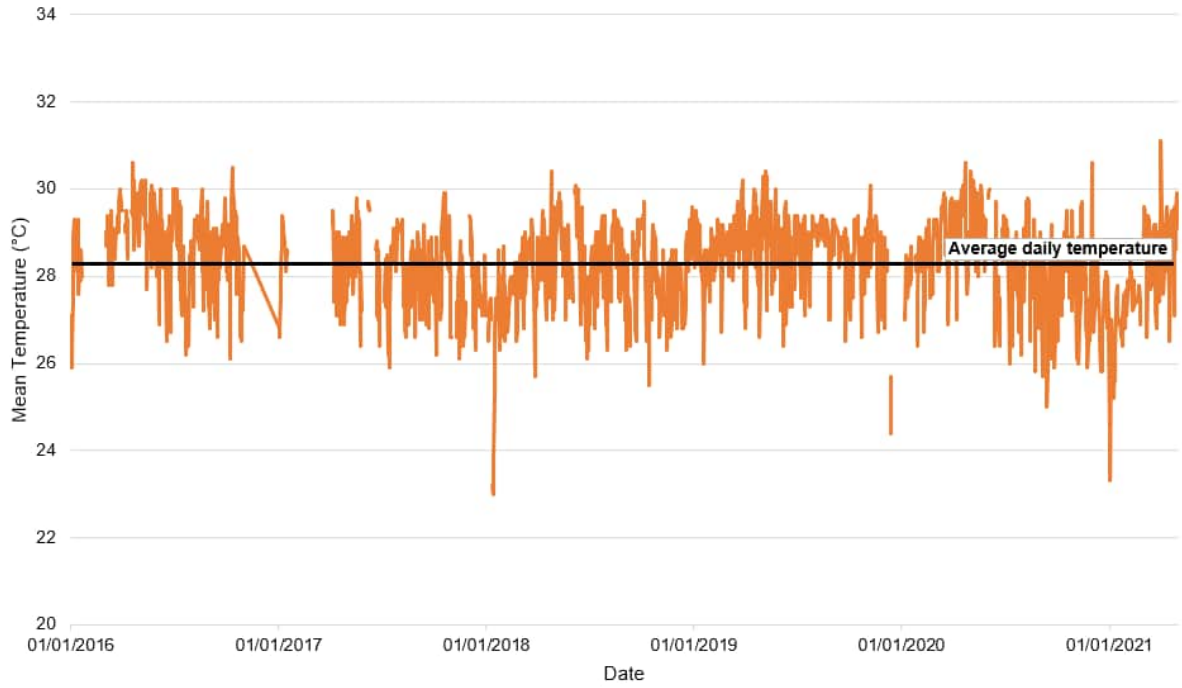


Figure 10-11 Mean temperature monitored at Sentosa Island monitoring station [W-42]

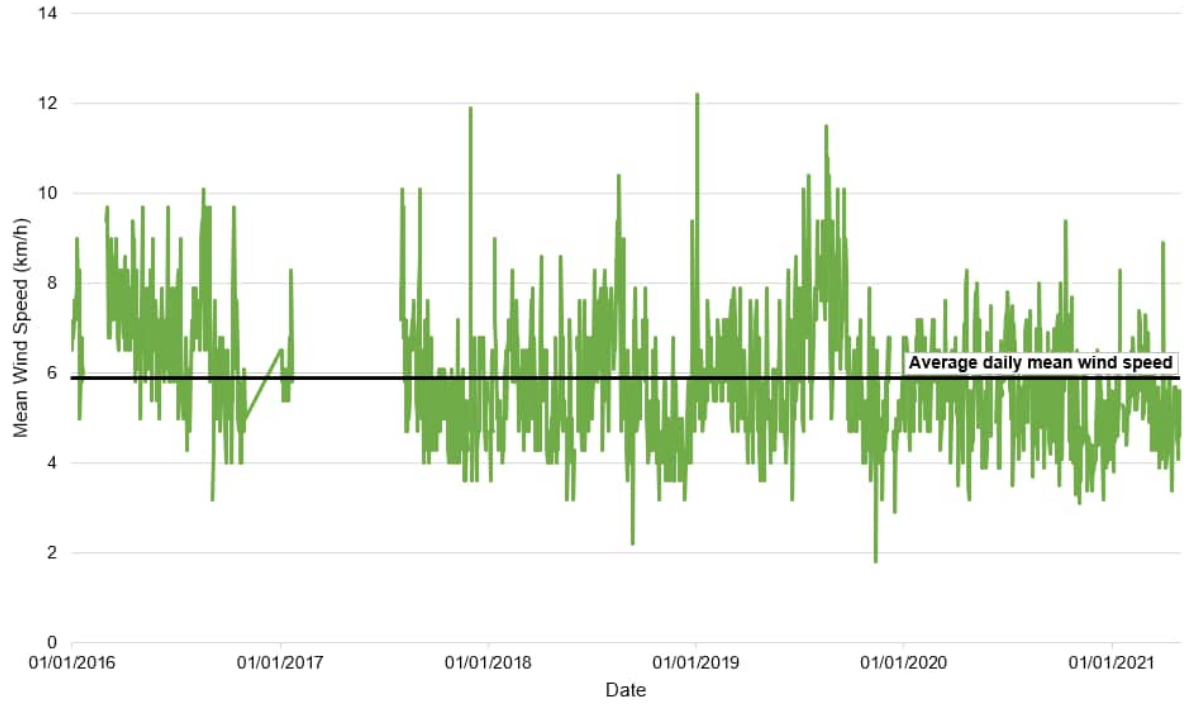


Figure 10-12 Mean wind speed monitored at Sentosa Island monitoring station [W-42]

10.5.2.2 Primary Data Collection (Survey & Sampling)

Seven (7) days of continuous ambient air quality monitoring was conducted at A1: Former BP Oil Refinery site as mentioned in Table 10-2 above to determine the pollutant concentrations from existing background pollutant sources. The monitoring results are summarized in Table 10-16 below and compared with the Singapore Ambient Air Quality Long Term Targets. Baseline monitoring results are presented graphically in Figure 10-13.

It can be observed from Table 10-16 and Figure 10-13 that the results at A1 were well below the Singapore Ambient Air Quality Long Term Targets for both PM_{10} and $PM_{2.5}$. The good ambient air quality monitoring results are expected due to A1 being located in open green land of Former BP Oil Refinery site in close proximity to Berlayer Creek, Keppel Club golf course and Labrador Nature Reserve. The monitoring results trend is also in line with the trend of secondary data presented in Section 10.5.2.1.2.

Table 10-16 Baseline air quality monitoring results

Monitoring Location	Monitoring Date	Daily PM_{10} Concentration, $\mu g/m^3$			Daily $PM_{2.5}$ Concentration, $\mu g/m^3$		
		Min	Max	Average	Min	Max	Average
A1: Former BP Oil Refinery site	22 – 29 March 2021	6.2	17.7	13.0	4.3	14.0	9.1
Singapore Ambient Air Quality Long Term Targets		*50*			*25*		
Note: Air quality monitoring was conducted during Singapore's Phase 3 reopening after the Circuit Breaker measures during COVID-19 pandemic. Ambient air quality in this area might be higher during normal condition.							

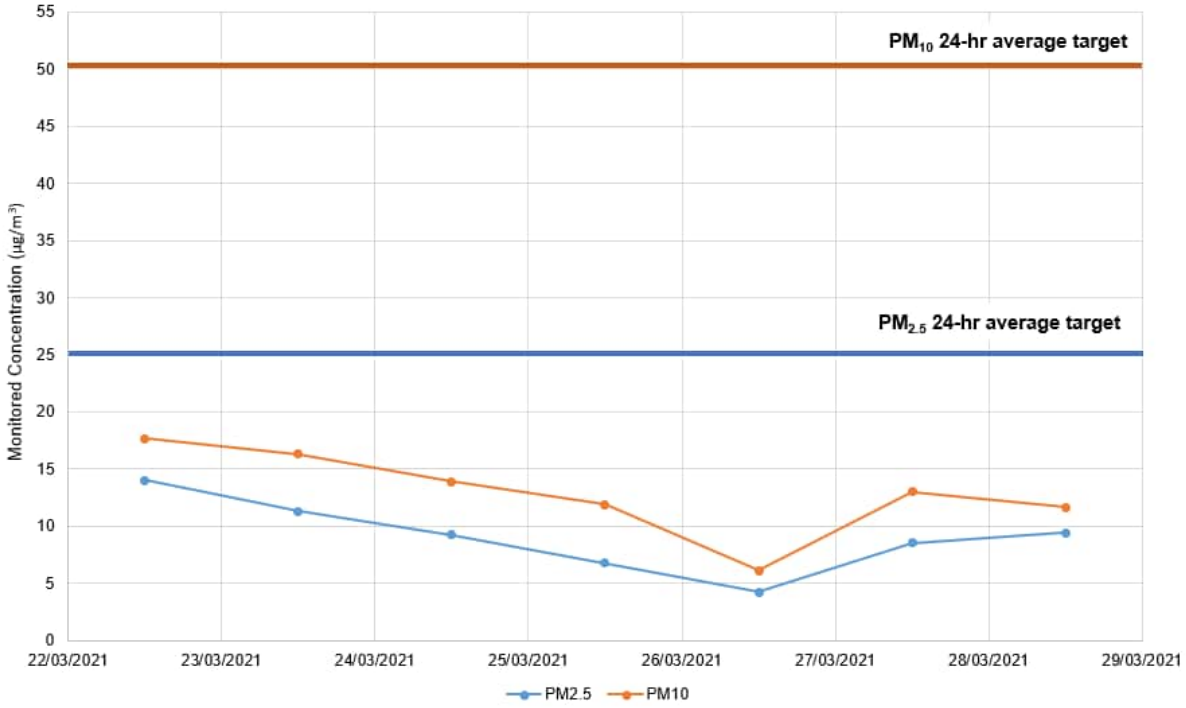


Figure 10-13 Baseline monitoring results at A1 [R-49]

10.6 Minimum Control Measures

This section proposes minimum controls or standard practices commonly implemented that have been assumed to be implemented for the purposes of impact assessment.

10.6.1 Construction Phase

The following control measures should be observed during the construction stage:

- The construction footprint shall be hoarded on all sides;
- No concrete batching plant to be located on-site; and
- Access road construction or expansion is recommended to be completed first and paved before the construction of other development commences.

10.6.2 Operational Phase

No minimum control has been assumed for the purpose of air quality impact assessment during operational phase.

10.7 Prediction and Evaluation of Air Quality Impacts

10.7.1 Construction Phase

Throughout the study a conservative but credible approach was adopted to assess potential dust impacts. This may lead to an over-estimation of the levels of pollutants that will arise in practice, but this is considered to be appropriate for planning purposes at this stage of the project and is consistent with precautionary principles.

The assessment is conducted using the site area, hours of operation, timescale of construction, construction material, excavation quantities, surface material and number of vehicles on site as discussed in Section 10.3.1.

Ecological Receptors

Dust from construction sites deposited on vegetation may create ecological stress within the local plant community. During dry periods dust can coat plant foliage adversely affecting photosynthesis and other biological functions. Rainfall removes the deposited dust from foliage and can rapidly leach chemicals into the soil. Large scale construction sites may give rise to dust deposition over an extended period of time and adversely affect vascular plants. Deposition of concrete dust has the potential to increase the surface alkalinity, which in turn can hydrolyse lipid and wax components, penetrate the cuticle, and denature proteins, finally causing the leaf to wilt [P-79]. Dust may affect photosynthesis, respiration, transpiration and allow the penetration of phytotoxic gaseous pollutants [P-80].

In line with the IAQM Guidance, the Impact Intensity was determined by reviewing the scale of construction activities and classifying them as low, medium or high for each activity type (earthworks, construction, and trackout). The amount of dust deposited, and its effects are also dependent upon weather conditions, during wet weather less dust will be generated and that which has been deposited upon foliage is more likely to be washed off. As discussed in Section 10.5.2.1.3, the project is expected to receive relatively higher rainfall in the long term compared to the other parts of Singapore. Hence, this is expected to help to lessen the intensity of dust generated and deposited upon plant foliage. However, the IAQM methodology does not take into account the rainfall intensity in the assessment area. Therefore, the air quality assessment is expected to be conservative for the purpose of the project.

The overall Consequence for each activity was classified by considering Impact Intensity with the Receptor Sensitivity. Without any mitigation measures in place, the Likelihood of occurrence of impacts from construction of the project is classified as Regular as the activity would occur on a regular basis during construction. The Impact Intensity, overall Consequence and Impact Significance are outlined in Table 10-17.

Based on the assessment, the highest Impact Significance is predicted to be **Major** for ecological impact. Hence, based on the assessment methodology in Section 10.2.3.1.7, Impact Significance evaluated as Major requires the adoption of management or mitigation measures.

Human Receptors

In line with the IAQM Guidance, the Impact Intensity was determined by reviewing the scale of construction activities and classifying them as low, medium or high for each activity type (earthworks, construction, and trackout). The project was expected to receive relatively higher rainfall in the long term compared to the other parts of Singapore. Hence, this was expected to help to lessen the intensity of dust generated and deposited. However, the IAQM methodology does not take into account the rainfall intensity in the assessment area. Therefore, the air quality assessment was expected to be conservative for the purpose of the project.

The overall Consequence for each activity was classified by considering Impact Intensity with the Receptor Sensitivity. Without any mitigation measures in place, the Likelihood of occurrence of impacts from construction of the project was classified as **Regular** as the activity would occur on a regular basis during construction. The Impact Intensity, overall Consequence and Impact Significance are outlined in Table 10-17.

Based on the assessment, the Impact Significance was predicted to be **Major** for human health impact. Hence, based on the assessment methodology in Section 10.2.3.1.7, Impact Significance evaluated as Major and Moderate requires the adoption of management or mitigation measures.

Table 10-17 Impacts of dust risk assessment (before mitigation)

Key Parameter - Earthworks				Impact Assessment						
Total Earthworks Footprint (m^2)	No. of heavy machineries during foundation work	Total Material Moved (tonnes)	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
~470,000 (>10,000)	~22 (>10)	>100,000	High	Priority 1	Priority 1	High	High	Regular	**Major**	**Major**
Key Parameter - Construction				**Impact Assessment**						
Total Building Volume (m^3)	Construction Material	No. of concrete batching plant	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
>100,000	Potentially dusty (e.g. concrete)	0	High	Priority 1	Priority 1	High	High	Regular	**Major**	**Major**
Key Parameter - Trackout				**Impact Assessment**						
No. of outward trucks movement per day	Road surface material	Unpaved Road Length (m)	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
~51 (>50)	Potentially dusty	>100	High	-	Priority 1	-	High	Regular	**-***	**Major**

Note: * As observed from Figure 10-6, any ecological receptor is located > 50 m from the indicative potential access road. Therefore, in line with the IAQM Guidance, the Trackout activities is expected to have insignificant impact on the ecological receptors. However, it shall be noted that impact on ecological receptors is still expected from Earthworks and Construction activities.

10.7.2 Operational Phase

As discussed in Section 10.3.2, emissions from vehicle exhaust due to increased traffic to the proposed project is expected. It is assumed that all new petrol and diesel vehicles will meet Euro 6 emission standard, while all motorcycles will meet Euro 4 standard going forward and slowly completely convert to these or better standards as they get phased out in 10 years from their onset. It can be observed from Table 10-18, NOx reduction from the last three Euro emission standard tier is 55.6% and 25% for diesel and gasoline passenger cars respectively. Similarly, as observed in Table 10-19, NOx reduction from the last three Euro emission standard tier is approximately 55% and 25% for diesel and gasoline commercial good vehicles respectively across all vehicle category.

Table 10-18 Euro emission standard for passenger cars [W-43]

Tier	Approval Date	Emission standard for passenger cars, g/km				
		CO	HC	NOx	HC+NOx	PM
Compression Ignition (Diesel)						
Euro 5a	September 2009	0.50	-	0.18	0.23	0.005
Euro 5b	September 2011	0.50	-	0.18	0.23	0.005
Euro 6	September 2014	0.50	-	0.08	0.17	0.005
Positive Ignition (Gasoline)						
Euro 4	January 2005	1.00	0.10	0.08	-	-
Euro 5	September 2009	1.00	0.10	0.06	-	0.005
Euro 6	September 2014	1.00	0.10	0.06	-	0.005

Table 10-19 Euro emission standard for commercial good vehicles [W-43]

Category	Tier	Approval Date	Emission standard for commercial good vehicles, g/km				
			CO	HC	NOx	HC+NOx	PM
Compression Ignition (Diesel)							
N1, Class I ⩽ 1305 kg	Euro 5a	September 2009	0.50	-	0.18	0.23	0.005
	Euro 5b	September 2011	0.50	-	0.18	0.23	0.005
	Euro 6	September 2014	0.50	-	0.08	0.17	0.005
N1, Class II 1305 – 1760 kg	Euro 5a	September 2009	0.63	-	0.235	0.295	0.005
	Euro 5b	September 2011	0.63	-	0.235	0.295	0.005
	Euro 6	September 2014	0.63	-	0.105	0.195	0.005
N1, Class III 1760-3500 kg	Euro 5a	September 2009	0.74	-	0.28	0.35	0.005
	Euro 5b	September 2011	0.74	-	0.28	0.35	0.005
	Euro 6	September 2014	0.74	-	0.125	0.215	0.005
N2, 3500 – 12000 kg	Euro 5a	September 2009	0.74	-	0.28	0.35	0.005
	Euro 5b	September 2011	0.74	-	0.28	0.35	0.005
	Euro 6	September 2014	0.74	-	0.125	0.215	0.005
Positive Ignition (Gasoline)							
N1, Class I ⩽ 1305 kg	Euro 4	January 2005	1.00	0.10	0.08	-	-
	Euro 5	September 2009	1.00	0.10	0.06	-	0.005

Category	Tier	Approval Date	Emission standard for commercial good vehicles, g/km				
			CO	HC	NOx	HC+NOx	PM
	Euro 6	September 2014	1.00	0.10	0.06	-	0.005
N1, Class II 1305 – 1760 kg	Euro 4	January 2005	1.81	0.13	0.10	-	-
	Euro 5	September 2009	1.81	0.13	0.075	-	0.005
	Euro 6	September 2014	1.81	0.13	0.075	-	0.005
N1, Class III 1760-3500 kg	Euro 4	January 2005	2.27	0.16	0.11	-	-
	Euro 5	September 2009	2.27	0.16	0.082	-	0.005
	Euro 6	September 2014	2.27	0.16	0.082	-	0.005
N2, 3500 – 12000 kg	Euro 5	September 2009	2.27	0.16	0.082	-	0.005
	Euro 6	September 2014	2.27	0.16	0.082	-	0.005

NOx can affect plants directly or indirectly. It may directly enter a plant via the stomata, where it has phytotoxic effects. Lower plants such as lichens and bryophytes (including mosses, landworts and hornwarts) are particularly vulnerable to direct exposure to the gases in this way [W-44]. Since the biodiversity survey was focused on only vascular plants, there is limited information on the locations of these non-vascular species. However, based on empirical observation, rain trees are known to other biomes such as mosses. Numerous specimens of large trees were recorded within the Study Area (refer to Section 7.3.4.3).

Indirectly, NOx can also deposit onto soil and, following transformation to nitrate, enrich the soil, leading to eutrophication. The effects of elevated NOx concentrations on vegetation can be broadly categorised as [R-48]:

- growth effects: particularly increased biomass, changes in root to shoot ratio and growth of more competitive species, but also including growth suppression of some species;
- physiological effects: e.g. CO_2 assimilation and stomatal conductivity; and
- (bio)chemical effects: e.g. changes in enzyme activity and chlorophyll content (probably through the effects of increased nitrogen).

Indirectly in the long run, accumulation of nitrogen oxides (NOx) via acidic rain causes soil and water to become more acidic and hence, reducing the nutritional value of food sources for fauna [P-81]. There is no published evidence for any direct toxic effect of NOx on animals and therefore effects on animals are not included in ecological impact assessment [R-46].

Lichens / mosses are indicator of good air quality and high level of SO_2 emission might impact these plants tremendously. Although this is not seemingly a potential concern in the operation of a residential area. Other development within the residential estates, such as community centre, might employ generators which might emit high level of SO_2. In order to avoid this, low sulphur diesel fuel should be used as minimum control in line with NEA's latest regulations.

It should also be noted that currently there is a significant traffic volume along the Telok Blangah Road and West Coast Highway in the north. However, the proposed project has also planned the construction of future roads. Hence, locally the traffic in the vicinity of the project is likely to increase. The exact numbers in terms of increase /change in volume of traffic was not available. Hence, no detailed assessment could be carried out. Without any mitigation measures in place, the Likelihood of occurrence of impacts during the operational phase is classified as Regular.

Overall it seems that given the two factors above (i.e. the implementation of Euro emission standard on new vehicles and current large traffic volume along existing roads), insignificant increase in air quality pollutant levels in the vicinity of proposed project is expected during the operational phase. Some green areas will also not be disturbed as part of the project. Hence, the Impact Intensity is considered to be Negligible.

As discussed in Section 10.4.2, the Sensitivity of the receptors is classified to be Priority 1 to Priority 3. Thus, as per Table 6-7, the Impact Consequence is calculated to be Very Low. Based on the impact significance matrix in Table 10-7, the Impact Significance is predicted to be **Minor** (refer to Table 10-20). No mitigation measures are required during operational phase.

Table 10-20 Impacts of air quality impact assessment – operational phase

Impact Intensity	Sensitivity of the Area	Overall Consequence	Likelihood	Impact Significance
Negligible	Priority 1 to Priority 3	Imperceptible to Very Low	Regular	**Minor**

10.8 Recommended Mitigation Measures

10.8.1 Construction Phase

Based on the assessment in Section 10.7.1, the Impact Significance was determined to be **Major**. The range of dust mitigation measures to be implemented at the construction sites are outlined in Table 10-21. Upon the implementation of mitigation measures, the Impact Significance was determined to be **Minor**. This will be detailed in Section 10.9.1.

Table 10-21 Air quality mitigation measures (construction phase)

Mitigation Measures	
GENERAL MITIGATION MEASURES TO BE IMPLEMENTED THROUGH OUT CONSTRUCTION PERIOD	
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	Mandatory
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	Mandatory
Develop and implement an Air Pollution Control Plan (APCP) (see paragraph below for APCP details).	Mandatory
Site Management	
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	Mandatory
Make the complaints log available to the local authority when asked.	Mandatory
Record any exceptional incidents that cause dust and/or air emissions, either on-site or off-site, and the action taken to resolve the situation in the log book.	Mandatory
Hold liaison meetings with other high-risk construction sites within 500 m of the site boundary, if any, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.	Optional
Monitoring	
Undertake regular (daily frequency recommended) on-site and off-site inspections and record results. The log should be made available to the NEA or other Government Agencies if required. Inspections should include regular dust soiling checks of surfaces such as street furniture, cars, and window sills within 100 m of site boundary. Cleaning should be provided if necessary.	Recommended
Carry out regular site inspections to monitor and record compliance with the Air Pollution Control Plan.	Mandatory
Increase the frequency of site inspections during prolonged dry or windy conditions.	Mandatory
Conduct monitoring for PM_{10} and $PM_{2.5}$ at suitable locations (refer to Section 12.13.1)	Mandatory

Mitigation Measures	
Preparing and maintaining the site	
Plan site layout so that machinery and dust causing activities are located away from receptors, where possible.	Mandatory
Erect hoarding around dusty activities and at the site boundary wherever possible. Boundary screens should be at least as high as any stockpiles or dust emission sources on site.	Mandatory
Fully enclose specific activities where there is a known high potential for dust production and the site will be active for an extensive period of time.	Mandatory
Keep site fencing, barriers, and scaffolding clean by cleaning regularly using wet methods (dry methods may give rise to fugitive dust).	Mandatory
Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, stockpiled material should be covered, seeded, fenced or enclosed to prevent fugitive dust formation.	Mandatory
Operating vehicle/machinery and sustainable travel	
Ensure all vehicles and engine powered equipment comply with the legislative requirements of Singapore.	Mandatory
Ensure all vehicles and equipment switch off their engines when stationary – i.e. no idling vehicles or engines. Clear signs shall be erected at site entrance to inform all visitors.	Mandatory
Where practicable, avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment.	Mandatory
Impose and signpost a maximum-speed-limit of 25 km/hr on paved or surfaced haul roads and 15 km/hr on unpaved haul roads and work areas.	Mandatory
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	Mandatory
Construction Operations	
Only use cutting, grinding or sawing equipment fitted with, or in conjunction with, suitable dust suppression techniques such as water sprays or local extraction e.g. local exhaust ventilation system.	Mandatory
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Mandatory
Use enclosed chutes and conveyors and covered skips wherever possible.	Mandatory
Minimise drop heights from conveyors, loading shovels, hoppers, and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Mandatory
A stringent “Clean as you go” Policy should be implemented on site to ensure no loose dry material is left exposed when not in use. Equipment should be readily available on site to clean any dry spillages, and cleaning should be conducted as soon as reasonably practicable after the event using wet cleaning methods.	Mandatory
Waste Management	
Avoid burning of waste or other materials.	Mandatory
MITIGATION MEASURES FOR EARTHWORKS	
Closed turfing to the exposed areas where possible and maintain proper storage of soil stockpiles to stabilise surfaces as soon as practicable. When a particular work is finished in an area, the soil will need to be reinstated upon completion, before moving on to different areas. This will reduce dust emission. In the air assessment it refers to reinstatement as a regrown area, it does not mean replanting same trees. It only refers to vegetation plantation which prevents erosion of soil to form dust.	Mandatory

Mitigation Measures	
Use Hessian, mulches or soil tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Soil erosion blankets may also be used as an alternative.	Mandatory
Only remove the cover in intended working areas and not all at once.	Mandatory
MITIGATION MEASURES FOR CONSTRUCTION	
Avoid scabbling (roughening of concrete surfaces) if possible.	Mandatory
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Mandatory
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	Mandatory
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	Mandatory
MITIGATION MEASURES FOR TRACKOUT	
Use water-assisted dust sweeper(s) on the access and affected local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	Mandatory
Avoid dry sweeping of large areas.	Mandatory
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	Mandatory
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Mandatory
Record all inspections of haul routes and any subsequent action in a site log book.	Mandatory
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Mandatory
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Mandatory
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	Mandatory
Site access gates to be located at least 10 m from receptors where possible.	Mandatory

The APCP shall include the following information as a minimum:

- Summary of all work to be carried out including breakdown of phases and individual activities that may give rise to fugitive dust formation;
- Project title, project location and area, description of the site layout and locations of areas where dust is most likely to be generated such as haulage routes, excavation areas, etc. This description shall also include the location of the water supply or chemical suppressants for applying to the dust generating areas on site;
- List of each dust generating activity, the likely schedule for each activity and the dust control measures to be implemented and frequency for their implementation. The level of detail will depend on the overall Consequence classification identified in this report and should include as a minimum the mitigation measures listed as mandatory in this document;
- Summary of the air monitoring to be undertaken including monitoring location and schedule. The air monitoring results shall be recorded, and trends observed to determine the efficacy of dust control measures over the different construction stages;

- Details and procedures on using the site logbook which is used to record information on incidents such as dust episodes, the sources identified, and the action taken and its efficacy. Any complaints shall also be recorded within the logbook along with the subsequent mitigation implemented and time to close out the complaint. The logbook should also be used to keep track of the daily dust control measures implemented such as wheel washing, site watering, site inspections etc.;
- Details of the Superintending Officer (SO) should be included in this plan for managing dust management at the site. The responsibilities of the SO are listed in Section 12.4.4; and
- The air pollution control plan shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust and emissions through the use of best practice and procedures.

10.8.2 Operational Phase

No mitigation measures are required during operational phase as only Minor air quality impact significance is expected during project operational phase.

10.9 Residual Impacts

10.9.1 Construction Phase

Residual Impact Assessment assumes that the mitigation measures within Section 10.8.1 are implemented within the construction footprint.

The Likelihood of occurrence of a significant adverse impact would be classified as Rare, subject to relevant mitigation measures identified being implemented. This Likelihood is combined with Impact Consequence to provide the residual Impact Significance results for the construction footprint. The residual Impact Significance is listed in Table 10-22 below.

Based on the assessment, by implementing the proposed mitigation measures, the Likelihood of the impact is expected to reduce from Regular to Rare, resulting in **Minor** Impact Significance.

Table 10-22 Impacts of dust risk assessment (after mitigation)

Key Parameter - Earthworks				Impact Assessment						
Total Earthworks Footprint (m^2)	No. of heavy machineries during foundation work	Total Material Moved (tonnes)	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
~470,000 (>10,000)	~22 (>10)	>100,000	High	Priority 1	Priority 1	High	High	Rare	**Minor**	**Minor**
Key Parameter - Construction				**Impact Assessment**						
Total Building Volume (m^3)	Construction Material	No. of concrete batching plant	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
>100,000	Potentially dusty (e.g. concrete)	0	High	Priority 1	Priority 1	High	High	Rare	**Minor**	**Minor**
Key Parameter - Trackout				**Impact Assessment**						
No. of outward trucks movement per day	Road surface material	Unpaved Road Length (m)	Impact Intensity	Sensitivity of the Area		Overall Consequence / Dust Risk		Likelihood	Impact Significance	
				Ecological Receptor	Human Receptor	Ecological Receptor	Human Receptor		Ecological Receptor	Human Receptor
~51 (>50)	Potentially dusty	>100	High	-	Priority 1	-	High	Rare	**-***	**Minor**

Note: * As observed from Figure 10-6, any ecological receptor is located > 50 m from the indicative potential access road. Therefore, in line with the IAQM Guidance, the Trackout activities is expected to have insignificant impact on the ecological receptors. However, it shall be noted that impact on ecological receptors is still expected from Earthworks and Construction activities.

10.9.2 Operational Phase

As discussed in Section 10.7.2, the potential impact significance due to increased traffic is considered to be Minor. No mitigation measures are required during operational phase.

10.10 Summary of Key Findings

Air quality impacts from the construction and operation of the proposed project were assessed on air sensitive receptors (ASRs) in the vicinity of the Study Area. Primary baseline air quality monitoring was conducted for 1 week each ranging from 22 – 29 March 2021 at one (1) representative location. All measured pollutant concentrations at A1 were well below the Singapore Ambient Air Quality Long Term Targets for both PM_{10} and $PM_{2.5}$. Analysis of baseline results are detailed in Section 10.5.2.2.

Potential impacts to the neighbouring sensitive receptors during construction phase mainly include emissions from the heavy vehicular exhaust and dust emitted from the earthworks, construction and trackout activities. During the operational phase, emissions from vehicle exhaust due to increased traffic in the vicinity of the proposed development is identified as the predominant air emission source.

Air quality impact assessment for construction phase were undertaken in accordance with the UK IAQM Guidance on the Assessment of Dust from Demolition and Construction. Pursuant to which, 50m and 350m Assessment Area for ecological and human receptors respectively were considered for earthworks, construction and trackout activities. Dust generated during construction works can have adverse effects upon vegetation restricting photosynthesis, respiration and transpiration. Furthermore, it can lead to phytotoxic gaseous pollutants penetrating the plants. The overall effect can be a decline in plant productivity. For human receptors, the dust and gaseous emissions might cause respiratory problems and diseases in human health.

The results of the assessment show that unmitigated impacts are classified as **Major** and have the potential to affect the receptors near the construction footprint unless mitigation measures are put in place (see Section 10.7 for assessment details). This is largely because of the large extent of the construction worksite located very close to the neighbouring sensitive receptors. This report pulls together mitigation measures that can be implemented by the contractor as administrative or management measures, sourcing from best practice measures internationally, which are detailed Section 10.8, which when applied successfully, the significance of impacts is anticipated to be reduced to **Minor** (see Section 10.9 for details). The key control and mitigation measures include but not limited to development and stringent implementation of air pollution control plan, dust control measures on site, site hoarding, planning of dust causing activities-location and timing, reinstating land upon completion of works amongst several others.

The construction contractor is recommended to prepare an air quality management plan incorporating a range of monitoring and mitigation measures in line with Section 10.8, Section 12.13 and Section 12.15.

Table 10-23 Summary of air quality impact assessment

Potential Source of Impact	Impact Significance with Minimum Control	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase		
Dust emissions generated by earthworks processes	Major	Minor
Dust and gaseous emissions generated by the construction of new structures, including the use of off-road diesel generators on-site	Major	Minor
Dust and gaseous emissions from transport of dust and dirt by dumper trucks	Major	Minor
Operational Phase		
Gaseous and particulate emissions from vehicle exhaust due to the increased traffic	Minor	Minor

11 Airborne Noise

11.1 Introduction

This section presents the qualitative assessment of airborne noise impacts arising from the construction and operational phase of the Project to the identified ecological receptors and human receptors. Noise from construction and operational activities may be perceivable, especially to receptors in proximity and those having a direct line-of-sight to the noise sources from the proposed construction worksites within the Study Area provided by URA at the pre-design stage.

The key steps for conducting noise impact assessment are as follows:

- Review baseline noise monitoring data to assess the current baseline noise levels at locations within and surrounding the Study Area;
- Identify and classify the sensitivity of receptors surrounding the proposed construction worksites within the Study Area;
- Conduct noise impact assessment to qualitatively assess noise impacts during the construction phase and operational phase;
- Recommend minimum control and mitigation measures to be implemented; and
- Determine the overall significance of the residual noise impacts after the implementation of the mitigation measures.

11.2 Methodology and Assumptions

11.2.1 Assessment Area

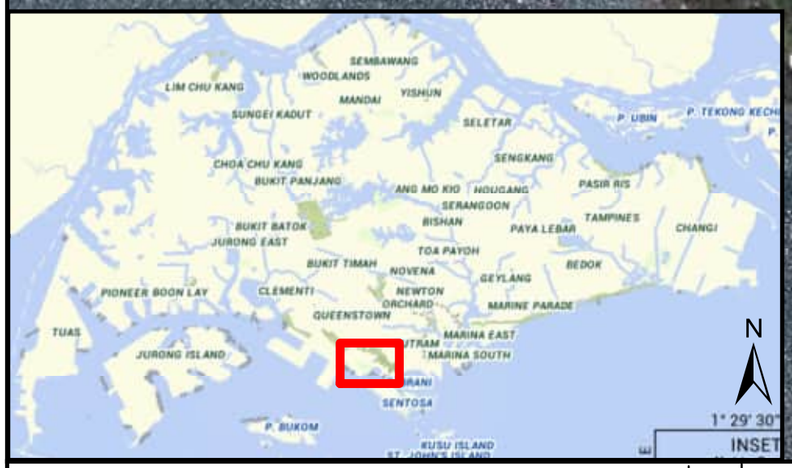
Following reflects the Assessment Area for the Construction Phase and Operational Phase of the Project:

11.2.1.1 Construction Phase

The Assessment Area for airborne noise impact assessment of the construction phase was recommended as 150 m from the proposed construction worksites provided by URA, in accordance with the *Environmental Protection and Management (Control of Noise at Construction Sites) Regulations*, 2008 [R-34] as reflected in Figure 11-1 to assess the noise impacts on ecological receptors and human receptors. It should be noted that at the current pre-design stage, construction worksites for three phases were tentatively proposed within the Study Area as visualized in Figure 11-1. As such, construction noise impact assessment shall only look into the noise impacts on receptors within 150 m arising from the proposed construction worksites where the primary sources of noise emissions arise from, as opposed to the entire Study Area.

For ecological receptors specifically, due to their mobile nature in comparison to fixed human receptors (i.e. buildings), a distinction between the ecological receptors found at Berlayer Creek, Keppel Club, near Bukit Chermin and Reflections at Keppel Bay (within 150 m from proposed construction worksites), and ecological receptors found along Port Road, near Labrador Nature Reserve (beyond 150 m of proposed construction worksites) was made as discussed in Section 11.4.1.1 to ensure fair assessment on potential qualitative impacts from construction noise on the noise sensitive ecological receptors.

Labrador MRT Station
HDB Estate Blangah Ct
Ongoing Construction
Telok Blangah MRT Station
Keppel Club golf course
PSA Club
Former BP Oil Refinery Site
Berlayer Creek
Labrador Nature Reserve
Keppel Club
Reflections at Keppel Bay
Bukit Chermin
Keppel Island
N
0 120 240 480 M



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksite Areas (Development Area)
- Boundary of Berlayer Creek

Assessment Area for Airborne Noise Impact Assessment

- 150 m from Proposed Construction Worksites (Development Area)

Note: Construction noise impact assessment shall only look into the noise impacts on receptors within 150 m arising from the proposed construction worksites where the primary sources of noise emissions arise from, as opposed to the entire Overall EIS Study Area.

N

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Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

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Figure Title :
Airborne Noise Study Area for Construction Phase

Figure No. :	Rev.	Sheet
11-1	-	1 of 1

CAD File Name :NA | A3

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11.2.1.2 Operational Phase

For the operational phase, two elements contribute to the noise impacts, namely arising from the operation of air conditioning and mechanical ventilation (ACMV) systems for non-industrial buildings proposed within the Study Area, and vehicular noise from road traffic at the Study Area which can be a result of noise emissions from new road networks within the Study Area (see Section 11.2.4.1.2) and increased traffic volumes and traffic noise from existing roads near the proposed residential developments.

The area of assessment for operational noise arising from ACMV systems looks into the impacts on human receptors (i.e. buildings) at the immediate boundary of the operational footprint (i.e. non-industrial building) as defined by the *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39]. While for operational noise arising from vehicular noise within the Study Area, the Assessment Area was recommended by the *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38] as 70 m from the land traffic noise sources (i.e. proposed new road networks) to assess the noise impacts on the human residential receptors and ecological receptors.

As no definitive information on proposed new road networks and demarcation of boundaries of non-industrial buildings within the Study Area are available at the pre-design stage, the Assessment Area of operational noise has hence been omitted in this report and shall be defined at the later detailed design stage by Noise Consultant(s) appointed by the developer/ developing agent once the non-industrial buildings and associated ACMV systems are laid out to procure an accurate understanding of the area of assessment for operational noise impacts.

11.2.2 Baseline Airborne Noise Study

Baseline airborne noise study was used to establish the existing noise levels in the Assessment Area.

11.2.2.1 Desktop Research

Desktop research consists of a review of secondary data (including existing land use and development activities, satellite images, etc.) which aids in determining the baseline noise monitoring location. The information retrieved during the desktop research comprised of publicly available data from government and technical agencies, existing available data, relevant articles, and other online sources.

11.2.2.2 Field Survey and Assessment

Site reconnaissance was conducted on 2 December 2020 for up to 150 m from and within the Assessment Area. A total of four (4) noise monitoring locations were proposed (at the Inception stage), based on the following considerations:

- Identification of NSRs (hospitals, schools, childcare facilities, old age homes, residences, fauna, and habitats of high ecological value) nearest to the Assessment Area;
- Other NSRs away from the Assessment Area were eliminated;
- NSRs with areas having ongoing construction were avoided; and
- The closest NSR to the Assessment Area was selected.

The noise monitoring locations are detailed in Table 11-1 and reflected in Figure 11-2. Noise monitoring was conducted for a period of one (1) week (inclusive of Weekdays and Weekends) to capture the baseline noise levels over periods of 12 hours (long term), 1 hour, and 5 minutes (short term) at each location. The NEA-approved Norsonic 131 Type 1 Sound Level Meter (SLM) was used to record the noise levels during the time periods. The method and results were detailed in the baseline noise monitoring report in Appendix V and will be further discussed in Section 11.5.2.

In determining the impact of the construction noise to the noise sensitive receptors (NSRs), the baseline noise levels in the Assessment Area would be included in the calculation to derive a background noise correction factor to establish the maximum permissible noise level from the construction activities in accordance with the noise legislation stated in *Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008* [R-34].

While for the determination of operational noise impacts arising from potential operational activities, namely land traffic noise and noise from air conditioning and mechanical ventilation (ACMV) systems, a qualitative study of noise impacts on the NSRs will be conducted in accordance with the *NEA Technical Guideline for Noise Limits for*

Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018 [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38].

Table 11-1 Airborne noise baseline monitoring locations

S/N	Monitoring Location	Ecological Receptors	Human Receptors	Justification	Photo of Monitoring Location
N1	Berlayer Creek Lookout Point	Priority 1, 2, 3 (dependent on sensitivty of species to noise)	N.A.	Berlayer Creek is an area of high ecological value located within the assessment area. The selected location represents the internal environment of areas of high ecological value within the Study Area.	
N2	Along Bukit Chermin Road	Priority 1, 2, 3 (dependent on sensitivty of species to noise)	Residential	Representative baseline noise monitoring location for Reflections at Keppel Bay Condominium in the east of the assessment area. The baseline noise level is expected to be dominated by low traffic along Bukit Chermin Road and operation within the condominium.	
N3	HDB Block 44, Blangah Court (Telok Blangah Drive)	N.A.	Residential	Representative baseline noise monitoring location for residences in the north of the assessment area. The baseline noise level is expected to be dominated by traffic along West Coast Highway and Telok Blangah Road.	

S/N	Monitoring Location	Ecological Receptors	Human Receptors	Justification	Photo of Monitoring Location
N4	Outside of Labrador Nature Reserve, along Port Road	Priority 1, 2, 3 (dependent on sensitivty of species to noise)	N.A.	Labrador Nature Reserve is an area of high ecological value south of the assessment area. The selected location represents the internal environment of the area of high ecological value. The baseline noise level is expected to be dominated by nature activities and human traffic within the nature reserve along Port Road.	
Note: N.A. – Not Applicable					

Labrador MRT Station
Ongoing Construction
HDB Estate Blangah Ct
N3
Telok Blangah MRT Station
Keppel Club golf course
PSA Club
N1
N4
N2
Former BP Oil Refinery Site
Berlayer Creek
Labrador Nature Reserve
Keppel Club
Reflections at Keppel Bay
Bukit Chermin
Keppel Island
SEMBAWANG
WOODLANDS
LIM CHU KANG
MANDAI
YISHUN
SUNGEI KADUT
SELETAR
P. UBIN
P. TEKONG KECHI
SENGKANG
CHOA CHU KANG
BUKIT PANJANG
ANG MO KIO
HOUGANG
PASIR RIS
SERANGOON
BUKIT BATOK
BISHAN
PAYA LEBAR
TAMPINES
CHANGI
JURONG EAST
TOA PAYOH
BUKIT TIMAH
NOVENA
BEDOK
GEYLANG
PIONEER
BOON LAY
CLEMENTI
NEWTON
ORCHARD
MARINE PARADE
QUEENSTOWN
TUAS
MARINA EAST
MARINA SOUTH
JURONG ISLAND
SENTOSA
P. BUKOM
KUSU ISLAND
1° 29' 30"
INSET
N
0 120 240 480 M

Legend

- Baseline Airborne Noise Monitoring Locations
- Overall EIS Study Area
- Development Area
- Boundary of Berlayer Creek

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Figure Title :
Baseline Airborne Noise Monitoring Locations

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	Drawn: SYT	Date: APR 2022

Figure No. : 11-2 | Rev. : - | Sheet : 1 of 1

CAD File Name :NA | A3

Note: Source of basemap - Google Earth Map

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11.2.3 Classification of Noise Sensitive Receptors

The classification of both ecological and human receptors is described as follows and visualized respectively in Figure 11-4 and Figure 11-5 of Section 11.4. Further discussion on the identification of noise sensitive receptors (NSRs) are detailed in Section 11.4.

11.2.3.1 Ecological Receptors

Based on the assessment methodology in Table 6-2, the classification of ecological receptors was deduced based on the auditory sensitivities of the respective fauna species. Fauna species the vocalise during important life cycle stages such as courtship, territorial claims and/ or mating, were assigned Priority 1 due to their auditory sensitivity. Fauna species that have auditory sensory systems but do not necessarily need to vocalize during important life cycle stages were assigned Priority 2. While fauna species that are not likely to be affected by noise were assigned Priority 3. The classification of auditory sensitivities of the ecological receptors are applicable for both the construction and operational phase and shall be further discussed in Section 11.4.1.

11.2.3.2 Human Receptors

11.2.3.2.1 Construction Phase

Based on the assessment methodology in Table 6-2, there are three classifications (i.e. Priority 1, Priority 2, Priority 3) of human noise sensitive receptors (NSRs) which relates to the nature of the building, be it educational institution, residential space, commercial or industrial space and so on, that are further discussed in Section 11.4.2.1.

The list of human NSRs is presented in Table 11-15 in Section 11.4.2.1. It should be noted that the list of human NSRs do not include the proposed residential housing of the Project and existing buildings within the Study Area, apart from those within the Bukit Chermin Reserve Site and existing MRT station structures (see Figure 11-1), as these buildings (i.e. Keppel Club, PSA Building) will be demolished as part the Project.

11.2.3.2.2 Operational Phase

While for the operational phase, two potential sources of operational noise as discussed in Section 11.2.1.2 should be considered when assessing human receptors. Human receptors subjected to operational noise impacts from ACMV systems are defined as buildings at the immediate boundary of the non-industrial building where the classification of the human receptors, similar to that of the construction phase, relates to the nature of the building as reflected in Table 11-15 and later discussed in Section 11.2.4.1.2. While human receptors subjected to traffic noise impacts due to emissions from existing/ new road networks, are defined as residential and noise sensitive developments in close proximity, within 70 m from, the traffic source. The classifications of the human receptors for the operational phase were deduced in accordance with the *NEA Technical Guideline for Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38].

At this pre-design stage, as no definite information on proposed new road networks and demarcation of boundaries of non-industrial buildings within the Study Area are available, the human receptors subjected to operational noise impacts are hence been omitted in this report and shall be defined at the later stages of the Project development at the detailed design stage by Noise Consultant(s) appointed by the developer/ developing agent once the non-industrial buildings and associated ACMV systems are laid out to procure an accurate understanding of the area of assessment for operational noise impacts.

11.2.4 Assessment Criteria

This section reflects the methodology used in deducing the specific noise criteria associated with the construction and operational phase of this Project to be adopted as part of quantitative noise impact assessment at the detailed design stage by Noise Consultant(s) engaged by the developer/ developing agent as mandated by law.

Furthermore, as part of the Project scope, qualitative noise impact assessment criteria adopted to assess airborne noise impacts on nearby noise sensitive receptors (NSRs) that may potentially arise from the construction phase and operational phase of the Project at the pre-design stage is also outlined in this section. Baseline noise levels were also monitored to develop the specific construction noise criteria for this Project.

11.2.4.1 Quantitative Airborne Noise Impact Assessment Criteria

It should be noted that the quantitative noise criteria deduced for construction phase at the current stage are for the purposes of serving as reference for the pre-design stage to the proposed residential developments of this Project. Operational phase noise criteria, however, will not be deduced as per the Project scope due to the lack of information required to assess operational phase baseline conditions in accordance with the NEA Guidelines required for establishing the operational noise criteria as detailed in Section 11.2.4.1.2 below. Hence, project specific noise criteria for the operational phase has been omitted from this report.

As per information available during Inception stage, current stipulated land use for the Study Area is still 'Residential (Subject to Detailed Planning)' (see Figure 3-2). As such, quantitative airborne noise impact assessment excluded from this EIS should be studied by the Noise Consultant(s) appointed by the developer/ developing agent upon solidifying design plans at the detailed design stage as mandated by law.

11.2.4.1.1 Construction Noise Criteria (Construction Phase)

11.2.4.1.1.1 Ecological Receptors

The ecological impacts from airborne noise are species dependent and hence the assessment would be based on species identified during site surveys within and surrounding the Study Area for airborne noise sensitive receptors to align with the biodiversity study in Section 7. Species which are noise sensitive are those that use noise, for example for their communication or identification of their way, at certain times of the day. Construction and noisy activities during their active times can cause interference with their day-to-day activities. Therefore, at these times, construction noise criteria are made more stringent for ecological receptors than the human noise criteria.

As no guidelines or standards were available to assess construction noise impacts on the ecological receptors, the baseline monitoring results within and surrounding the Project Study Area shall be applied to form the assessment criteria for the airborne noise impact assessment on ecological receptors. Unlike human receptors, baseline monitoring results were chosen as a basis of comparison for ecological receptors because fauna species face a direct form of impact, given that the habitats where they reside in are directly impacted by the noises emitted from the introduction of construction activities in the vicinity. Therefore, it is not advisable to adopt similar assessment criteria to human receptors where they operate in different nature.

For the purpose of noise impact assessment on ecological receptors in this EIS, a criterion of no-worse-off than baseline shall be adopted in absence of adequate research data on criteria and applied to the ecological receptors identified within and surrounding the Study Area as part quantitative noise impact assessment to be conducted by Noise Consultant(s) appointed by the developer/ developing agent at the detailed design stage of the Project as mandated by law.

11.2.4.1.1.2 Human Receptors

Specific construction noise criteria for the construction phase of this Project were developed with the baseline noise levels detailed in Section 11.5.2, included in the calculation to derive a background noise correction factor to establish the maximum noise level permitted from the construction activities in accordance with the *Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008* [R-34].

The legislative requirements for environmental noise arising from construction activities in Singapore contains three parts which specifies the applicable noise criteria for construction sites over different periods of time. The corresponding permissible noise criteria are provided in Table 11-2 to Table 11-4 for different periods of duration.

They are reflected in the order as follows:

- $L_{Aeq(12\ hour)}$ refers to equivalent continuous noise level over a period of 12 hours;
- $L_{Aeq(1\ hour)}$ refers to equivalent continuous noise level over a period of 1 hour within a 24-hour period; and
- $L_{Aeq(5\ min)}$ refers to equivalent continuous noise level over a period of 5 minutes within a 24-hour period.

Table 11-2 Maximum permissible noise levels for construction works over a period of 12 hours

Types of Affected Buildings	Days of the week	Maximum Permissible $L_{Aeq(12\ hour)}$, dB	
		7am – 7pm	7pm – 7am
(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	All days	60	50
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	All days	75	–
(c) Buildings (other than those in paragraphs (a) and (b))	All days	75	65

Table 11-3 Maximum permissible noise levels for construction works over a period of 1 hour

Types of affected buildings	Days of the week	Maximum Permissible $L_{Aeq\ (1\ hour)}$ (dB)		
		7am – 7pm	7pm – 10pm	10pm – 7am
(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	Monday to Saturday	–	–	–
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	Monday to Saturday	–	65	55
(c) Buildings (other than those in paragraphs (a) and (b))	Monday to Saturday	–	–	–

Table 11-4 Maximum permissible noise levels for construction works over a period of 5 minutes

Types of affected buildings	Days of the week	Maximum Permissible $L_{Aeq\ (5\ min)}$ (dB)		
		7am – 7pm	7pm – 10pm	10pm – 7am
(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	All days	75	55	55
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	Monday to Saturday	90	70	55
	Sunday and PH	75	55	55
(c) Buildings (other than those in paragraphs (a) and (b))	All days	90	70	70

As per the legislation, if there exists other sources of noise affecting the measurement of noise emitted from the construction site, the maximum permissible noise levels from the construction sites will be subjected to adjustments by the addition of a correction factor to account for the existing background noise levels in the area. The correction factor corresponds to the difference between the relevant permissible levels, and the background noise levels as presented in Table 11-5. The difference in noise levels are then added to the higher of the two noise levels (background noise/ criteria as appropriate) to deduce the applicable noise criteria for the specified construction area.

Table 11-5 Construction noise correction factor

Difference between Permissible & Background Noise Levels, dB (A)	Correction Factor to be Added to the Higher of the Two Noise Levels, dB (A)
Below 2	3
2 to less than 4	2
4 to less than 10	1
10 and above	Nil.

The corrected construction noise criteria will be presented and further elaborated in Section 11.5.2.

11.2.4.1.2 Operational Noise Criteria (Operational Phase)

11.2.4.1.2.1 Ecological Receptors

There are currently no guidelines or standards available to assess the noise from operational activities on the ecological receptors. The current guidelines and standards available are used to assess the respective noise impacts to humans only and will be adopted for the ecological receptors for this study for the purpose of establishing the criteria and assessing noise impacts to the identified noise sensitive ecological receptors. The ecological impacts from airborne noise is species dependent, hence the assessment will be based on the species identified by the fauna specialists during site surveys within and surrounding the Study Area as stated in Section 11.4.2.1, in sync with the biodiversity section of this report.

The adopted human guidelines and standards for the operational noise impact on ecological receptors are reflected in Section 11.2.4.1.1.2 below.

11.2.4.1.2.2 Human Receptors

For airborne noise arising from the operational phase, there exists two (2) aspects of impact for consideration:

1. Operation of air conditioning and mechanical ventilation (ACMV) systems for proposed buildings (non-industrial) within the Study Area; and

2. Vehicular noise from road traffic at the Study Area.

11.2.4.1.2.3 Air Conditioning and Mechanical Ventilation Systems

According to the *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39], non-industrial buildings refers to any permanent or temporary building or structure used for the purposes of trade, business or commerce and includes any shopping complex, financial institution, office tower, hotel, educational institution, hospital, transport infrastructures, community infrastructure, sport and recreational infrastructure but does not include any factory and residential premises.

As per the latest statutory land use plan (Master Plan 2019 [M-2]) (see Figure 3-2), majority of the land parcel stipulated for use in the proposed residential development is still ‘Subject to Detailed Planning’. As such, noise impacts of arising from ACMV systems at the Study Area to the receptors in the vicinity will be considered in this study as the nature of the residential development is uncertain at this stage. It should be noted that if the proposed residential development will be a mixed-used development comprising of both commercial and residential, the more stringent residential noise limits (see Section 11.2.4.1.1) should apply. The noise limits for ACMV systems are outlined in Table 11-6 below.

Table 11-6 NEA boundary noise limits

Type of Affected Premises	Boundary Noise Limits (reckoned as the equivalent continuous noise level over 15 minutes), dB(A)		
	Day 7am – 7pm	Evening 7pm – 11pm	Night 11pm – 7 am
Noise Sensitive Premises e.g. hospital, home for the aged sick, library.	60	55	50
Residential Premises	65	60	55
Others	70	65	60

As part of the assessment during the pre-design stage, baseline noise results derived during noise monitoring will be used to derive the operational noise criteria for noise impacts over a continuous period of 15 minutes. However, at the current pre-design stage given that the proposed residential developments within the Study Area are still 'Subject to Detailed Planning', proper baseline noise for operational phase impact assessment could not be captured due to the lack of information of defined building boundaries and building type (e.g. non-industrial) required to conduct impact assessment as per the NEA Guidelines. Due to this, the baseline noise results recorded for $L_{Aeq(15\ mins)}$ reflected in Section 11.5.2.2 for the operational phase shall only serve to reflect the indicative operational baseline noise conditions.

As such, to deduce the adjusted operational noise criteria, a Noise Consultant should be appointed by the developer/ developing agent once the non-industrial buildings and associated ACMV systems are laid out to procure an accurate understanding of baseline noise levels for the operational phase where noise levels should be measured at the boundaries of the non-industrial buildings following the methodologies detailed in the guideline at the detailed design stage as required by NEA. Hence, the operational noise criteria have been omitted from in this report.

According to the guideline:

> "*Where a noise source contains certain characteristics such as tonality, impulsiveness, intermittency, irregularity or dominant low frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same level and a penalty of 5 dB (A) shall be added for each of the following characteristics, up to a maximum to 10 dB (A).*"

Hence, noise correction factors shall be applied to the baseline noise results to determine the operational noise criteria for the Project. The maximum permissible noise levels for the Project shall be deduced and adjusted by the correction factor reflected in Table 11-7 below to account for the existing noise levels measured at defined boundaries of the non-industrial buildings at later stages of development in the detailed design stage, by the appointed Noise Consultant.

The correction factor corresponds to the difference between maximum permitted level (see Table 11-6) and the baseline noise levels (see Section 11.5.2), to the higher of the two (2) noise levels. The adjusted value for the maximum permissible noise limit (i.e. the operational noise criteria), shall be determined through the addition of the correction factor to the baseline noise results. This shall too be conducted by an appointed Noise Consultant at a later stage.

Table 11-7 ACMV correction factor (operational phase)

Difference between 2 noise levels in decibels (A)	Correction factor in decibels (A)
Below 2	3
2 to less than 4	2
4 to less than 10	1
10 and above	Nil.

11.2.4.1.2.4 Land Traffic Noise

The Technical Guideline for Land Traffic Noise Impact Assessment provides guidance to conduct for the following:

- Part 1 – Land traffic Noise Impact Assessment on new residential and noise sensitive developments located in close proximity to existing land traffic noise sources/hotspots (e.g. expressways/major arterial roads/MRT tracks); and
- Part 2 – Land traffic Noise Impact Assessment on existing residential and noise sensitive developments located in close proximity to new transport-related developments (e.g. expressway/major arterial roads/MRT track/bus interchanges/bus depots), inclusive of the expansion of existing transport-related infrastructures.

The noise emissions due to movement of traffic shall be assessed against the *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38] for the proposed development for operation of transportation networks in the Study Area. The noise levels of the new residential and noise sensitive development shall comply with the following NEA's noise requirement.

NEA's noise requirements are as follows:

- The noise levels at 1 m from the façade of the new residential/noise sensitive building shall not exceed $L_{Aeq(1hr)}$ 67 dB; and
- The indoor noise level of the new residential/noise sensitive building under natural ventilation shall not exceed $L_{Aeq(1hr)}$ 57 dB.

This Traffic Noise Impact Assessment (TNIA) is typically conducted by a Noise Consultant appointed for the proposed developments for the residential and noise sensitive buildings for the Project at the detailed design stage and hence have been omitted in this report.

11.2.4.2 Qualitative Airborne Noise Impact Assessment Criteria

This section reflects the qualitative airborne noise impact assessment criterions adopted for the qualitative assessment of both construction and operational noise impacts on the noise sensitive receptors (NSRs) identified (refer to Section 11.4) for this Project.

As observed in Table 11-8 and Table 11-9 below, impact intensity, defined as the magnitude of the impact and status of the impact in relation to regulations (e.g. discharge limits), standards (e.g. environmental quality criteria) and guidelines (see Section 6.4), is defined based on the perceivability and noticeability of the noise impacts experienced by the NSRs.

The purpose of conducting qualitative impact assessment at the pre-design stage is to aid in decision making during the master planning phase where potential noise impacts could be deduced and mitigated at an early stage to streamline the eventual design of the proposed developments and establishments within the Study Area/ proposed construction worksites at the detailed design stage.

Please note that as only qualitative impact assessment is conducted currently at the pre-design stage (as per Project Scope), quantitative noise impact assessment must be conducted as mandated by law in accordance with the *Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2008* [R-34] and *NEA Construction Noise Control* [W-13] regulations for construction noise impacts, and *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial*

Buildings, 2018 [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38] for operational noise impacts. As such, AECOM recommends that the developer/ developing agent appoint Noise Consultant(s) to conduct quantitative noise impact assessments for the proposed developments of this Project upon solidifying design plans at the detailed design stage.

The following sections details the qualitative impact assessment matrices adopted to deduce the impact intensity of the construction and operational noise on the NSRs.

11.2.4.2.1 Ecological Receptors

As observed below in Table 11-8 (and also in Table 6-6), the impact intensity of airborne noise on the ecological receptors are dependent on the perceivable and noticeable impacts to fauna, such as whether are there detectable changes in behaviours (e.g. stress), longevity of the perceived impacts (e.g. short term vs long term), reversibility of these impacts (e.g. whether ecological receptors will temporarily/ permanently abandon their habitats) with or without compensatory measures, and their respective auditory sensitivity to noise. These matrices shall be adopted for qualitative noise impact assessment discussed further down in Section 11.7.

Table 11-8 Qualitative evaluation of impact intensity for construction and operational noise for ecological receptors

Environmental Parameters	Impact Intensity			
	Negligible	Low	Medium	High
Airborne Noise (Construction and Operational Phase)	Ecological Receptors: • No detectable change to fauna as the noise levels contribution from construction do not add to the average baseline levels.	Ecological Receptors: • Potential impacts last a short duration, are reversible and/ or of a small magnitude for species with low auditory sensitivity level.	Ecological Receptors: • Potential impacts last for a moderate duration, are reversible with significant input and compensatory measures, and/ or of a moderate magnitude for species with medium auditory sensitivity level.	Ecological Receptors: • Potential impacts last for a long time, are non-reversible, and/ or of a significant magnitude for species with high auditory sensitivity level.

11.2.4.2.2 Human Receptors

As observed in Table 11-9 (also in Table 6-6), the impact intensity of airborne noise on human receptors are similarly dependent on perceivable and noticeable impacts of noise on human receptors, such as how intrusive the noise is, whether the noise can be heard and results in behavioural changes, if the noise will result in sleep disturbances, and whether the noise will result in depreciation of the perceived quality of life of the area. These matrices shall be adopted for qualitative noise impact assessment discussed further down in Section 11.7.

Table 11-9 Qualitative evaluation of impact intensity for construction and operational noise for human receptors

Environmental Parameters	Impact Intensity			
	Negligible	Low	Medium	High
Airborne Noise (Construction and Operational Phase)	Human Receptors: Just noticeable, non-intrusive, increase in noise levels: • Noise can be heard but does not result in any change in behaviour or attitude. • Can slightly affect the character of the area but not such that there is a perceived change in quality of life.	Human Receptors: Noticeable, mildly intrusive, increase in noise levels: • Noise can be heard and may cause small changes in behaviour and/ or attitude. • Potential for non-awakening sleep disturbance. • Can slightly affect the character of the area but not such that there is a perceived change in quality of life.	Human Receptors: Noticeable, disruptive, increase in noise levels: • Causes an important change in behaviour and/ or attitude during periods of intrusion. • Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening, and difficulty in getting back to sleep. • Quality of life diminished due to change in character of area.	Human Receptors: Noticeable, very intrusive, increase in noise levels: • Significant changes in behaviour and/ or an inability to mitigate effect of noise leading to psychological stress or psychological effects.

11.2.5 Prediction and Evaluation of Impact Assessment

The airborne noise impact assessment includes the evaluation of construction and operational noise impacts on the respective noise sensitive receptors (NSRs) (i.e. ecological and human receptors).

11.2.5.1 Construction Phase

The study on the construction noise impacts on the NSRs shall focus on worst-case noisiest activities for the construction activities active during certain construction schedules provided by URA in Appendix W. As per information communicated by URA on 8 June 2021, no night works will be involved in the construction phase and as legislated by NEA, no construction works should be conducted on the Weekends (Sunday/ Public Holidays) unless necessary and granted approval by relevant agencies. Hence, construction noise assessment will only be conducted for the construction schedule of 7am – 7pm and for Weekdays (i.e. Monday – Saturday). Of the six (6) construction activities detailed in the equipment inventory list provided by URA (see Appendix W), construction activity “Activity 3: Foundation Works” (see Table 11-10 below) was deduced as having the highest 12 hours and 5 mins effective sound power level (SPwL) for 7am – 7pm for Weekdays (i.e. Monday – Saturday).

As reflected in Figure 11-3, there are a total three (3) parcels of proposed construction worksites where construction activities listed in Table 11-10 below will occur on as part of the construction phase. These three (3) parcels are indicative of the areas stipulated for earthworks Phase 1 – Phase 3. It was assumed that construction activity “Activity 3: Foundation Works”, selected as the construction activity of focus for this study, will occur across all three (3) parcels of the proposed construction worksites at the same time same time in order to account for the potential worst-case noisiest situation that the NSRs would be exposed to during construction works. The intent of selecting the worst-case activity for assessment was such that if noise can be controlled in this activity by permanent features during the entire construction, the noise from other less noisy construction activities will also be mitigated.

The respective sound power levels of the selected construction activity provides an insight into the potential magnitude of noise perceived by the ecological and human receptors and how noticeable these noise emissions may be to the receptors on the receiving end for the purposes of conducting qualitative impact assessment.

As detailed in the assessment methodology (see Section 6.4), NSRs were first identified and classified by the nature of the receptors as reflected in Table 6-2. Then, impact intensity was determined through the perceivability and noticeability of noise to the respective ecological and human receptors as detailed in Table 6-6. By considering both impact intensity and receptor sensitivity, impact consequence can then be obtained as per the matrix in Table 6-7. Thereafter, the likelihood of occurrence of the impact from the construction activities of this Project were calculated based on the percentage of duration of the activity over the entire construction timeline at the worksites (e.g. an activity happening for < 5% of entire construction timeline at the worksites results in an Unlikely/ Remote likelihood) as shown in Table 6-8. By relating both impact consequence and likelihood of occurrence, the impact significance of airborne noise impacts were predicted with the consideration of minimum control measures (see Section 11.6).

Further analysis and evaluation will then be conducted to recommend additional mitigation measures (e.g. noise barriers, etc.) where necessary. At the end, a monitoring plan shall be established and triggers for action determined so that the impacts can be controlled within acceptable limits or as low as reasonably practicable.

Table 11-10 Construction activities of the construction phase

Construction Activity	Tentative Duration*
Activity 1: Demolition	18 months (from Q3 2022)
Activity 2: Clearance for Construction Areas • Earthworks Phase 1: Earthworks within existing Keppel Club golf course west of Bukit Chermin Road, with proposed access to the site from Telok Blangah Road/ West Coast Highway (in the north) and Bukit Chermin Road (in the east); • Earthworks Phase 2: Earthworks at the southern part of the Keppel Club, where Keppel Club's buildings and facilities are currently located. Site entrace during this phase is planned to be from southern reaches of Bukit Chermin Road, northwest of Bukit Chermin; and • Earthworks Phase 3: Earthworks east of the Bukit Chermin Road with proposed access to the site from Bukit Chermin Road in the proximity of Reflections at Keppel Bay.	49.5 months (from Q4 2022)
Activity 3: Foundation Works (Substructures including piles and pile caps)	10 months (from Q3 2025)
Activity 4: Superstructure (Prefab installation)	40 months (from Q2 2026)
Activity 5: Landscape Works	20 months (from Q1 2028)
Activity 6: Removal of Temporary Works and Re-instatement	10 months (from Q4 2028)
Note: * Due to the current pre-design stage of the Project, the construction schedules of each of the six (6) activities listed above are provided tentatively.	



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksite Areas (Development Area)
- Proposed Construction Access
- Proposed Construction Routes
- Boundary of Berlayer Creek

Assessment Area for Airborne Noise Impact Assessment

- 150 m from Proposed Construction Worksites (Development Area)

Proposed Construction Worksite Areas (Parcels)

- Earthworks (Phase 1): 2022 - 2025 Tentative
- Earthworks (Phase 2): 2023 - 2025 Tentative
- Earthworks (Phase 3): 2025 - 2027 Tentative

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SYT	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: Housing & Development Board; Urban Redevelopment Authority

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Parcels of Proposed Construction Worksites and Proposed Construction Routes

Designed	Checked	Approved
LAL	NHT	JAG
	Drawn: SYT	Date: APR 2022

Figure No. : 11-3 | Rev. : - | Sheet : 1 of 1

CAD File Name :NA | A3

Note: Source of basemap - Google Earth Map

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11.2.5.2 Operational Phase

Referring to Section 11.2.4.1.2, it is mandatory for the proposed developments to comply with NEA's guidelines for boundary noise impact assessment for air conditioning and mechanical ventilation (ACMV) systems of non-industrial buildings and Traffic Noise Impact Assessment (TNIA) for existing/ new road networks for the developments within the Study Area. Usually conducted by an appointed Noise Consultant during the detailed design stage, AECOM recommends the works for ACMV boundary noise impact assessment and TNIA to be conducted in the later stages of the development in accordance with *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38].

11.3 Potential Sources of Airborne Noise Impact and Likelihood of Occurrence

11.3.1 Construction Phase

Construction activities will inevitably result in some degree of noise disturbances at locations in close proximity to the proposed construction worksites of the Project. This is, however, a temporary source of noise. The noise levels generated by the construction activities will have the potential to impact the noise sensitive receptors (NSRs). Noise levels at the receptors depends on several factors such as the number and type of Powered Mechanical Equipment (PMEs) used, the distance between the NSRs and the construction worksites, and the level of attenuation likely due to ground absorption, air absorption or barrier effects.

Based on the construction programme proposed by URA at the pre-design stage, a total of six (6) construction activities starting with Demolition, followed by Clearance for Construction Areas, Foundation Works, Superstructure, Landscape Works and Removal of Temporary Works and Re-instatement have been planned as part of the activities involved in the residential development within the proposed construction worksite areas.

This section discusses on the equipment and activities which could potentially contribute to noise impacts during the construction phase of the Project. The main sources of noise will originate from the PMEs used for the construction activities detailed in Section 3.3. The PMEs and their respective sound power levels (SPwL) provided in this study are listed in the equipment inventory list in Appendix W. A summary of the six (6) construction activities and their overall effective SPwLs derived from the PMEs engaged in each of these activities are reflected in Table 11-11 below.

Table 11-11 Effective sound power level (construction phase)

No.	Construction Activity	Effective Sound Power Level L_{wA}, dB(A) from overall equipment inventory	
		$L_{Aeq(12\ hours)}$	$L_{Aeq(5\ mins)}$
		7am – 7pm	7am – 7pm
1	Demolition	116	119
2	Clearance for Construction Areas	107	110
3	**Foundation Works (Substructures including piles and pile caps)**	**118**	**121**
4	Superstructure (Prefab installation)	104	107
5	Landscape Works	116	119
6	Removal of Temporary Works and Re-instatement	116	119

The activities chosen for assessment as discussed in Section 11.2.5.1 were based on the worst-case activities with the highest overall SPwLs of the construction phase as reflected in Table 11-11 above in **bold** (i.e. Foundation Works). It is notable that the sound power levels (SPwL) reflected in Table 11-11 above represents the levels of noise emitted from source (i.e. from PMEs within the proposed construction worksites) which serves as an indicator towards the potential perceived level of noise experienced by the noise sensitive receptors in the vicinity of the Study Area at the receiving end and how noticeable the noise impacts may be, to the receptors.

11.3.1.1 Likelihood of occurrence of impacts

The likelihood of occurrence of the airborne noise impacts are determined based on the construction timeline and selected construction activities from Table 11-11.

11.3.1.1.1 Activity 3: Foundation Works

According to the tentatively proposed Project construction schedule reflected in Figure 3-3, Activity 3 will occur for a short 10 months out of a total of 125 months of the Project's construction schedule, equating to approximately 8.0 %. However, as observed in Table 11-11, there exists other activities of similarly high sound power levels (SPwL) as Activity 3, such as Activity 1: Demolition, Activity 5: Landscape Works and Activity 6: Removal of Temporary Works and Re-instatement.

Due to the potential of these other activities with similarly high SPwL contributing to significant noise impacts, it is not justifiable that only Activity 3: Foundation Works was considered as the only activity that would contribute to noise impacts despite being the worst-case noisiest activity especially while evaluating the likelihood of considerable significant impact. Therefore, additional construction activities as listed in Table 11-12 below were also included to provide a more accurate assessment of the likelihood of occurrence of noise impacts on the nearby noise sensitive receptors.

According to information provided by URA (refer to Appendix W), the total duration in months consumed by the identified construction activities over the total construction timeline will cover 58 months out of 125 months. This equates to approximately 46.4 % of the total construction timeline.

With reference to Table 6-8, activities occurring for 26 – 50 % of the construction timeline would have a likelihood of **Likely/ Regular** as reflected in Table 11-12 below. In order to streamline the report, reference to the likelihood of airborne noise impact for Activity 3 shall apply the term '**Likely**' to refer to **Likely/ Regular**.

Table 11-12 Likelihood evaluation of construction activities for airborne noise impact assessment

Worksites	Construction Activities and Duration	Likelihood of Occurrence
Activity 3: Foundation Works		
All proposed construction worksites (see Figure 11-3)	The total construction timeline is Q3 2022 (July) – Q3 2029 – 125 months Construction of proposed residential developments for $L_{Aeq(12\ hours)}$ and $L_{Aeq(5\ mins)}$ for 7am – 7pm Weekdays: • Activity 1: Demolition – 18 months (from Q3 2022) • Activity 3: Foundation Works – 10 months (from Q3 2025) • Activity 5: Landscape Works – 20 months (from Q1 2028) • Activity 6: Removal of Temporary Works and Re-instatement – 10 months (from Q4 2028)	Likelihood of occurrence of construction activities for $L_{Aeq(12\ hours)}$ and $L_{Aeq(5\ mins)}$ (7am -7pm) – approximately 46.4 % Likelihood: **Likely/ Regular** (refer to Table 6-8)

11.3.2 Operational Phase

The typical potential noise sources during the operational phase of the Project includes the following:

- Air-conditioning and mechanical ventilation (ACMV) noise from services emitted from non-industrial buildings as part of the Project development; and
- Traffic noise due to increase in vehicular volume and new road networks due to the development of the Project and in the vicinity of the Study Area.

Operational noise arising from ACMV systems, if any, are expected to persist throughout the day, emitting from proposed non-industrial buildings depending on the nature of the eventual establishment.

The potential impacts due to the increase in noise levels from the above-mentioned sources includes noise disturbance to humans and in addition, disturbance to ecological receptors (i.e. fauna species) found within the nearby Berlayer Creek, Labrador Nature Reserve areas and areas along Bukit Chermin such as the potential impacts of affecting ecological foraging behaviour, and intra-species and inter-species communication.

11.4 Identification of Airborne Noise Sensitive Receptors

This study focused on the noise impacts to the ecological receptors (i.e. fauna) and human receptors within the Assessment Area during the construction and operational phase of the Project. The classification of ecological receptors and human receptors was based on the auditory sensitivity of the respective species as described in Section 11.2.3. The identified ecological receptors and human receptors are further discussed respectively in Section 11.4.1 and Section 11.4.2.

11.4.1 Construction Phase

11.4.1.1 Ecological Receptors

11.4.1.1.1 Receptor Importance

The prioritization of the ecological receptors within and surrounding the Study Area follows the approach listed in the below factors:

- The actual presence or likely presence (from records) from faunistic field assessment conducted;
- The conservation significance or importance of the identified ecological receptors; and
- The ecological receptor's likelihood to be sensitive to airborne noise impacts.

Based on faunistic field assessment conducted within and surrounding the Study Area of the Project, a summary of the identified ecological receptors of concern in line with the biodiversity section are discussed below. The full list of ecological receptors is reflected in Appendix Y.

Priority 1, Priority 2 and Priority 3 fauna species have been identified within and surrounding the Study Area established in this Project as shown in Figure 11-4. In order to assess the construction noise impacts arising from the proposed construction worksites (see Figure 11-3) on the identified ecological receptors, a distinction between the ecological receptors found at Berlayer Creek, Keppel Turf Club, near Bukit Chermin and Reflections at Keppel Bay (within 150 m from proposed construction worksites), and ecological receptors found along Port Road, near Labrador Nature Reserve (beyond 150 m of proposed construction worksites) was made to ensure fair assessment on potential qualitative impacts from construction noise to be discussed further down in Section 11.7.

Species of conservation significance (CS) were also identified at these areas and listed in Table 11-14. These identified fauna species, mainly Priority 1 and Priority 2, are of particular concern due to their auditory sensitivities to airborne noise. Priority 3 fauna species of conservation significance, identified as not likely to be affected by noise (refer to Section 11.4.1.1.2 below), were also identified and reflected in Table 11-13 and discussed below. A full detailed list of ecological receptors found within and surrounding the proposed construction worksites and Study Area is provided in Appendix Y.

11.4.1.1.2 Receptor Sensitivity to Airborne Noise

The following paragraphs discusses the ecological receptors and the rationale for their respective auditory sensitivity. The priority levels for auditory sensitivity reflected in Table 11-13 were assigned based on the following general framework provided by the biodiversity specialists of this Project:

- Priority 1: Animals that vocalise during important life cycle stages such as courtship, territorial claims and/ or mating;
- Priority 2: Animals that have auditory sensory systems but do not necessarily need to vocalise during important life cycle stages; and
- Priority 3: Animals that are not likely to be affected by airborne noise.

Amphibians such as frogs are considered to have highly auditory sensitive as studies have demonstrated that anthropogenic noise is likely to substantially decrease the reproductive success in frogs [P-21]. Hence, amphibians are classified as Priority 1 ecological receptors.

Birds are considered to be highly auditory sensitive as most make use of sound for communication and breeding. Studies have also shown that birds are impacted negatively by anthropogenic noise [P-22]. Hence, birds are classified as Priority 1 ecological receptors.

Lepidoptera such as the butterflies are known to behaviourally respond to low-frequency vibrations and sounds to avoid insect predators and parasites [P-23]. Adult butterflies are known to make use of existing airborne noise in order to avoid predators [P-24]. Based on the above, lepidopterans are considered highly auditory. Hence, are classified as Priority 2 ecological receptors.

Non-volant mammals such as rodents are known to display stressed behaviour in response to sounds of heavy machinery which could be common occurrence from construction noise [P-27]. Hence, non-volant mammals are deemed to be highly auditory sensitive and classified as Priority 2 ecological receptors.

While for volant mammals such as bats, anthropogenic noise is known to impacts bats negatively by disrupting foraging patterns [P-30] and are hence classified as highly auditory sensitive. Hence, they are classified as Priority 1 ecological receptors. However, based on faunistic surveys, bats of conservation significance were not observed for this Project.

It is documented that adult odonates appear to be able to hear however sound does not appear to cause significant behavioural change [P-26]. Odonates are consequently regarded as being less auditory sensitive. Hence, they are classified as Priority 3 ecological receptors, dependant on conservation significance.

Reptiles such as lizards are considered to be highly auditory sensitive due to studies showing these species exhibiting stress responses when exposed to anthropogenic noise [P-31]. For snakes, though not equipped with outer-ears and tympanic middle ear, have vestiges for hearing inside their heads and can feel low-frequency airborne sounds [P-28]. Turtles on the other hand, follows the classification of aquatic species such as decapod crustaceans and fish due to their ability to traverse land and water [P-29]. As such, reptiles are classified as Priority 2 sensitive ecological receptors.

Studies have been conducted on the transmission of noise energy across the air to water boundary. Research shows that the transmission of airborne noise energy to the water medium is low due to the difference in acoustic characteristic impedance of air to water by a ratio of 1:3600 [P-25]. Hence, aquatic/ marine species such as arthropods, cephalopods, cnidarians, decapods, echinoderms, marine worms, molluscs, and fishes that primarily dwell within water bodies are considered to be Priority 3 sensitive ecological receptors [P-33].

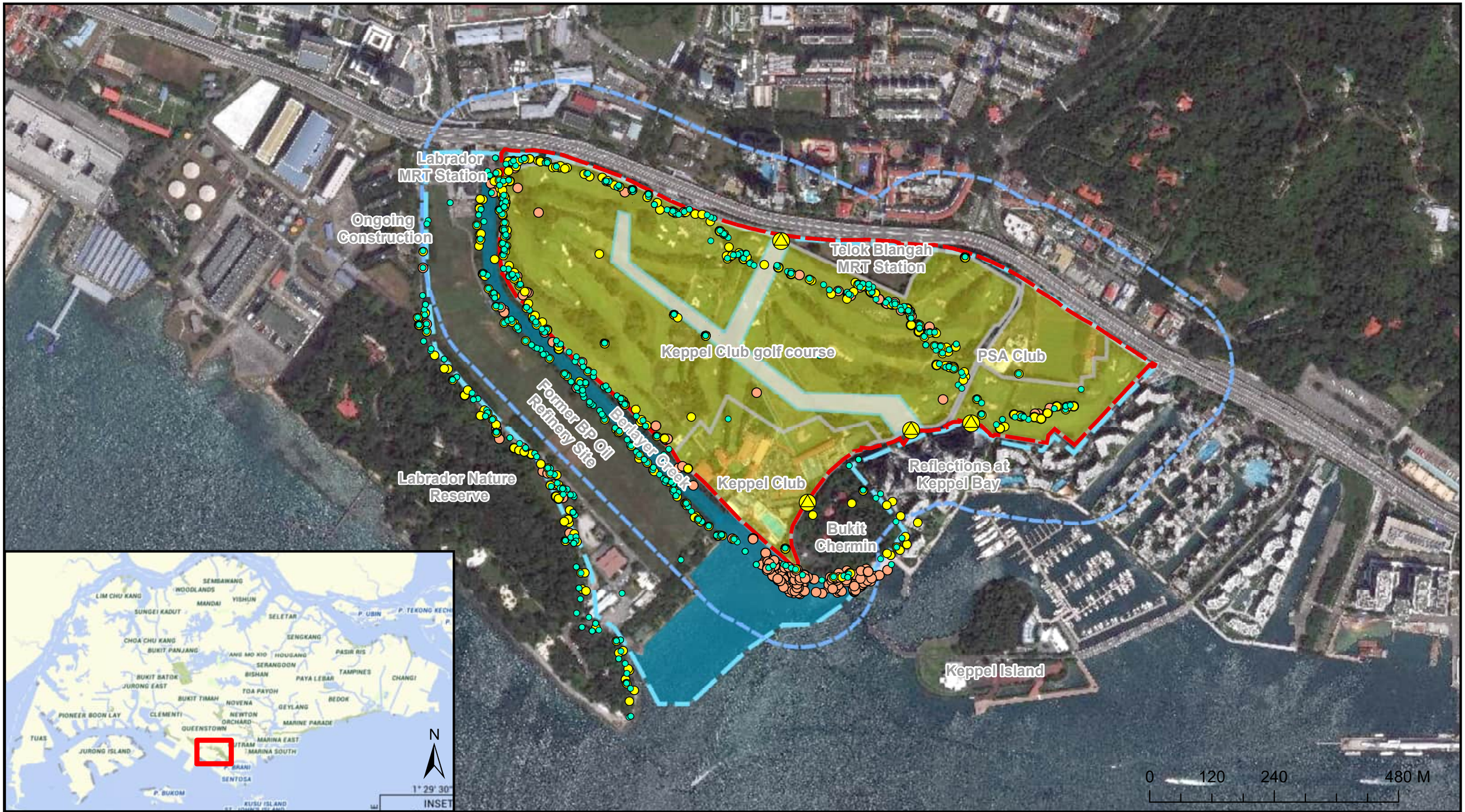
Table 11-13 Ecological Receptors and Airborne Noise Auditory Sensitivity Classification

Receptor Number	Receptors	Auditory Sensitivity Classification
Terrestrial Fauna		
1	Amphibians • Frogs • Toads	Priority 1
2	Bird	Priority 1
3	Butterfly	Priority 2
4	Non-volant Mammals	Priority 2
5	Volant Mammals (Bats)	Priority 1
6	Odonates • Damselfly • Dragonfly	Priority 3
7	Reptiles • Snakes • Turtles • Lizards	Priority 2
Marine/ Aquatic Fauna		
1	Arthropods • Horseshoe Crab	Priority 3
2	Cephalopod • Octopus • Squid	Priority 3
3	Cnidarian • Anemone • Coral	Priority 3
4	Decapods • Anomura • Brachyura • Caridea • Gebiidea	Priority 3
5	Echinoderm • Sand dollar • Sea rock/ star • Sea cucumber	Priority 3
6	Fish	Priority 3
7	Marine Worms • Nemertea • Platyhelminthes • Polychaete • Sipuncula	Priority 3
8	Molluscs • Bivalve • Gastropoda • Polyplacophora	Priority 3

Table 11-14 List of Ecological Receptors of Conservation Significance

No.	Faunal Group	Common name	Species	Global Status	Local Status	Auditory Sensitivity
1	Bird	Crested goshawk	*Accipiter trivirgatus*	Critically Endangered	Least Concern	Priority 1
2	Bird	Changeable hawk-eagle	*Nisaetus cirrhatus*	Endangered	Least Concern	Priority 1
3	Bird	Grey heron	*Ardea cinerea*	Least Concern	Vulnerable	Priority 1
4	Bird	Purple heron	*Ardea purpurea*	Least Concern	Endangered	Priority 1
5	Bird	Oriental pied hornbill	*Anthracoceros albirostris*	Least Concern	Critically Endangered	Priority 1
6	Bird	Red-wattled lapwing	*Vanellus indicus*	Endangered	Least Concern	Priority 1
7	Bird	Oriental magpie-robin	*Copsychus saularis*	Least Concern	Endangered	Priority 1
8	Bird	Red junglefowl	*Gallus gallus*	Least Concern	Endangered	Priority 1
9	Bird	Blue-crowned hanging-parrot	*Loriculus galgulus*	Least Concern	Endangered	Priority 1
10	Bird	Straw-headed bulbul	*Pycnonotus zeylanicus*	Endangered	Critically Endangered	Priority 1
11	Bird	Red-legged crake	*Rallina fasciata*	Vulnerable	Least Concern	Priority 1
12	Bird	Spotted wood owl	*Strix seloputo*	Critically Endangered	Least Concern	Priority 1
13	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not Assessed	Priority 2
14	Mammal	Smooth-coated otter	*Lutrogale perspicillata*	Vulnerable	Critically Endangered	Priority 2
15	Fish	Estuarine seahorse	*Hippocampus kuda*	Vulnerable	Vulnerable	Priority 3
16	Mollusc (Gastropoda)	Not Available	*Mauritia arabica*	Not Assessed	Vulnerable	Priority 3
17	Mollusc (Gastropoda)	Not Available	*Murex trapa*	Not Assessed	Vulnerable	Priority 3
18	Mollusc (Gastropoda)	Not Available	*Clithon oualaniensis*	Least Concern	Vulnerable	Priority 3
19	Mollusc (Gastropoda)	Flat-spire nerite	*Nerita planospira*	Not Assessed	Vulnerable	Priority 3
20	Mollusc (Gastropoda)	Black-lipped conch	*Canarium urceus*	Not Assessed	Vulnerable	Priority 3
21	Mollusc (Gastropoda)	Button snail	*Umbonium vestiarium*	Not Assessed	Vulnerable	Priority 3
22	Mollusc	Jewelled chiton	*Acanthopleura gemmata*	Not Assessed	Endangered	Priority 3

No.	Faunal Group	Common name	Species	Global Status	Local Status	Auditory Sensitivity
	(Polyplacophora)					
23	Decapod (Anomura)	Land hermit crab	*Coenobita violascens*	Not Assessed	Vulnerable	Priority 3
24	Decapod (Brachyura)	Ferocious reef crab	*Eriphia ferox*	Not Assessed	Vulnerable	Priority 3
25	Arthropod (Horseshoe Crab)	Mangrove horseshoe crab	*Carcinoscorpius rotundicauda*	Data deficient	Vulnerable	Priority 3
26	Echinoderm	Thick-edged sand dollar	*Jacksonaster depressum*	Not Assessed	Vulnerable	Priority 3
Note: This table presents the list of fauna species of Conservation Significance (CS). A list of other non-CS fauna species of varying auditory sensitivities is provided in Appendix Y.						



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksites (Development Area)
- Proposed Construction Access
- Proposed Construction Routes
- Boundary of Berlayer Creek

Noise Sensitive Receptors
Ecological Receptors
Auditory Sensitivity
- Priority 1
- Priority 2
- Priority 3

Assessment Area for Airborne Noise Impact Assessment
- 150 m from Proposed Construction Worksites (Development Area)

Note: Only ecological receptors within the 150 m airborne noise assessment area, exlusive of ecological receptors within proposed construction worksites, will be assessed for construction noise impacts.

N

Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SYT	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD; URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Figure Title :
Noise Sensitive Receptors (Ecological)

Designed	Checked	Approved
LAL	NHT	JAG
	Drawn: SYT	Date: APR 2022

Figure No. : **11-4** | Rev. : - | Sheet : 1 of 1

CAD File Name :NA | A3

Note: Source of basemap - Google Earth Map

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11.4.1.2 Human Receptors

According to the *Environmental Project and Management Regulation, 2008* [R-34], the sensitive human receptors for the construction phase are buildings within 150 m from the proposed construction worksites within the Study Area. As an initial step of noise impact assessment, the buildings within the Assessment Area that may be potentially sensitive to the construction noise from the Project were analysed. As a result, the human noise sensitive receptors (NSRs) for the construction phase were identified and reflected in Figure 11-5 and Table 11-15 where the respective sensitivity classifications are based on Table 6-2.

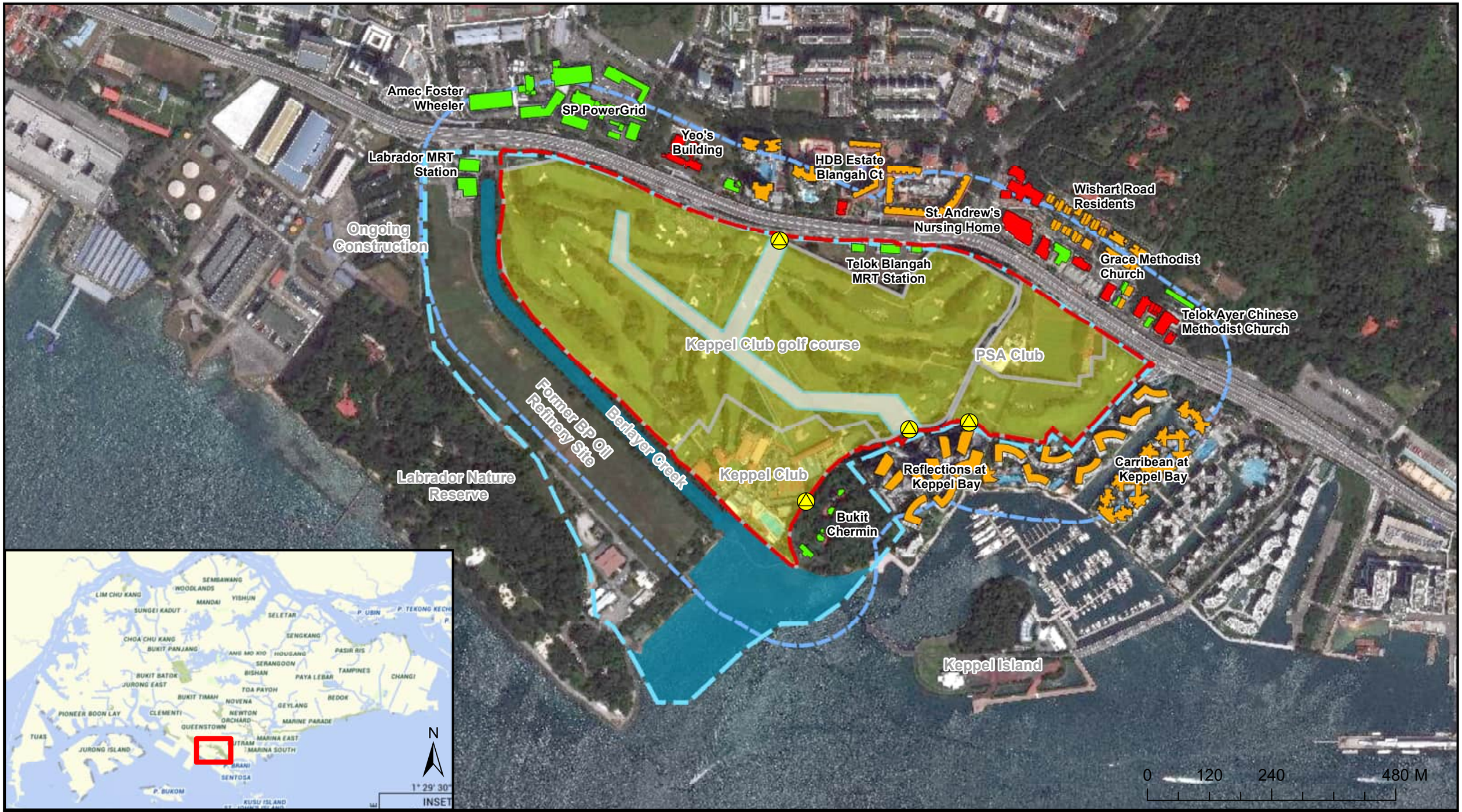
Information on the nearest sound level meter (SLM) to the human receptors where records of baseline noise levels representative of current environmental noise conditions experienced by the identified human receptors is also provided in Table 11-15, providing an insight to current baseline conditions experienced by the human receptors. This association plays an important role in noise impact assessment as the baseline noise levels recorded at different SLMs will result in differing noise criterions that human receptors will be assessed against as part of quantitative noise impact assessment to be conducted by a Noise Consultant(s) appointed by the developer/ developing agent as part of the detailed design process of the Project as mandated by law.

For the purposes of qualitative impact assessment, the baseline noise levels recorded at SLMs associated with the different human receptors listed in Table 11-15 shall serve as a gauge towards the determination of the perceivability and noticeability of additional noise impacts on these receptors arising from the construction phase.

Table 11-15 Human noise sensitive receptors (construction phase)

No.	Noise Sensitive Receptors	Receptor Sensitivity	Nearest Sound Level Meter	Receptor Type	Group (see Section 11.7.1.2)
1	21, 22, 24, 30 Bukit Chermin	Priority 1	N2	Reserve Site	Group C
2	5, 7, 8, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31, 33 Reflections at Keppel Bay	Priority 2	N2	Residential	Group C
3	38, 40, 42 Caribbean at Keppel Bay	Priority 2	N2	Residential	Group C
4	1, 3 Reflections at Keppel Bay	Priority 2	N3	Residential	Group D
5	44, 46 Caribbean at Keppel Bay	Priority 2	N3	Residential	Group D
6	HDB Block 44 - 47, Telok Blangah Dr	Priority 2	N3	Residential	Group A
7	110A - G, 110K - N, 110P, 112, 114, 114A, 116, 116A, 118, 129 Wishart Rd	Priority 2	N3	Residential	Group A
8	608, 610, 612 Skyline Residences, Telok Blangah Rd	Priority 2	N3	Residential	Group A
9	100, 102, 104, 106, 108 The Foresta @ Mount Faber	Priority 2	N3	Residential	Group A
10	Harbour View Towers, 21 Telok Blangah Dr	Priority 2	N3	Residential	Group A
11	Christian Community Chapel	Priority 1	N3	Place of Worship	Group A
12	Pasir Panjang Tamil Methodist Church, 85 Wishart Rd	Priority 1	N3	Place of Worship	Group A
13	Acts Baptist Church	Priority 1	N3	Place of Worship	Group A
14	Telok Blangah Soka Peace Centre, 91 Wishart Rd	Priority 1	N3	Place of Worship	Group A
15	Telok Ayer Chinese Methodist Church	Priority 1	N3	Place of Worship	Group A
16	The Methodist Church of Singapore, 63 - 65 Ruth Home, WSCS CAC	Priority 1	N3	Welfare Home	Group A

No.	Noise Sensitive Receptors	Receptor Sensitivity	Nearest Sound Level Meter	Receptor Type	Group (see Section 11.7.1.2)
17	Grace Methodist Church, 398 Telok Blangah Rd	Priority 1	N3	Place of Worship	Group A
18	St. Andrew's Nursing Home (Henderson), 303 Henderson Rd	Priority 1	N3	Welfare Home	Group A
19	Moral Welfare Home, 301 Henderson Rd	Priority 1	N3	Welfare Home	Group A
20	Ting Kong Temple, 578 Telok Blangah Rd	Priority 1	N3	Place of Worship	Group A
21	Yeo's Building, Buddhist Fellowship, 2 Telok Blangah St 31	Priority 1	N3	Place of Worship	Group A
22	Shipmart Pte Ltd (Pharmacy), Faber Health Resource Centre (Clinic), 370 Telok Blangah Rd	Priority 1	N3	Medical Provision	Group A
23	San Laksa Steamboat Pte Ltd	Priority 3	N3	Commercial	Group A
24	Fragrance Hotel - Viva	Priority 2	N3	Residential	Group A
25	ibis budget Singapore Mount Faber	Priority 2	N3	Residential	Group A
26	Seventynine 79, 79 Wishart Rd	Priority 3	N3	Commercial	Group A
27	16 Morse Rd	Priority 3	N3	Commercial	Group A
28	Esso Telok Blangah, 396 Telok Blangah Rd	Priority 3	N3	Commercial	Group A
29	Shell, 450 Telok Blangah Rd	Priority 3	N3	Commercial	Group A
30	Labrador Park MRT Station (CC27)	Priority 3	N3	Commercial	Group B
31	Telok Blangah MRT Station (CC28)	Priority 3	N3	Commercial	Group B
32	Telok Blangah MRT Station, Utility Building	Priority 3	N3	Commercial	Group B
33	Telok Blangah Complex	Priority 3	N3	Commercial	Group A
34	Telok Blangah SPPG, 501 Telok Blangah Rd	Priority 3	N3	Commercial	Group A
35	Telok Blangah Pumping Station, 11 Telok Blangah St 31	Priority 3	N3	Commercial	Group A
36	SPC Telok Blangah	Priority 3	N3	Commercial	Group A
37	SP PowerGrid, 501 Telok Blangah Road	Priority 3	N3	Commercial	Group A
38	SP PowerGrid, 501 Telok Blangah Road, Utility Building	Priority 3	N3	Commercial	Group A
39	Pasir Panjang Power Station B, 7 Pasir Panjang Rd	Priority 3	N3	Commercial	Group A
40	Amec Foster Wheeler, 991E, Alexandra Rd	Priority 3	N3	Commercial	Group A
41	LG Service Centre, Hackwagon Academy, Victory Petroleum Trading Pte Ltd, 991D Alexandra Rd	Priority 3	N3	Commercial	Group A
43	TBWA Singapore Pte Ltd, 991C Alexandra Rd	Priority 3	N3	Commercial	Group A
44	Himawari Japanese Restaurant, OPIO Kitchen Bar, Hyper Consultant, 991B Alexandra Rd	Priority 3	N3	Commercial	Group A
45	Star Living @ Labrador	Priority 3	N3	Commercial	Group B



Legend

- Overall EIS Study Area
- Development Area
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- Proposed Construction Access
- Proposed Construction Routes
- Boundary of Berlayer Creek

Noise Sensitive Receptors
Human Receptors
Receptor Sensitivity
- Priority 1
- Priority 2
- Priority 3

Assessment Area for Airborne Noise Impact Assessment
- 150 m from Proposed Construction Worksites (Development Area)

Note: Buildings within the Overall EIS Study Area, apart from Bukit Chermin Reserve Site and existing MRT station structures, are not reflected as receptors as they are assumed to be demolished to make way for residential development at the proposed construction worksites within the Development Area.

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Rev.	Date	By	Description	Chk'd	App'd
-	APR 2022	SYT	Final Report	NHT	JAG

Qualified Person Endorsement : NA

HDB & URA Endorsement : NA

Consultant : AECOM

Client: HOUSING & DEVELOPMENT BOARD / URBAN REDEVELOPMENT AUTHORITY

Project Title :
CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

Designed	Checked	Approved
LAL	NHT	JAG
	Drawn: SYT	Date: APR 2022

Figure Title :
Noise Sensitive Receptors (Human)

Figure No. :	Rev.	Sheet
11-5	-	1 of 1

CAD File Name :NA | A3

Note: Source of basemap - Google Earth Map

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11.4.2 Operational Phase

11.4.2.1 Ecological Receptors

Ecological receptors considered for assessment of noise impacts arising from the operational phase shall consider similar ecological receptors identified for the construction phase as discussed in Section 11.4.1.1 above. With necessary and adequate mitigation measures implemented for the construction phase to reduce noise impacts on the ecological receptors, similar fauna species identified surrounding the proposed construction worksites and within/ surrounding the Project Study Area prior to construction works, should continue to inhabit the surrounding areas.

It is advised that faunistic survey and baseline noise monitoring be conducted upon completion of the construction phase and commencement of the operational phase to determine the new baseline conditions and fauna species that remain in the vicinity of the proposed construction worksites to determine actual operational noise impacts.

11.4.2.2 Human Receptors

Human receptors for the operational phase should be identified and assessed as part of operational noise impacts arising from noise associated with the ACMV systems of non-industrial buildings, and as part of Traffic Noise Impact Assessment (TNIA). Both elements should be conducted by Noise Consultant(s) engaged by the developer/ developing agent to conduct TNIA on nearby existing residential buildings/ noise sensitive buildings affected by new road networks, and ACMV noise impacts at the boundaries of non-industrial buildings as per the guidelines discussed in Section 11.2.4.1.1.2.

Additionally, the developers of the residential developments should assess the noise impacts arising from West Coast Highway and Telok Blangah Road, if within audible range, following the same guidelines to determine the potential noise impacts arising from existing road networks on the future residential developments to facilitate planning of residential development.

11.5 Baseline Airborne Noise

11.5.1 Baseline Monitoring Personnel

The assessment and site surveys were conducted by the following personnel:

- Ms. Jagriti Dawra, AECOM (EIS Technical Lead)
- Mr. Hanzel Lalitan, AECOM (Air and Noise Consultant)
- Mr. Zay Phyo, AECOM (Noise Consultant)
- Ms. Sim Yi Ting, AECOM (Noise Consultant)

To understand the ambient noise environment near the Study Area, site reconnaissance was conducted on 2 December 2020. Furthermore, baseline noise monitoring was conducted between the dates listed below to obtain the baseline noise levels for the purposes of developing the specific construction noise criteria for this Project.

The baseline monitoring dates are as follows:

- 17th February 2021 to 23rd February 2021 (for N2 and N4); and
- 5th May 2021 to 11th May 2021 (for N1 and N3).

11.5.2 Baseline Monitoring Results

Baseline monitoring was conducted to understand the ambient noise levels at locations in proximity of the Study Area for the purposes of developing the corrected noise criteria.

11.5.2.1 Construction Phase

The baseline airborne noise monitoring results from N1 – N4 for $L_{Aeq\ (12\ hour)}$, $L_{Aeq\ (1\ hour)}$ and $L_{Aeq\ (5\ min)}$ of Weekdays (Monday – Saturday) and Sunday/ Public Holidays respectively are summarized in Table 11-16 below, in accordance with local noise guidelines for the construction phase.

Baseline noise monitoring results at N1 and N4 are primarily representative of noise levels experienced by fauna species within Berlayer Creek and Labrador Nature Reserve respectively. While noise levels recorded at N2 and N3 are more representative of that experienced by human receptors residing near Reflections at Keppel Bay along Bukit Chermin Road, near Blangah Court HDB Estates along West Coast Highway and Telok Blangah Road, and potential fauna species residing near these human receptors (i.e. ecological receptors found along Bukit Chermin Road, see Section 11.7.1.1.3).

As observed in Table 11-16, noise levels recorded at N3 is the highest in general. This is attributed to the dominant high traffic noise from both the West Coast Highway and Telok Blangah Road fronting the human receptors at Blangah Court HDB Estates. While monitoring point at N2 also recorded relatively higher noise levels than N1 and N4 due to traffic from Bukit Chermin Road, residents from Reflections at Keppel Bay and activities in nearby Keppel Club, the differences are more distinct during daytime with higher volumes of human activity, but reduces to similar noise levels to N4 after nightfall.

It is notable that maximum recorded noise levels at relatively quieter N1 and N4 are higher on certain days as highlighted in Table 11-16. This could potentially be due higher human traffic volumes on certain days with visitors visiting Berlayer Creek and Labrador Nature Reserve for recreational purposes. For clearer insight to daily reported noise levels, please refer to the baseline noise monitoring report found in Appendix V.

Table 11-16 Summary of baseline noise monitoring results for construction noise impact assessment

Location	Date of Monitoring	$L_{Aeq(12\ hour)}$, dB		$L_{Aeq(1\ hour)}$, dB						$L_{Aeq(5\ min)}$, dB								
		7am - 7pm	7pm - 7am^	7pm - 10pm^			10pm - 7am^			7am - 7pm			7pm - 10pm^			10pm - 7am^		
		Overall		Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Weekdays (Monday – Saturday)																		
N1: Berlayer Creek Lookout Point	5 May – 11 May 2021	56	52	45	58	51	42	58	48	44	64/ 73*	51	44	63	50	40	65	47
N2: Along Bukit Chermin Road	17 Feb – 23 Feb 2021	61	54	54	60	56	46	62	52	52	77	59	52	67	56	43	67	51
N3: HDB Block 44, Blangah Court (Telok Blangah Drive)	5 May – 11 May 2021	70	66	68	70	69	59	70	64	66	78	70	66	73	69	56	76	64
N4: Outside of Labrador Nature Reserve, along Port Road	17 Feb – 23 Feb 2021	58	53	52	57	55	46	56	51	49	66/ 72*	56	49	63	54	45	63	51
Weekend/ Public Holidays (Sunday/ Public Holidays)																		
N1: Berlayer Creek Lookout Point	5 May – 11 May 2021	51	47	N.A.						44	61	49	46	54	49	43	56	47
N2: Along Bukit Chermin Road	17 Feb – 23 Feb 2021	58	53							52	71	57	50	64	56	45	63	56
N3: HDB Block 44, Blangah Court (Telok Blangah Drive)	5 May – 11 May 2021	69	66							66	73	69	67	74	69	56	77	66
N4: Outside of Labrador Nature Reserve, along Port Road	17 Feb – 23 Feb 2021	59	52							53	67	58	51	58	55	45	60	52

Note: N.A.– Not Applicable
In accordance with the EPM 2008 Regulation, $L_{Aeq(1\ hour)}$ is not assessed for Weekend/ Public Holidays and is hence not applicable.
*** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N1 and N4 on certain days during the Weekday.**
^ No night works beyond the 7am – 7pm construction schedule or work on Weekend/ Public Holidays were proposed in this Project as per information provided by URA in Appendix W. Information of baseline noise levels measured at other timings are for purposes of reference. Night-works or works on Weekend/ Public Holidays will only be allowed if permission from relevant local agencies is sought and approved.

11.5.2.2 Operational Phase

The overall baseline airborne noise monitoring results from N1 – N4 for $L_{Aeq\ (15\ mins)}$ are summarized in Table 11-17 below, in accordance with local noise guidelines for the operational phase.

Similar results discussed in Section 11.5.2.1 prior can also be observed, with N3 having the highest recorded baseline noise levels and N1 and N4 recording relatively lower noise levels overall. Please refer to Appendix V for the baseline noise monitoring report detailing daily recorded noise levels.

It should be noted that the recorded $L_{Aeq(15\ mins)}$ noise levels for the operational phase are only indicative at this stage as baseline noise levels captured are not aligned with the requirements for operational noise impact assessment detailed in the *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38] due to the lack of information on building boundaries, building type, detailed information on new road networks at the current pre-design stage.

Hence, to meet requirements mandated by law, AECOM recommends that the developer/ developing agent appoint a Noise Consultant(s) upon finalising of design plans at the detailed design stage to determine baseline noise levels for the operational phase as part of quantitative operational phase noise impact assessment.

Table 11-17 Summary of baseline noise monitoring results for operational noise impact assessment

Location	Date of Monitoring	$L_{Aeq(15\ min)}$, dB Day 7am - 7pm			Evening 7pm - 11pm			Night 11pm - 7am		
		Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
N1: Berlayer Creek Lookout Point	5 May – 11 May 2021	45	62/ 72*	52	43	62	49	41	63	47
N2: Along Bukit Chermin Road	17 Feb – 23 Feb 2021	54	73	59	49	61	55	44	65	51
N3: HDB Block 44, Blangah Court (Telok Blangah Drive)	5 May – 11 May 2021	67	76	70	67	73	69	57	73	63
N4: Outside of Labrador Nature Reserve, along Port Road	17 Feb – 23 Feb 2021	52	66/ 70*	57	51	60	54	45	59	50

Note:
* Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N1 and N4 on certain days of the week.

11.5.2.3 Corrected baseline noise criteria

Based on the baseline airborne noise monitoring results and correction noise factor introduced in accordance to the "adjusted maximum permissible noise level" explained in Section 11.2.4, the corrected noise criteria for airborne noise impact assessment on ecological and human receptors were deduced separately and reflected in this section for the construction phase. Operational phase corrected noise criteria were not deduced and omitted from this report due to the lack of information on building boundaries, building type, new road networks, necessary to capture appropriate baseline noise levels required for the establishment of the noise criterion.

11.5.2.3.1 Construction Phase

Construction noise criteria for $L_{Aeq\ (12\ hours)}$, $L_{Aeq(1\ hour)}$ and $L_{Aeq\ (5\ mins)}$ were deduced for the period of 7am – 7pm, 7pm – 7am, 7pm – 10pm and 10pm – 7am for Weekdays (Monday – Saturday) and Weekend/ Public Holidays according to regulations. It was noted from information provided by URA on the construction work schedule reflected in Appendix W that construction work was only proposed for 7am – 7pm on Weekdays and no night-works or works on Weekend/ Public Holidays will be engaged. Following deduced corrected noise criterions for working hours beyond the 7am – 7pm work schedule shall serve as reference in the case if night-works or works on Weekend/ Public Holidays would be proposed in the future. However, it should be noted that the developer/developing agent will be required to seek approval from relevant local agencies if it wishes to conduct construction works beyond 7am – 7pm.

11.5.2.3.1.1 Ecological receptors

As mentioned in Section 11.2.4.1.1, there are currently no guidelines or standards available to assess construction noise impacts on the ecological receptors, thus the average baseline monitoring results in Table 11-16 was used to establish the assessment criteria for construction noise impact on ecological receptors as reflected in Table 11-18 below. Baseline noise levels recorded at N1 and N4 were taken to be representative of noise levels experienced by ecological receptors residing near Berlayer Creek and Labrador Nature Reserve and hence would form the basis of criteria to which construction noise limits should adhere to.

This approach was taken as part of a conservative means; that if no noise exceedances is predicted when compared to these stringent criteria, the airborne noise impact on fauna in the vicinity will also not experience noise levels exceeding the established criteria.

Table 11-18 Noise criterion established for ecological receptors

No.	Location	Noise Criteria for $L_{Aeq(12\ hour)}$, dB		Noise Criteria for $L_{Aeq(1\ hour)}$, dB		Noise Criteria for $L_{Aeq(5\ min)}$, dB		
		7am - 7pm	7pm - 7am^	7pm - 10pm^	10pm - 7am^	7am - 7pm	7pm - 10pm^	10pm - 7am^
Weekdays (Monday – Saturday)								
N1	Berlayer Creek Lookout Point	56	52	51	48	51	50	47
N4	Outside of Labrador Nature Reserve, along Port Road	58	53	55	51	56	54	41
Weekend/ Public Holidays (Sunday/ Public Holidays)								
N1	Berlayer Creek Lookout Point	51	47	N.A.		49	49	47
N4	Outside of Labrador Nature Reserve, along Port Road	59	52			58	55	52

Note: N.A. – Not Applicable
^ No night works beyond the 7am – 7pm construction schedule or work on Weekend/ Public Holidays were proposed in this Project as per information provided by URA in Appendix W. Information of baseline noise levels measured at other timings are for purposes of reference. Night-works or works on Weekend/ Public Holidays will only be allowed if permission from relevant local agencies is sought and approved.

11.5.2.3.1.2 Human receptors

For human receptors, the corrected noise criteria was deduced from using the overall recorded baseline noise levels for $L_{Aeq\ (12\ hours)}$, $L_{Aeq(1\ hour)}$ and $L_{Aeq\ (5\ mins)}$ recorded at N1 – N4 to calculate the "adjusted maximum permissible noise level" as per the *Environmental Protection and Management (Control of Noise at Construction Sites) Regulation, 2008* [R-34]. Table 11-19 below reflects the corrected noise criteria for Weekdays (Monday – Saturday) and Weekend/Public Holidays according to EPM (2008). Detailed calculations on the derivation of corrected noise criteria from the correction factors are provided in Appendix X.

As discussed in Section 11.5.2.1, noise levels recorded at N2 and N3 are generally more representative of noise experienced by human receptors identified in the vicinity of the Study Area with N2 representative of human receptors located near Reflections at Keppel Bay along Bukit Chermin Road, and N3 representative of human receptors located near Blangah Court HDB Estates along West Coast Highway and Telok Blangah Road. Hence, the corrected noise criteria deduced at locations N2 and N3 shall be adhered to when assessing for construction noise impacts on human receptors as part of mandatory quantitative noise impact assessment to be performed at a later stage of the Project.

Table 11-19 Corrected noise criteria – weekdays (construction phase)

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(12\ hour)}$, dB		Noise Criteria for $L_{Aeq(1\ hour)}$, dB		Noise Criteria for $L_{Aeq(5\ min)}$, dB		
		7am - 7pm	7pm - 7am	7pm - 10pm	10pm - 7am	7am - 7pm	7pm - 10pm	10pm - 7am
Weekdays (Monday – Saturday)								
N1	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55	N/A	N.A.	75	56	56
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.	65	56	90	70	56
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	N.A.	N.A.	90	70	70
N2	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	64	55	N.A.	N.A.	75	59	57
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.	66	57	90	70	57
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	N.A.	N.A.	90	70	70
N3	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	70	66	N.A.	N.A.	76	69	65
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	76	N.A.	70	65	90	73	65
	(c) Buildings (other than those in paragraphs (a) and (b))	76	69	N.A.	N.A.	90	73	71
N4	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55	N.A.	N.A.	75	58	56
	(b) Residential buildings located less than 150 m from the construction site where	75	N.A.	65	57	90	70	56

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(12\ hour)}$, dB		Noise Criteria for $L_{Aeq(1\ hour)}$, dB		Noise Criteria for $L_{Aeq(5\ min)}$, dB		
		7am - 7pm	7pm - 7am	7pm - 10pm	10pm - 7am	7am - 7pm	7pm - 10pm	10pm - 7am
	the noise is being emitted							
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	N.A.	N.A.	90	70	70
Weekend/ Public Holidays (Sunday/ Public Holidays)								
N1	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	61	52	N.A.		75	56	56
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.			75	56	56
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65			90	70	70
N2	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55			75	59	59
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.			75	59	59
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65			90	70	70
N3	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	70	66			76	69	66
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.			76	69	66
	(c) Buildings (other than those in paragraphs (a) and (b))	76	69			90	73	71
N4	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	63	54			75	58	57
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	N.A.			75	58	57
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65			90	70	70

Note: N.A. – Not Applicable

In accordance with the EPM 2008 Regulation, $L_{Aeq(1\ hour)}$ is not assessed for Weekend/ Public Holidays and is hence not applicable.

*** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N1 and N4 on certain days during the Weekday.**

^ No night works beyond the 7am – 7pm construction schedule or work on Weekend/ Public Holidays were proposed in this Project as per information provided by URA in Appendix W. Information of baseline noise levels measured at

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(12\ hour)}$, dB		Noise Criteria for $L_{Aeq(1\ hour)}$, dB		Noise Criteria for $L_{Aeq(5\ min)}$, dB		
		7am - 7pm	7pm - 7am	7pm - 10pm	10pm - 7am	7am - 7pm	7pm - 10pm	10pm - 7am
other timings are for purposes of reference. Night-works or works on Weekend/ Public Holidays will only be allowed if permission from relevant local agencies is sought and approved.								

11.5.2.3.2 Operational Phase

At the current pre-design stage, given that the proposed residential developments within the Study Area are still 'Subject to Detailed Planning', proper baseline noise for operational phase impact assessment could not be captured due to the lack of information of defined building boundaries and building type (e.g. non-industrial) required to conduct impact assessment as per the NEA Guidelines. Hence, corrected noise criteria for the operational phase were not deduced and is omitted from this report.

Please note that the baseline noise levels reflected in Section 11.5.2.2 for $L_{Aeq(15\ mins)}$ shall only serve as indicative operational baseline noise levels for reference purposes of potential baseline conditions experienced by the noise sensitive receptors prior to any establishment of permanent facilities that may contribute to operational noise (i.e. new road network/ non-industrial building ACMV systems).

As such, an appointed Noise Consultant(s) should be engaged by the developer/ developing agent to conduct baseline noise monitoring once the non-industrial buildings and associated air conditioning and mechanical ventilation (ACMV) systems or new road networks are laid out with which the corresponding corrected noise criteria for the operational phase shall be determined and used for quantitative operational noise impact assessment as mandated by law at the detailed design stage.

11.6 Minimum Control Measures

This section proposes minimum controls or standard practices commonly implemented in Singapore for the purposes of impact assessment.

11.6.1 Construction Phase

The list below is non-exhaustive and should be practised as minimum control to reduce noise levels during the construction phase of the Project:

- All machinery and equipment used shall be labelled with a weather-proof sticker clearly indicating its noise emission level (at source) under normal operating conditions;
- All machinery and equipment used on site should be sound reduced, as far as is practicable;
- Stationary noisy equipment should be housed in enclosures on site where necessary;
- Machine operators and workers must be trained and briefed on quieter work techniques;
- Ad-hoc noise monitoring must be carried out when work progresses during noisy operations;
- Additional noise measures should be implemented when noise monitoring indicates the noise levels are approaching or exceeding permissible noise levels; and
- Avoid shouting, whistling, sirens or similar loud intermittent noises especially near ecologically sensitive receptors which can be impacted by them.

11.6.2 Operational Phase

Mechanical ventilation would be designed and sited appropriately during detailed design phases to ensure that boundary noise levels are in compliance with the adjusted boundary noise limits to be derived by an appointed Noise Consultant as part of quantitative operational noise impact assessment at the detailed design stage as mandated by law. Some noise sources might be located close to the boundary and might require special attention for boundary noise limits compliance, and if necessary, be equipped with additional mitigation measures. These are to be provided upon assessment of noise arising from the operational phase.

Minimum control measures for noise emissions arising from the operational phase such as originating from air conditioning and mechanical ventilation (ACMV) and land traffic noise are listed below. This list is non-exhaustive and should be practised as minimum control to reduce noise levels during the operational phase of the Project:

- Use low noise ACMV system equipment;
- Ensure that exhaust outlets or intakes from the mechanical ventilation system is designed to be adequately set back as far as possible from the boundary line of the development;
- Acoustic treatment if any to be designed and implemented;
- Air conditioning systems should be designed with the air handling units (AHUs) placed at appropriate locations, set as back from the boundary line of the development as possible;
- Acoustic enclosures should be provided for outdoor equipment;
- Road design should be considered as part of land use planning to minimize potential impact of land traffic noise on existing residential buildings;
- Use of low-noise pavement mix for sections of new road networks near existing residential buildings should be considered;
- Alternative siting/ alignment of roads should be considered during road design to propose road siting/ alignment away from existing noise sensitive development; and
- Screening should be done to identify noise tolerant buildings (e.g. multi-storey car park building) and placing noise tolerant buildings between road traffic and existing residential buildings during road design phase.
- Screening by noise tolerant buildings where to assign road prior to construction such as choosing to construction road along noise tolerant buildings away from existing residential buildings, placing noise tolerant building in between road traffic and existing residential building e.g. use of multi-storey carpark building.

11.7 Prediction and Evaluation of Airborne Noise Impacts

11.7.1 Construction Phase

In this section, construction noise impacts arising from Activity 3: Foundation Works, identified for assessment in Section 11.2.5.1, are presented for the noise sensitive receptors (i.e. ecological and human receptors).

11.7.1.1 Ecological Receptors

It is important that distinctions be made between the ecological receptors found at Berlayer Creek, Keppel Club, near Bukit Chermin and Reflections at Keppel Bay, and along Port Road near Labrador Nature Reserve to ensure fair assessment on potential qualitative impacts experienced by the identified fauna species subjected to varying conditions. Visualized in Figure 11-4, ecological receptors assessed for construction noise impacts (i.e. within 150 m from proposed construction worksites) are primarily found at Berlayer Creek which reflects the highest density of identified fauna species, as well as some fauna species along Bukit Chermin Road.

As shown in Figure 11-4, fauna species were also recorded within the Keppel Club, proposed for the siting of construction worksites. Hence, under the assumption that when construction work commences and land is cleared in preparation for construction activities, habitats frequented by the fauna species within the turf club will be removed and no fauna species will remain within the proposed construction worksites.

Fauna species were also identified beyond the 150 m Assessment Area along Port Road near Labrador Nature Reserve. These fauna species will also not be assessed as part of this EIS due to the distance away from the proposed construction worksite, falling outside of the established airborne noise assessment area. With the understanding that if permanent features proposed to mitigate noise impacts experienced by the ecological receptors within the 150 m Assessment Area were efficient, fauna species found further away in nearby Labrador Nature Reserve will similarly be mitigated from the potential noise impacts.

As part of airborne noise impact assessment for the ecological receptors, assessment was conducted for terrestrial fauna species found at ground level (i.e. ground-dwelling fauna), and for fauna found at mid to higher canopy levels (i.e. arboreal fauna), as well as in surrounding water bodies for marine/ aquatic fauna species observed along the

proposed construction worksite areas (i.e. along Berlayer Creek, along/ near Bukit Chermin) during site reconnaissance. This is due to the fact that noise impacts on ground level will differ from that at higher elevation even at the same location resulting in variation of response from ecological receptors according to the noise impact intensity as well as type of fauna inhabiting or present at the different levels

The findings of the impacts of construction noise on the identified ecological receptors are further discussed below.

11.7.1.1.1 Findings for Ecological Impacts on Ecological Receptors

The forested areas and water bodies inhabited by fauna species at Berlayer Creek and along/ near Bukit Chermin Road (within 150 m Assessment Area) are in close proximity to the proposed construction worksites. During the construction phase, due to the potential of noise impacts from high noise sources emitting from the worksites, terrestrial ecological receptors found at all elevations were predicted through qualitative means of assessment to face potential noise impact intensity ranging from **Medium – High** attributed to their proximity to the noise sources and direct exposure to noise via the air medium. For marine/ aquatic ecological receptors found in water bodies at Berlayer Creek and along/ near Bukit Chermin Road, the predicted potential impact intensity of airborne noise is **Low** due losses in transmission from the air to water medium which is further discussed below.

Fauna species at ground level are typically ground dwellers comprising of odonates and mammals such as identified rat species reflected in Appendix Y. Noise impact on these species of fauna are not yet clearly known but it is possible that these fauna species will avoid the immediate vicinity of the proposed construction worksites, seeking refuge in nearby Labrador Nature Reserve.

For fauna species found at higher levels from the ground, it can be expected that fauna species that are highly mobile are able to move away from noisier locations to seek refuge in quieter nearby Labrador Nature Reserve, away from the construction noise. Mammals and avian species impacted are likely to be able to find alternative habitats in the surrounding irrespective of construction noise, driven away largely due to presence of human activities. Hence, bird species will likely move away temporarily/ permanently during the construction period and may or may not return due to the clearance of their habitats.

Butterflies are perturbed by intermittent noise. Therefore, as a minimum control for the Project's proposed construction worksites, it is recommended that high intermittent noises be avoided as much as possible while not compromising human safety.

Reptiles such as lizards, snakes, and turtles were also observed in these areas. Lizards are considered to be highly auditory sensitive and will exhibit stress responses when exposed to anthropogenic noise. Snakes, though not equipped with outer-ears and the tympanic middle ear, have vestiges for hearing inside their heads and can feel low-frequency airborne sounds. Turtles, with their ability to traverse both terrestrial and aquatic settings, although able to detect airborne sounds in vibrations of lower frequencies do not have sensitive hearing due to the lack of an outer ear.

While for marine/ aquatic fauna species, such as decapod, fishes and others (refer to Table 11-13), studies conducted on the transmission of airborne noise energy across the air to water boundary have shown that the transmission of noise energy to the water medium is low due to differences in acoustic characteristics and impendences of air and water by a ratio of 1:3600. Hence, marine/ aquatic species were determined to unlikely be auditorily sensitive to airborne noise as discussed in Section 11.4.1.1.2.

Amphibians such as frogs are fauna species that are likely to be found near natural waterbodies such as streams. It is noted that findings of site surveys conducted by the water team revealed the presence of water bodies at Berlayer Creek (refer to Figure 8-7), along the proposed construction worksites in which the highly noise sensitive amphibians may reside in. Therefore, it is likely that the noise sensitive amphibians be impacted when construction works commence regardless of construction noise, but due to human activities and potential removal of habitat.

For the bat species identified in this area (see Appendix Y), no bat specie of Conservation Significance were recorded during faunistic field surveys. However, there exists a couple of bamboo clusters in Bukit Chermin and several in Keppel Club area that may serve as roosting sites and potential refugia for bamboo bats which are nationally threatened bat species of Conservation Significance. At the current stage, it is likely that these bat species (if any) will be forced to move away from their roosting sites during the construction period temporarily or potentially abandoning these sites to seek refuge in quieter areas.

As mentioned in Section 11.2.5 the overall impact significance for the ecological receptors at Berlayer Creek and along Bukit Chermin Road were classified according to impact intensity, impact consequence and likelihood of

occurrence of impacts from the construction phase. Following reflects the deduction of the overall impact significance of ecological receptors found at the respective locations. A list detailing the noise impacts on focal ecological receptors of conservation significance is also provide in Table 11-21 below. Please note that references to the assessment matrices in Section 6.4 have been provided in brackets for ease of reference to the appropriate matrices.

11.7.1.1.2 Ecological Receptors at Berlayer Creek

Observed in Figure 11-4, Berlayer Creek is home to a high density of high noise sensitive species (Priority 1) such as birds and volant mammals (bats), and a myriad of other less noise sensitive species (Priority 2, Priority 3), including marine/ aquatic fauna deduced by fauna specialists to not be sensitive to airborne noise (i.e. Priority 3, refer to Section 11.4.1.1.2) due to transmission loss of noise across the air to water boundary. Judging from baseline noise levels recorded at N1 (see Table 11-16 in Section 11.5.2.1), existing noise levels were found to be below maximum permissible noise levels regulated by NEA [R-34].

It is notable that the powered mechanical equipment (PMEs) associated with Activity 3: Foundation Works contribute to significantly high noise levels due to the high effective sound power level (SPwL) as reflected in Appendix W. Considering the short distance between Berlayer Creek to the proposed construction worksites, approximately 20 – 40 m, with fauna also populating the areas in between, potential long-term, non-reversible impacts on noise sensitive ecological receptors with high auditory sensitivities are predicted with potential behavioural effects on species that may result in temporary/ permanent abandonment of territory, population decline due loss of ability to reproduce with the onslaught of physiological changes due to stress responses, to hearing loss on species that rely on hearing for important environmental cues and signals.

Based on the above identified factors, ecological receptors found at Berlayer Creek are assessed to experience **High** impact intensity for terrestrial ground-dwelling and arboreal fauna species and **Low** impact intensity (refer to Table 11-8) for and marine/ aquatic fauna species found in nearby waterbodies. With a corresponding impact consequence ranging from **Very Low – High** (see Table 6-7) and a likelihood of occurrence of **Likely** (in accordance with Table 6-8), the overall impact significance was deduced to range from **Minor – Major** (refer to Table 6-9). A summary of noise impacts is reflected in Table 11-20 below.

As such, mitigation measures have been proposed in this study (refer to Section 11.8) aimed at controlling the airborne noise impacts on the ecological receptors arising from construction noise of Activity 3: Foundation Works to reduce the impact significance on ecological receptors at Berlayer Creek to **Negligible – Minor** or as low as practicably as possible.

11.7.1.1.3 Ecological Receptors along Bukit Chermin Road

For fauna species found along Bukit Chermin Road, whilst baseline noise levels recorded at N2 were also found to be below maximum permissible noise levels regulated by NEA, noise levels recorded at location N2 is relatively higher than that recorded at N1 (see Table 11-16 in Section 11.5.2.1). As observed from Figure 11-4, the fauna density along Bukit Chermin Road is significantly lower and sparse compared to at Berlayer Creek potentially due to the pre-existing noisier conditions that are not in favour of noise sensitive fauna species inhabiting the area. This suggests that the remaining fauna species found to reside along Bukit Chermin Road may be more adapted and tolerable to anthropogenic noise arising from activities in nearby Keppel Club, and traffic from Bukit Chermin Road and the residents of Reflections at Keppel Bay. Hence, it is predicted that potential impacts arising from construction noise may last for a moderate duration whereby existing fauna species may retreat from Bukit Chermin during the noisier construction periods but return or be adapted to noisier new baseline conditions where tolerable suggesting that impacts are potentially reversible.

With the considerations of current pre-existing conditions and noise contributing factors from Activity 3, ecological receptors found along Bukit Chermin Road were qualitatively assessed to potentially experience noise impact intensity of **Medium** (see Table 11-8) for terrestrial ecological receptors at varied heights, while marine/ aquatic ecological receptors were assessed to experience **Low** impact intensity from noise emitted during construction activities as summarized in Table 11-20.

Relating the impact intensity to an impact consequence of a range of **Very Low – Medium** (refer to Table 6-7) and a likelihood of occurrence of **Likely** (see Table 6-8), the overall impact significance of construction noise impacts on ecological receptors found along Bukit Chermin Road were assessed to range from **Minor – Moderate** (refer to Table 6-9).

Therefore, mitigation measures were proposed in this study (see Section 11.8) aimed at controlling the airborne noise impacts on the ecological receptors arising from Activity 3: Foundation Works during the construction phase of the Project to reduce the impact significance on ecological receptors found along Bukit Chermin Road to **Negligible – Minor** or to where practically achievable.

Table 11-20 Summary of construction noise impacts (ecological)

Location/ Elevation	Nearest Sound Level Meter No. for Baseline Monitoring Result	Receptor Priority	Impact Intensity	Impact Consequence	Likelihood	Impact Significance
Ecological Receptors found at Berlayer Creek (Terrestrial)						
Ground Level	N1: Berlayer Creek Lookout Point	Priority 1	High	High	Likely	Major
		Priority 2	High	High	Likely	Major
		Priority 3	High	Low	Likely	Moderate
Mid-level Elevation		Priority 1	High	High	Likely	Major
		Priority 2	High	High	Likely	Major
		Priority 3	High	Low	Likely	Moderate
High-level Elevation		Priority 1	High	High	Likely	Major
		Priority 2	High	High	Likely	Major
		Priority 3	High	Low	Likely	Moderate
Ecological Receptors found near Berlayer Creek (Marine/ Aquatic)						
N.A.	N1: Berlayer Creek Lookout Point	Priority 3	Low	Very Low	Likely	Minor
Ecological Receptors found along Bukit Chermin (Terrestrial)						
Ground Level	N2: Along Bukit Chermin Road	Priority 1	Medium	Medium	Likely	Moderate
		Priority 2	Medium	Medium	Likely	Moderate
		Priority 3	Medium	Very Low	Likely	Minor
Mid-level Elevation		Priority 1	Medium	Medium	Likely	Moderate
		Priority 2	Medium	Medium	Likely	Moderate
		Priority 3	Medium	Very Low	Likely	Minor
High-level Elevation		Priority 1	Medium	Medium	Likely	Moderate
		Priority 2	Medium	Medium	Likely	Moderate
		Priority 3	Medium	Very Low	Likely	Minor
Ecological Receptors found near Bukit Chermin (Marine/ Aquatic)						
N.A.	N2: Along Bukit Chermin Road	Priority 3	Low	Very Low	Likely	Minor
Note: N.A. – Not Applicable						

Table 11-21 Summary of noise impacts to focal ecological receptors of conservation significance

No.	Faunal Group	Common name	Auditory Sensitivity	Greatest Impact Significance
1	Bird	Crested goshawk	Priority 1	**Major**
2	Bird	Changeable hawk-eagle	Priority 1	**Major**
3	Bird	Grey heron	Priority 1	**Major**
4	Bird	Purple heron	Priority 1	**Major**
5	Bird	Oriental pied hornbill	Priority 1	**Major**
6	Bird	Red-wattled lapwing	Priority 1	**Major**
7	Bird	Oriental magpie-robin	Priority 1	**Major**
8	Bird	Red junglefowl	Priority 1	**Major**

No.	Faunal Group	Common name	Auditory Sensitivity	Greatest Impact Significance
9	Bird	Blue-crowned hanging-parrot	Priority 1	**Major**
10	Bird	Straw-headed bulbul	Priority 1	**Major**
11	Bird	Red-legged crake	Priority 1	**Major**
12	Bird	Spotted wood owl	Priority 1	**Major**
13	Mammal	Long-tailed macaque	Priority 2	**Major**
14	Mammal	Smooth-coated otter	Priority 2	**Major**
15	Fish	Estuarine seahorse	Priority 3	**Minor**
16	Mollusc (Gastropoda)	Not Available	Priority 3	**Minor**
17	Mollusc (Gastropoda)	Not Available	Priority 3	**Minor**
18	Mollusc (Gastropoda)	Not Available	Priority 3	**Minor**
19	Mollusc (Gastropoda)	Flat-spire nerite	Priority 3	**Minor**
20	Mollusc (Gastropoda)	Black-lipped conch	Priority 3	**Minor**
21	Mollusc (Gastropoda)	Button snail	Priority 3	**Minor**
22	Mollusc (Polyplacophora)	Jewelled chiton	Priority 3	**Minor**
23	Decapod (Anomura)	Land hermit crab	Priority 3	**Minor**
24	Decapod (Brachyura)	Ferocious reef crab	Priority 3	**Minor**
25	Arthropod (Horseshoe Crab)	Mangrove horseshoe crab	Priority 3	**Minor**
26	Echinoderm	Thick-edged sand dollar	Priority 3	**Minor**

Note: This table presents the list of fauna species of Conservation Significance (CS).
A list of other non-CS fauna species of varying auditory sensitivities is provided in Appendix Y.

11.7.1.2 Human Receptors

Similarly, for human receptors, it is important that distinction be made to establish the current environmental conditions the receptors are subjected to, to allow for an understanding on the additional noise impacts arising from the proposed construction activities.

As observed in Section 11.4.1.2, human receptors were classified based on the type of establishments and nearest sound level meter, recording the baseline noise levels representative of current noise conditions experienced by the various receptors. Based on this information, following distinctions were established to facilitate qualitative impact assessment of human receptors.

Four (4) distinct groups of human receptors were identified as follows (see Table 11-15) based on their location in relation to the proposed construction worksites (see Figure 11-6) and are qualitatively assessed in subsequent sections below:

- (Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites;
- (Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites;
- (Group C) Human receptors along Bukit Chermin Road; and
- (Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway.

11.7.1.2.1 (Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites

Human receptors fronting West Coast Highway and Telok Blangah Road were found to already experience relatively high noise levels dominated by high volumes of traffic from the aforementioned road networks. This suggests that human receptors inhabiting in these areas have already been subjected to long-term noise disturbances and may be more tolerant to additional noise arising from the proposed construction worksites across the highway.

It should be noted that multiple human receptors identified as part of Group A are noise sensitive buildings such as places of worship and welfare homes (see Table 11-15). These noise sensitive buildings were found to already be experiencing high noise levels exceeding that of maximum permissible noise limits established by NEA [W-13] for noise sensitive buildings (e.g. $L_{Aeq(12\ hours)}$ baseline recorded 70 dB(A), maximum permissible for noise sensitive buildings defined as 60 dB(A) by NEA [W-13] for 7am – 7pm).

Considering the already noisy conditions and distance of Group A human receptors away from the proposed construction worksites (approximately 50 – 60 m away), it is likely that while the noise levels emitting from the proposed construction worksites may be noticeable, the predicted noise impact intensity is likely to be mildly intrusive with the increase in noise levels being heard but resulting in only small changes in behaviour and/ or attitude such as closing windows to reduce intrusion of elevated background noise, not enough to result in a perceived change in quality of life i.e. **Low** (refer to Table 11-9).

When relating an impact intensity of **Low** to an impact consequence ranging from **Very Low – Low** (see Table 6-7) for human receptors of varying sensitivities, the impact significance of noise arising from construction activities associated with Activity 3: Foundation Works was deduced to range from **Minor – Moderate** (refer to Table 6-9) having a likelihood of occurrence of **Likely** (see Table 6-8). A summary of noise impacts is reflected in Table 11-22 below.

As such, mitigation measures have been proposed in this study (refer to Section 11.8) aimed at controlling the airborne noise impacts on the ecological receptors arising from construction noise of Activity 3: Foundation Works to reduce the impact significance on Group A human receptors to **Negligible – Minor** or as practicable as possible.

11.7.1.2.2 (Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites

Similarly, for Group B human receptors, these human receptors akin to those in Group A fronting West Coast Highway and Telok Blangah Road have already been subjected to long-term high noise levels arising from the high volumes of traffic from these roads. However, noted as part of the distinction between Group A and Group B, Group B human receptors are located in closer proximity along the proposed construction worksites, the noise levels experienced by Group B receptors are deduced to be higher than at Group A, across the highway.

Despite this, when considering for the nature of establishments of Group B, it was found that commuters/ visitors will only stay at these locations for short periods of time for the purposes of commuting or visiting Star Living @ Labrador, a furniture showroom commercial site. Based on these findings, it is safe to assume that while noise emitting from the proposed construction worksites may be more noticeable than for Group A, the predicted noise impact intensity is likely to be mildly intrusive with the increase in noise levels being heard but resulting in only small changes in behaviour and/ or attitude not enough to result in a perceived change in quality of life i.e. **Low** (refer to Table 11-9).

Relating the impact intensity to an impact consequence of **Very Low** (refer to Table 6-7) and a likelihood of occurrence of **Likely** (see Table 6-8), the overall impact significance of construction noise impacts on Group B human receptors were assessed as **Minor** (refer to Table 6-9). A summary of noise impacts is reflected in Table 11-22 below.

Therefore, mitigation measures were not proposed to mitigate noise impacts for Group B human receptors due to **Minor** impact significance.

11.7.1.2.3 (Group C) Human receptors along Bukit Chermin Road

Noise levels recorded at N2 representative of baseline conditions experienced by Group C human receptors reflect relatively low noise levels in comparison to noise levels recorded at N3 for human receptors fronting West Coast Highway and Telok Blangah Road. The noise levels recorded at N2 (see Table 11-16 in Section 11.5.2.1) were found to be below maximum permissible noise levels established by NEA [W-13] suggesting that despite this area being dominated by low traffic noise from Bukit Chermin Road, residents of Reflections at Keppel Bay, and visitors to Bukit Chermin and Keppel Club, noise levels in the area remains relatively low.

It is notable that the powered mechanical equipment (PMEs) associated with Activity 3: Foundation Works would contribute to significantly high nose levels due to the high effectively sound power levels (SPwL) of machinery involved as reflected in Table 11-11. Considering the short distances between the proposed construction worksites to Group B human receptors (approximately 5 – 25 m) and placement of access routes facing these human receptors as visualized in Figure 11-3, noise emitted from the powered mechanical equipment at the proposed construction worksites and heavy-duty vehicles (HDV) accessing the worksites will be noticeable and disruptive, resulting in changes to behaviour of residents/ visitors and attitude during periods of intrusion such as needing to raise their voice to speak, irritability as part of stress response in a noisy environment, inability to have a continuous line of thought which can ultimately lead to psychological stress or effects. The area of human receptors (i.e. Reflections at Keppel Bay) facing the proposed construction worksites are mainly comprised of balconies/ windows looking into Keppel Club golf course.

It should be noted that while current existing baseline noise levels along Bukit Chermin Road are well within the NEA maximum permissible noise levels [W-13] particularly for residential receptors (i.e. Priority 2 – Reflections at Keppel Bay) (see Table 11-15) with a recorded baseline of $L_{Aeq(12\ hours)}$ of 61 dB(A) and $L_{Aeq(5\ mins)}$ at an average of 59 dB(A) (see Table 11-16) for 7am – 7pm, allowing for a significant margin of noise increase before exceeding the NEA maximum permissible noise levels of $L_{Aeq(12\ hours)}$ 75 dB(A) and $L_{Aeq(5\ mins)}$ 90 dB(A) for 7am – 7pm, significant increase in noise levels to a currently quiet and tranquil site will not be well received by the residents even if within the criterion set by NEA.

Hence, it is likely that the residents of these buildings perceive that quality of life be diminished due to change in character of area from a previously quiet and tranquil private area to facing a noisy construction site, and potentially raise frequent noise complaints due irritability and psychological stress due to the significant increase in noise levels.

Based on the identified factors, Group C human receptors are qualitatively assessed to experience **High** impact intensity (see Table 11-9). With a corresponding impact consequence of **High** (see Table 6-7) and a likelihood of

occurrence of **Likely** (in accordance with Table 6-8), the overall impact significance was deduced as **Major** (refer to Table 6-9). A summary of noise impacts is reflected in Table 11-22 below.

As such, mitigation measures have been proposed in this study (refer to Section 11.8) aimed at controlling the airborne noise impacts on Group C Human Receptors arising from construction noise of Activity 3: Foundation Works to reduce the impact significance on Group C human receptors to **Negligible – Minor** as much as possible.

11.7.1.2.4 (Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway

For Group D human receptors along Bukit Chermin Road and fronting West Coast Highway, it is likely that the high traffic noise from West Coast Highway will dominate the noise profile of the area as opposed to noise from quieter low road traffic on Bukit Chermin Road. This suggests that Group D human receptors have already been subjected to long-term noise disturbances and may be more tolerant to additional noise arising from the proposed construction worksites.

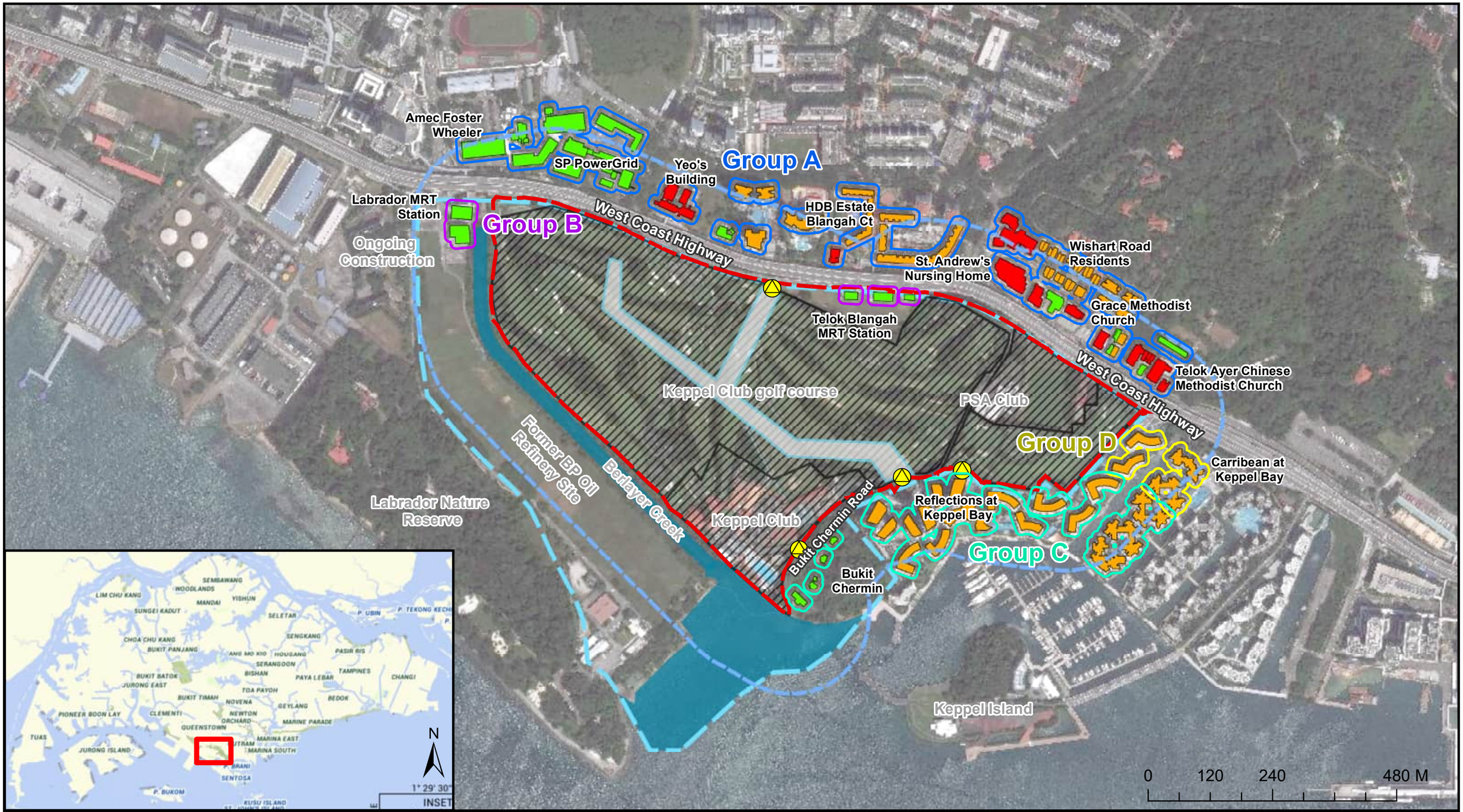
However, referring to Figure 11-3, it should be noted that on top noise arising from being in close proximity to the proposed construction worksites where high source noise levels are emitted from Activity 3: Foundation Works, Group D human receptors are located at the entrance/ exit to Bukit Chermin Road where increased road traffic noise from heavy-duty vehicles (HDV) entering into Bukit Chermin Road to the proposed access routes to worksites will result in further additional noise impacts. Hence, Group D human receptors are likely to face noticeable noise disturbances from Activity 3 resulting in changes to behaviour of residents who are likely to perceive a diminished quality of life due to the change in character of area with intrusion brought about by increased road traffic on side facing Bukit Chermin Road.

Based on the above identified factors, Group D human receptors are qualitatively assessed to experience **Medium** noise impact intensity (refer to Table 11-9). Relating an impact consequence of **Medium** (see Table 6-7) and a likelihood of **Likely** (refer to Table 6-8), the overall impact significance was determined to be **Moderate** (refer to Table 6-9). A summary of noise impacts is reflected in Table 11-22 below.

Therefore, mitigation measures are proposed in this study (see Section 11.8) to control the airborne noise impacts on the Group D Human Receptors arising from Activity 3: Foundation Works to reduce the impact significance on Group D human receptors to a range of **Negligible – Minor** where possible.

Table 11-22 Summary of construction noise impacts (human)

Location/ Nearest Sound Level Meter	Noise Receptor Sensitivity	Impact Intensity	Impact Consequence	Likelihood	Impact Significance
(Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites					
N3	(a) Noise Sensitive (Priority 1)	Low	Low	Likely	Moderate
	(b) Residential (Priority 2)	Low	Low	Likely	Moderate
	(c) Others (Priority 3)	Low	Very Low	Likely	Minor
(Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites					
N3	(c) Others (Priority 3)	Low	Very Low	Likely	Minor
(Group C) Human receptors along Bukit Chermin Road					
N2	(a) Noise Sensitive (Priority 1)	High	High	Likely	Moderate
	(b) Residential (Priority 2)	High	High	Likely	Moderate
(Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway					
N3	(b) Residential (Priority 2)	Medium	Medium	Likely	Moderate



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksites (Development Area)
- Proposed Construction Access
- Proposed Construction Routes
- Boundary of Berlayer Creek

Assessment Area for Airborne Noise Impact Assessment

- 150 m from Proposed Construction Worksites (Development Area)

Noise Sensitive Receptors

Human Receptors

Receptor Sensitivity

- Priority 1
- Priority 2
- Priority 3

Groupings

- Group A
- Group B
- Group C
- Group D

Note: Buildings within the Overall EIS Study Area, apart from Bukit Chermin Reserve Site and existing MRT station structures, are not reflected as receptors as they are assumed to be demolished to make way for residential development at the proposed construction worksites within the Development Area.

Rev.	Date	By	Description	Chk'd	App'd
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Qualified Person Endorsement : NA

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Consultant : AECOM

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Project Title :

CONTRACT URA/T/20/001 ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

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Figure Title :

Human Receptors Distinct Groups

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11.7.2 Operational Phase

11.7.2.1 Ecological Receptors

As observed in Figure 11-4, the forested areas and water bodies surrounding the proposed construction worksites is home to several ecological receptors identified in Section 11.4. For this study, operational noise impacts on ecological receptors were qualitatively assessed based on the auditory sensitivities of identified fauna species. Within the group of fauna species identified to reside within 150 m from the Study Area, Priority 1 (most sensitive) – Priority 3 fauna have been identified.

However, it should be noted that the larger impact on this area regardless of noise is due urbanization and removal of the habitats where these identified fauna species reside in which impacts them directly (e.g. clearance of Keppel Club golf course area inhabited by fauna). Whether the fauna species will eventually move westwards to take shelter in less disturbed areas of nearby Labrador Nature Reserve or develop new habitats elsewhere is uncertain at this stage making it difficult to analyse the impact of noise on these fauna species.

For fauna species found to reside further away from the boundary of the proposed construction worksites, as noise propagation reduces with distance, it is possible that with time in the operational phase, that the fauna species may adapt itself to a continuous noise level (i.e. new baseline). As discussed in Section 11.2.4.1.2, the developer/ developing agent should appoint a Noise Consultant(s) to assess the impacts arising from the operational phase to procure a more accurate understanding of noise impacts arising from operational conditions based on updated baseline conditions as required by NEA as part of the detailed design process. It is advised that faunistic survey and baseline noise monitoring be conducted upon completion of the construction phase and commencement of the operational phase to determine the new baseline conditions and fauna species that remain in the vicinity of the proposed construction worksites to determine actual operational noise impacts.

The noise monitoring location N1 and N4 are the nearest noise monitoring locations to the ecological receptors in the vicinity of the proposed construction worksites. The average baseline noise levels for $L_{Aeq(15\ mins)}$ recorded at N1 and N4 ranged from 47 – 57 dB(A) for 7am – 7pm (see Table 11-17). Comparing this to the *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] for the most stringent noise sensitive criteria (60 dB(A) – day, 55 dB(A) – evening, 50 dB(A) – night), current recorded baseline noise levels are relatively lower than the noise limits provided by NEA. As a conservative means, the lower recorded baseline noise levels should be established as the noise criteria to ensure that noise sensitive fauna species will not face significant impacts from noise disturbances. Assuming if the regulation will be met by the contractors, fauna species may potentially face **Negligible – Moderate** impacts due detectable disturbances from increased noise levels in the surrounding nature areas if ACMV systems are designed to be fronting those noise sensitive areas. However, if a more conservative criteria (i.e. no worse off than baseline) was adopted, the operational noise impact significance on the ecological receptors can be qualitatively assessed as **Negligible – Minor**.

The impact intensity if abiding by the conservative criteria would potentially range from **Negligible – Low** (refer to Table 6-6) and the corresponding impact consequence may range from **Imperceptible – Low** (see Table 6-7). The likelihood of noise levels exceeding the criteria would be **Occasional** (see Table 6-8), dependant on human activities and how frequently ACMV systems are engaged. Hence, the overall impact significance can be qualitatively assessed to range from **Negligible – Minor** (see Table 6-9) for ecological receptors found in forested areas and water bodies in vicinity of the proposed residential development site.

In accordance with the impact evaluation matrices in Section 6.4.2, the summary of operational noise impacts as assessed qualitatively are presented in Table 11-23 below.

Table 11-23 Summary of operational noise impacts (ecological)

Auditory Sensitivity of Ecological Receptors	Impact Intensity	Impact Consequence	Likelihood	Impact Significance
Priority 1	Negligible – Low	Very Low – Low	Occasional	Negligible – Minor
Priority 2	Negligible – Low	Very Low – Low	Occasional	Negligible – Minor
Priority 3	Negligible – Low	Imperceptible – Very Low	Occasional	Negligible

11.7.2.2 Human Receptors

Referring to Section 11.2.4.1.2, it is mandatory for the proposed developments to comply with NEA's guidelines for boundary noise impact assessment for air conditioning and mechanical ventilation (ACMV) systems of non-industrial buildings and Traffic Noise Impact Assessment (TNIA) for existing/ new road networks for the developments within the Project proposed construction worksites. Usually conducted by an appointed Noise Consultant during the detailed design stage, AECOM recommends the works for ACMV boundary noise impact assessment and TNIA to be conducted in the later stages of the development in accordance with *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38].

For the ACMV boundary noise impact assessment, the immediate boundary of the identified non-industrial buildings as part of the Project developments should be assessed against the corrected criteria in accordance to the guidelines, especially for boundaries fronting noise sensitive receptors. For TNIA, developers of the residential developments should assess noise impacts from the proposed new road networks and the West Coast Highway or Telok Blangah Road (if within audible range) on the noise sensitive receptors as outlined by the guideline.

As part of qualitative impact assessment for operational noise impacts on human receptors, judging from the construction noise impacts which are considerably more significant compared to operational noise impacts in terms of magnitude of noise, size of/ area impacted by noise source, operational noise impacts should constitute lesser significance. Based on this, the impact intensity of operational noise on human receptors was qualitatively assessed as **Negligible** (see Table 6-6), with the corresponding impact consequence deduced to range from **Imperceptible** – **Very Low** (refer to Table 6-7) depending on the sensitivity of the receptor (see Section 11.4.1.2). The likelihood of noise levels exceeding the criteria would be **Occasional** (see Table 6-8), dependant on human activities and how frequently ACMV systems are engaged. Hence, the overall impact significance can be qualitatively assessed to range from **Negligible** – **Minor** (see Table 6-9) for operational noise impacts on human receptors.

It should be noted that as regulated by NEA, the developer/ developing agent should appoint Noise Consultant(s) to conduct quantitative operational noise impact assessment duly in the later stages of the Project development as part of the detailed design process.

11.8 Recommended Mitigation Measures

11.8.1 Construction Phase

Due to the proximity of the noise sensitive receptors (NSRs) to the Project proposed construction worksites boundary, mitigation measures for the control of noise at source were recommended as per the mitigation principles outlined in Section 6.5.

11.8.1.1 Avoid

11.8.1.1.1 High Noise Powered Mechanical Equipment

The equipment inventory list shall be analysed to check the equipment (PME) causing high noise levels (higher quantity and/or longer working periods of PME can cause higher noise levels). The use of equipment with lower noise level shall be prioritized, as this is the most effective way to mitigate the noise level at the source.

11.8.1.1.2 Access Routes facing Noise Sensitive Receptors

Access routes to the worksites should avoid facing receptors in vicinity of the proposed construction worksites to reduce noise impacts arising from increased traffic noise from heavy duty vehicles (HDV), as well as to prevent sound leak from noise barriers implemented to reduce noise impacts along the boundaries of proposed construction worksites facing the noise sensitive receptors.

11.8.1.2 Minimize

11.8.1.2.1 Stagger Building Heights

To minimize construction noise impacts to nearby noise sensitive receptors, the construction of buildings of staggered heights with low-rise, low-mid rise, mid-high rise and high-rise buildings should be considered as reflected in Figure 11-7 below. Lower building heights may relate to shallower footings required as part of building foundation works (Activity 3: Foundation Works). This may help to reduce construction noise impacts on nearby

noise sensitive receptors by reducing the duration of noisy construction activities near the proposed construction worksite boundaries nearest to these receptors and thereby reducing the likelihood of occurrence of noise impacts and overall impact significance.

For instance, low rise buildings could be built along highly noise sensitive sites such as along Berlayer Creek and in areas fronted by the Bukit Chermin reserve site. Low-mid rise buildings could be proposed along areas in close proximity to existing residential sites that are predicted to face considerable noise impacts such as along Reflections at Keppel Bay and Caribbean at Keppel Bay found along Bukit Chermin Road.

In consideration of the existence of highly noise sensitive human receptors (i.e. Priority 1 receptors such as places of worship, welfare homes) as well as existing high-rise residential buildings looking into the proposed construction areas, the buildings to be constructed in areas fronting these receptors could consider mid-high rise buildings with the greater allowance for noisy activities due to the already noisy West Coast Highway and Telok Blangah Road.

While high-rise buildings can be considered to be built in areas along West Coast Highway, facing the commercial/ industrial sites such as Telok Blangah SPPG, Amec Foster Wheeler (see Figure 11-5) as these receptors are the least sensitive to noise overall.



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksite Areas (Development Area)
- Boundary of Berlayer Creek

Assessment Area for Airborne Noise Impact Assessment

- 150 m from Proposed Construction Worksites (Development Area)

Proposed Staggered Building Heights

- Low rise
- Low-mid rise
- Mid-high rise
- High rise

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Figure Title :
Proposed Staggered Building Heights

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11.8.1.2.2 Erect Noise Barriers

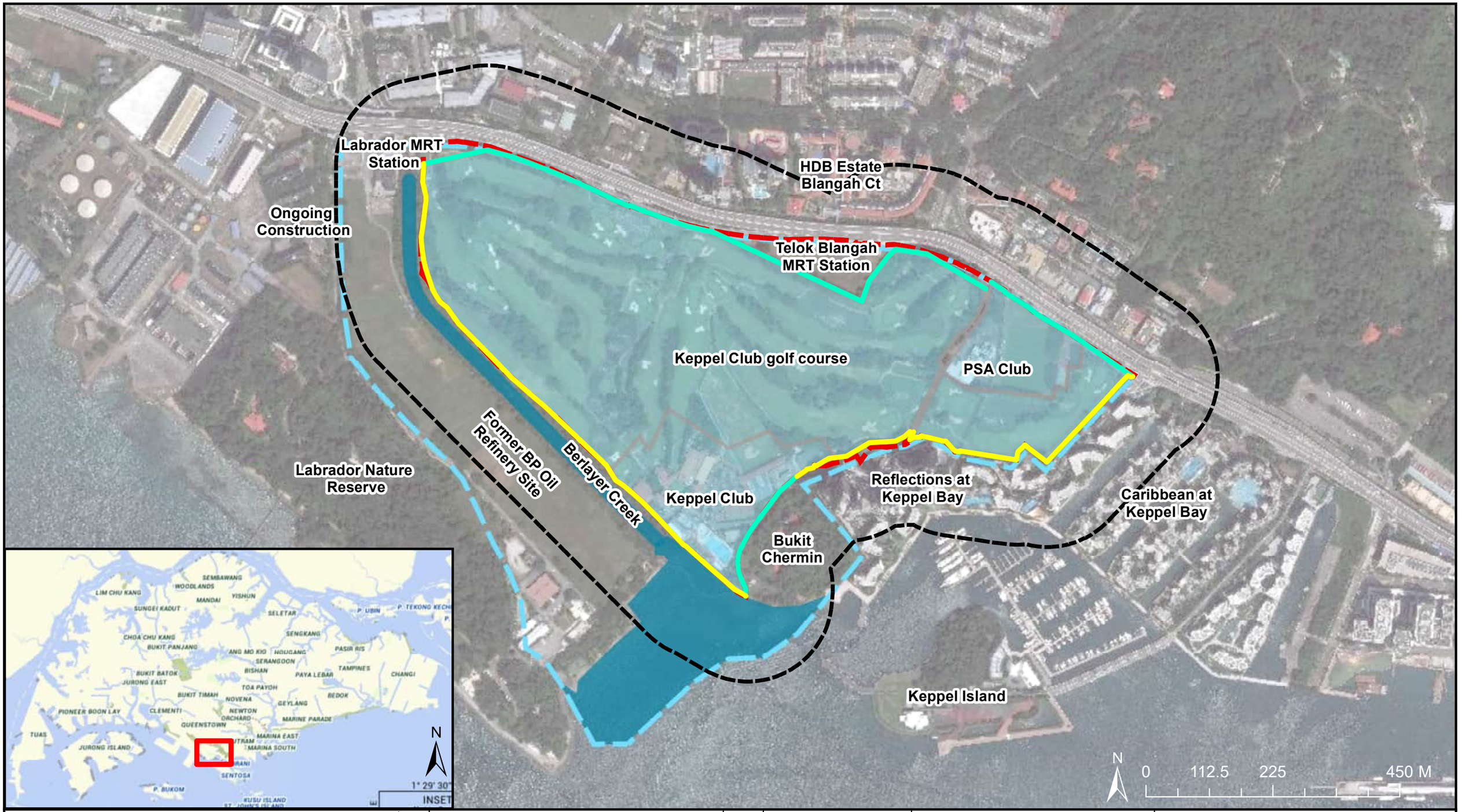
When substitution of noisy equipment is not applicable or feasible, erection of noise barriers should be considered. The barrier height and placement position of a noise barrier are the prime factors in determining its efficiency and are as follows:

- Noise barriers should be placed as close as possible to either the source, or the receiver position for maximum effectiveness; and
- Noise sensitive receptors within 150 m from construction worksites not predicted to experience exceedance will not require noise barriers;

Following the above suggestions, noise barriers of heights up to 8 – 12 m height where deemed necessary were proposed to be erected at locations along the proposed construction worksites near the receptors qualitatively predicted to experience significant noise impacts in Section 11.7, as visualized in Figure 11-8 to mitigate noise impacts arising from the construction activities on the noise sensitive receptors (NSRs).

The height of the barrier was determined based on the heights of the receptors in the vicinity and the viability of implementation with consideration on space required to stabilize and erect the barriers. Contractors should note that the erection of noise barriers must not result in additional clearance of vegetation beyond the bounds of the proposed construction worksites area.

It should be noted that the proposed heights of noise barriers at the current pre-design stage are only tentative for reference deduced according to considerations of current conditions such as average tree/ building heights. To deduce optimized barrier heights required at each site, AECOM recommends that quantitative noise impact assessment with noise modelling be conducted by Noise Consultant(s) appointed by the developer/ developing agent at the detailed design process as required by NEA regulations.



Legend

- Overall EIS Study Area
- Development Area
- Proposed Construction Worksites (Development Area)
- Boundary of Berlayer Creek

Assessment Area for Airborne Noise Impact Assessment

- 150 m from Proposed Construction Worksites (Development Area)

Proposed Noise Barriers

- Low noise barriers up to 8 m (where necessary)
- Tall noise barriers of at least up to 12 m (where necessary)

Note: The proposed heights of noise barriers at the current pre-design stage are only tentative for reference according to considerations of current conditions such as average tree/ building heights.

To deduce optimized barrier heights required at each site, quantitative noise impact assessmemt with noise modelling is suggested to be conducted by Noise Consultant(s) appointed by URA at a later stage.

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Figure Title :
Proposed Noise Barrier Location for Construction Phase

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11.8.1.2.3 Source Noise Control

As a last resort for engineering control, when noise barriers are also not so effective in mitigating noise, or in order to manage complaints if there are intermittent noisy works, Table 11-24 below provides information on methods of quietening PME to be adopted for further mitigation on construction noise impact.

The maximum reduction in sound power level in Table 11-24 is achievable when all source control measures stated in this table are adopted. Noise enclosures should be used at the locations of the noise generating equipment at the construction site. Acoustic sheds should be provided at the locations of the noise generating activity such as operation of hand-held breaker. Sound pressure levels reduction ranging from 0 – 3 dB can be achieved by using all or combination of the following measures.

Table 11-24 Control of noise source from worksites

Type of Equipment	Equipment	Reduction in Sound Power Level, dB(A) [1]	Description of Source Control
Compressors & Generators	Generators	-20	Acoustic dampening of metal casing of body shell; acoustic enclosure or screen between the generator and receptor. The acoustic casing for the generator shall be proprietary product supplied by the generator manufacturer. The screen, if used, shall be as close as possible to the generator and it shall be of a solid construction (minimum STC 20 or surface density > 20kg/m^2) with no gaps at the bottom or in-between panels.
Hacking major structures	Excavator with Rock Breaker	-15	Use of an acoustic shed with adequate ventilation for the machine and bit.
Earth-moving Plant	Crane	-10	Manufacturers' enclosure panels to be kept closed. The engines of these vehicles shall not be exposed and clad with the manufacturers' enclosure to reduce noise break-out. Manufacturer-supplied silencers for the engine exhausts shall be installed and maintained.
	Dump Truck	-10	
	Excavator with Rock Breaker	-10	
	Excavator	-10	
	Concrete Mix Truck	-10	
	Lorry	-10	
Pumps	All Pumps	-10 to -20	Use of acoustic enclosure.

Note:
[1] The noise reduction level makes reference to BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise

Based on the Singapore Standards Code of Practice for Noise Control at Construction Sites, 2014 (SS602:2014), the typical materials used for noise barriers and acoustic shed/enclosures is given below:

Acoustic Shed/Enclosure:

A typical machine acoustic enclosure covers the machine as fully as possible (with/without ventilation), providing adequate sound insulation that noise energy does not readily pass through it. In addition, it could also have a sound absorbing material lining, to avoid the build-up of sound energy inside. In general, an acoustic enclosure could include:

- Outer cover material made up of brickwork, fibreboard, or plasterboard. Thickness of the insulating cover depends on the material used;
- Inner lining of sound absorbing material such as glass fibre, mineral wool, straw slabs, wood wool slabs can be used. A thickness of at least 25 mm is to be provided in case of high frequency sound, whereas a 12 mm thick lining would suffice for low frequency sound; and

- Perforated sheet coverings can be used to protect the inner lining material, especially if it is glass wool or mineral wool-based lining.

In the case of a more permanent or substantial machine enclosure or acoustic shed, concrete breezeblock and open textured blockwork can be more effective alternatives as these are known to be durable, inexpensive, and quick to assemble, and provide a useful degree of sound absorption.

11.8.1.2.4 Administrative Controls to further reduce noise

It is recommended to reduce noise impact to avifauna by various administrative controls at the Study Area. For example, avoid breeding seasons for the activity, or to avoid early morning daytime noisy activities between 7 – 9 am as far as possible on site. This may reduce some impacts on this fauna on behavioural aspects and communication.

Other than that, the following administrative control measures should also be observed during the construction stage to further reduce the noise levels, especially on human receptors:

- Machines (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- Only well-maintained construction plants should be utilized on-site, and construction plants should be serviced regularly during the entire construction period;
- The number of PMEs should be reduced as far as practicable when construction works are carried out at areas close to the noise sensitive receivers:
- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme;
- Behavioural practices including no shouting, no loud stereos/ radios on site, no dropping of materials from height, no throwing of metal items should be ensured;
- Construction respite: Restrict high noise generating drilling activities only in continuous blocks, not exceeding 3 hours each, with a minimum respite period of one hour between each block, if possible;
- Periodic noise monitoring by an independent third party, to establish compliance with requirements and to advise on equipment causing concern, and additional potential mitigation measures;
- Night works, apart from advance works/ site clearance if approved by Agencies, will be prohibited after 6 pm to minimise noise disturbance to nocturnal animals;
- Plan the layout of the site by considering using materials and other large structural equipment as noise barriers;
- Construction plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby noise sensitive receptors;
- Material stockpiles and other structures will be effectively utilized, wherever practicable, in screening noise from on-site construction activities;
- All handheld percussive breakers and air compressors used on site will comply with local legislation and requirements;
- Activities may be scheduled to minimize noise generated at certain areas during periods which may be particularly sensitive to noise;
- Works using machines or vehicles that generate noise should be prohibited in the night and the dawn;
- Appropriate hearing protectors should be used by personnel operation the plant or equipment, the hearing protector must attenuate the exposure of the user to sound pressure levels below 85dB (A). Signage to remind personnel to put on hearing protection will be put up at work areas that emit excessive noise. Choice of hearing protector such as ear plugs (for < 100 dB (A)), earmuffs (for 100 dB (A) to 120 dB (A), ear plugs and earmuffs (for > 120dB (A)) in various noise exposure level;
- Noise awareness briefing should be conducted regularly and highlighted the noise mitigation measures such as position of machinery, making use of portable noise barriers and dos and don’ts for use of machinery at night; and

- If noise remains an issue even after implementation of recommended mitigation measures such as noise barriers, contractor should consider implementation of proprietary noise barriers of high noise reduction capabilities to further reduce noise to acceptable levels.

In addition to the above measures, an EMMP with airborne noise monitoring program was proposed to assess the effectiveness of minimum control measures and recommended mitigation measures on site during construction phase of the Project, as detailed in Section 12.14.

11.8.2 Operational Phase

At this stage, following mitigation measures have been proposed for consideration as reflected in Table 11-25 below.

Table 11-25 Proposed mitigation measures - operational phase (human impacts)

Potential Noise Sources	Proposed Mitigation Measures
Air conditioning and mechanical ventilation systems	Noise attenuators and other Best Available Technology (BAT) and Best Environmental Practice (BEP) noise control measures shall be utilized.
	Ample setback of developments with ACMV systems fronting noise sensitive receptors should be provided such as provision of park areas/ ecological setback (see Figure 7-50) in line with recommendations for biodiversity impact mitigation in Section 7.10.1, to ensure that operational noise sources are at a distance away from the receptors.
Increase road traffic in vicinity of developments	Traffic noise at drop-off points and parking areas shall be mitigated with low-speed postings, speed humps and speed limit signages. The addition of these speed control measures will likely lower noise levels for traffic as the vehicles would be cruising at lower speeds.
Additional road traffic noise from new road networks	Consider alternative siting of roads away from areas with noise sensitive receptors such as avoid areas along Berlayer Creek. Consider the provision of park areas/ ecological setback (see Figure 7-50) in between new road networks if in proximity to areas with noise sensitive receptors, in line with recommendations for biodiversity impact mitigation in Section 7.10.1

Due to the lack of literature regarding the possible impacts of operational noise arising from the operation of ACMV systems and increased traffic noise on the ecological receptors, the approach to mitigate operational noise impacts on human receptors have been adopted to mitigate noise impacts on the ecological receptors. It was assumed that due to the potential noise sources arising from human activities as part of the operational phase (see Table 11-25), it is likely that ecological receptors with higher mobility (e.g. birds, butterflies, bats) will migrate westwards towards less disturbed areas of Labrador Nature Reserve, away from the disturbances brought about by operational noise. The approach to mitigate noise arising from ACMV systems and increased road traffic as per Table 11-25 is recommended to be employed to mitigate operational noise where possible.

Noise monitoring programme for the operational phase have not been proposed as information required regarding ACMV system designs and traffic volumes are unavailable. Usually conducted by an appointed Noise Consultant during the detailed design stage, AECOM recommends the works for ACMV boundary noise impact assessment and TNIA to be conducted in the later stages of the development in accordance with *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38].

11.9 Residual Impacts

The residual construction impact assessment assumes that the mitigation measures proposed in Section 11.8 are implemented at the proposed construction worksites, nearest to the receptors predicted to experience significant impact intensity through qualitative methods of assessment.

11.9.1 Construction Phase

11.9.1.1 Residual Ecological Impacts

This section discusses on the residual construction noise impacts on the identified ecological receptors, qualitatively assessed based on matrices defined in Section 11.2.4.2.1 under the assumption that mitigation measures proposed in Section 11.8 have been implemented. The predicted residual impact intensity for ecological receptors found around the proposed construction worksites are summarized in Table 11-26 below, with the findings of the residual impacts of ecological receptors at the two locations defined in Section 11.7.1.1 discussed below as follows:

11.9.1.1.1 Findings for Residual Ecological Impacts on Ecological Receptors

As mentioned in Section 11.2.4.2 the overall impact significance for the ecological receptors at Berlayer Creek and found along Bukit Chermin Road were classified according to impact intensity, impact consequence and likelihood of occurrence of impacts from the construction phase. Following reflects the findings and deduction of the residual overall impact significance of ecological receptors at the two locations. Please note that references to the assessment matrices in Section 6.4 have been provided in brackets for ease of reference to the appropriate matrices.

11.9.1.1.2 Ecological Receptors at Berlayer Creek (Residual)

For ground dwelling fauna species found at ground level, the proposed noise barriers of up to 12 m tall along the proposed construction worksites facing ecological receptors found at Berlayer Creek were qualitatively assessed to be beneficial in reducing noise impact intensity from **High** to **Low** (see Table 11-8) as presented in Table 11-26 below. This is potentially achievable due to the elimination of direct line of sight of receptors (receivers) into the proposed construction worksites (source) by the tall barriers. The associated impact consequence was consequently reduced from a range **Low – High** to ranging from **Very Low – Low** (see Table 6-7) with the corresponding impact significance reduced from **Moderate – Major** to **Minor – Moderate** (refer to Table 6-9) with a likelihood of **Likely** (see Table 6-8).

While for marine/ aquatic fauna in nearby water bodies of Berlayer Creek, the proposed noise barriers of up to 12 m tall along the proposed construction worksites facing ecological receptors found at Berlayer Creek were qualitatively assessed to be beneficial in reducing noise impact intensity from **Low** to **Negligible** (see Table 11-8) as presented in Table 11-26 below. The reduction of propagation of noise from the proposed construction worksites through the use of noise barriers on ground level will serve to further diminish the transmission of construction noise to nearby water bodies. The correlated impact consequence was consequently reduced from **Very Low** to **Imperceptible** (see Table 6-7) with the corresponding impact significance reduced from **Minor** to **Negligible** (refer to Table 6-9) with a likelihood of **Likely** (see Table 6-8).

For terrestrial arboreal ecological receptors found at mid to higher canopy levels, proposed noise barriers were found to be beneficial in reducing noise impact intensity. However, impact intensity remains significant after reduction from **High** to **Medium** (see Table 11-8), compared to the reduction of noise at ground level as the tall noise barriers are unlikely to eliminate the direct line of sight from the viewpoint of arboreal fauna at heights (e.g. on top of tree line) into the proposed construction worksites due to uneven terrain and limitation to height of proposed noise barriers to ensure the viability of implementation of barriers, considering the space required to stabilize and erect the barriers. The corresponding impact consequence was reduced from a range of **Low – High** to a range of **Very Low – Medium** (see Table 6-7). With a likelihood of occurrence of **Likely** (see Table 6-8), the overall residual impact significance for arboreal ecological receptors at Berlayer Creek was deduced to range from **Minor – Moderate** (refer to Table 6-9).

Despite the minimal improvement in overall impact significance for both ground dwelling and arboreal fauna species where the highest overall impact significance only reduced to **Moderate** and not within a range of **Negligible – Minor**, the post-mitigation results reflected in Table 11-26 below reflected a reduction in overall noise impact intensity with the application of noise barriers along the boundary of the proposed construction worksites in the vicinity of ecological receptors at Berlayer Creek qualitatively assessed to experience significant impact intensity

(see Section 11.7.1.1). This potentially reduces the areas where more mobile fauna such as avian species of high auditory sensitivity (Priority 1) have to retreat from, thereby potentially aiding in preserving the biodiversity of fauna species found at Berlayer Creek.

11.9.1.1.3 Ecological Receptors found along Bukit Chermin Road (Residual)

For ground dwelling terrestrial found at ground level along Bukit Chermin Road, the proposed noise barriers of up to 8 m height along the proposed construction worksites facing ecological receptors found along Bukit Chermin Road were qualitatively assessed to be beneficial in reducing noise impact intensity from **Medium** to **Negligible** (see Table 11-8) as presented in Table 11-26 below. As mentioned, this is potentially achievable due to the elimination of direct line of sight of receptors (receivers) into the proposed construction worksites (source) by the tall barriers. Furthermore, it is noted that ecological receptors found along Bukit Chermin Road are adapted and likely more tolerable to noisier conditions. With a reduction in noise levels predicted with the implementation of mitigation efforts in Section 11.8, it is likely that these ecological receptors face significant benefits in reduction of impact intensity as discussed above. The associated residual impact consequence was hence reduced from a range **Very Low – Medium** to ranging from **Imperceptible – Very Low** (see Table 6-7) with the corresponding residual impact significance reduced from **Minor – Moderate** to **Negligible – Minor**(refer to Table 6-9) with the likelihood of occurrence of **Likely** (see Table 6-8).

While for marine/ aquatic fauna species found in water bodies near Bukit Chermin Road, the proposed noise barriers of up to 8 m height along the proposed construction worksites facing the ecological receptors found near Bukit Chermin Road were qualitatively assessed to be beneficial in reducing noise impact intensity from **Low** to **Negligible** (see Table 11-8) as presented in Table 11-26 below. As discussed, this is attributed a reduction in ground level propagation of construction noise, further reducing possible transmission of noise to nearby water bodies. The correlating impact consequence was hence reduced from **Very Low** to Imperceptible (see Table 6-7) with the corresponding impact significance reduced from **Minor** to **Negligible** (refer to Table 6-9) with a likelihood of **Likely** (see Table 6-8).

For terrestrial arboreal ecological receptors found at mid to higher canopy levels along Bukit Chermin Road, proposed noise barriers of heights up to 8 – 12 m were found to be beneficial in reducing noise impact intensity from **Medium** to **Low** (see Table 11-8). The corresponding impact consequence was reduced from a range of **Very Low – Medium** to a range of **Very Low – Low** (see Table 6-7). The overall residual impact significance for arboreal ecological receptors at Berlayer Creek was however deduced as unchanged, ranging from **Minor – Moderate** (refer to Table 6-9) due to a **Likely** likelihood of occurrence (see Table 6-8).

As deduced above, while ground dwelling and marine/ aquatic fauna species found along Bukit Chermin Road were predicted to benefit significantly from the implementation of mitigation efforts with a reduction in overall impact significance, no changes were predicted for arboreal fauna species where the highest overall impact significance remained as **Moderate** and not within a range of **Negligible – Minor**. Despite this, post-mitigation results reflected in Table 11-26 below reflected a reduction in overall noise impact intensity with the application of noise barriers along the boundary of the proposed construction worksites in the vicinity of ecological receptors found along Bukit Chermin Road assessed to experience significant impact intensity (see Section 11.7.1.1.3). This potentially reduces the areas where more mobile fauna such as avian species of high auditory sensitivity (Priority 1) have to retreat from, thereby potentially aiding in preserving the biodiversity of fauna species found along Bukit Chermin Road.

Table 11-26 Summary of residual construction noise impact evaluation (ecological)

Location/ Elevation	Nearest Sound Level Meter No. for Baseline Monitoring Result	Receptor Priority	Pre-Mitigation				Post-Mitigation				Remark(s)
			Impact Intensity	Impact Consequence	Likelihood	Impact Significance	Impact Intensity	Impact Consequence	Likelihood	Impact Significance	
Ecological Receptors found at Berlayer Creek (Terrestrial)											
Ground Level	N1: Berlayer Creek Lookout Point	Priority 1	High	High	Likely	Major	Low	Low	Likely	Moderate	Ground dwelling ecological receptors are likely to benefit from the proposed noise barriers with direct line to sight to proposed construction worksites eliminated reducing the noise impact intensity from **High** to **Low**.
		Priority 2	High	High	Likely	Major	Low	Low	Likely	Moderate	
		Priority 3	High	Low	Likely	Moderate	Low	Very Low	Likely	Minor	
Mid-level Elevation		Priority 1	High	High	Likely	Major	Medium	Medium	Likely	Moderate	Arboreal ecological receptors found at heights are likely to experience benefits from the erection of tall noise barriers of heights up to 12 m with benefits being lower compared to at ground level at direct line of sight to proposed construction worksites may not be entirely eliminated. Hence, the proposed tall noise barriers of up to 12 m tall is likely to be able to reduce noise impact intensity from **High** to **Medium** for ecological receptors at heights.
		Priority 2	High	High	Likely	Major	Medium	Medium	Likely	Moderate	
		Priority 3	High	Low	Likely	Moderate	Medium	Very Low	Likely	Minor	
High-level Elevation		Priority 1	High	High	Likely	Major	Medium	Medium	Likely	Moderate	
		Priority 2	High	High	Likely	Major	Medium	Medium	Likely	Moderate	
		Priority 3	High	Low	Likely	Moderate	Medium	Very Low	Likely	Minor	
Ecological Receptors found at Berlayer Creek (Marine/ Aquatic)											
N.A.	N1: Berlayer Creek Lookout Point	Priority 3	Low	Very Low	Likely	Minor	Negligible	Imperceptible	Likely	Negligible	Marine/ aquatic ecological receptors are likely to benefit from the proposed noise barriers erected on ground level, reducing the noise impact intensity from **Low** to **Negligible**.
Ecological Receptors found along Bukit Chermin (Terrestrial)											
Ground Level	N2: Along Bukit Chermin Road	Priority 1	Medium	Medium	Likely	Moderate	Negligible	Very Low	Likely	Minor	Ground dwelling ecological receptors are likely to benefit from the proposed noise barriers with direct line to sight to proposed construction worksites eliminated reducing the noise impact intensity from **Medium** to **Negligible**.
		Priority 2	Medium	Medium	Likely	Moderate	Negligible	Very Low	Likely	Minor	
		Priority 3	Medium	Very Low	Likely	Minor	Negligible	Imperceptible	Likely	Negligible	
Mid-level Elevation		Priority 1	Medium	Medium	Likely	Moderate	Low	Low	Likely	Moderate	Arboreal ecological receptors found at heights are likely to experience benefits from the erection of tall noise barriers of heights up to 12 m with benefits being lower compared to at ground level at direct line of sight to proposed construction worksites may not be entirely eliminated. Hence, the proposed tall noise barriers of up to 12 m tall is likely to be able to reduce noise impact intensity from **Medium** to **Low** for ecological receptors at heights but not likely significantly enough to reduce any further.
		Priority 2	Medium	Medium	Likely	Moderate	Low	Low	Likely	Moderate	
		Priority 3	Medium	Very Low	Likely	Minor	Low	Very Low	Likely	Minor	
High-level Elevation		Priority 1	Medium	Medium	Likely	Moderate	Low	Low	Likely	Moderate	
		Priority 2	Medium	Medium	Likely	Moderate	Low	Low	Likely	Moderate	
		Priority 3	Medium	Very Low	Likely	Minor	Low	Very Low	Likely	Minor	
Ecological Receptors found near Bukit Chermin (Marine/ Aquatic)											
N.A.	N2: Along Bukit Chermin Road	Priority 3	Low	Very Low	Likely	Minor	Negligible	Imperceptible	Likely	Negligible	Marine/ aquatic ecological receptors are likely to benefit from the proposed noise barriers erected on ground level, reducing the noise impact intensity from **Low** to **Negligible**.
Note: N.A. – Not Applicable											

11.9.1.2 Residual Human Impacts

This section discusses on the residual construction noise impacts on human receptors identified for this Project, qualitatively assessed based on matrices defined in Section 11.2.4.2.2 under the assumption the mitigation measures proposed in Section 11.8 have been implemented.

As mentioned in Section 11.7.1.2 the overall impact significance for the identified human receptors were classified according to impact intensity, impact consequence and likelihood of occurrence of impacts from the construction phase. Following reflects the findings and deduction of the residual overall impact significance of the four (4) groups of human receptors. Please note that references to the assessment matrices in Section 6.4 have been provided in brackets for ease of reference to the appropriate matrices. The findings of the residual impacts of the four (4) distinct groups of human receptors defined in Section 11.7.1.2 are discussed below:

11.9.1.2.1 (Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites

For Group A human receptors, receptors of different receptor sensitivities were qualitatively assessed to benefit from the implementation of mitigation measures proposed in Section 11.8 differently. For Group A Priority 1 noise sensitive human receptors, it was noted that these establishments are mainly comprising of low-rise buildings housing places of worship or welfare homes where proposed noise barriers of up to 8 m tall were qualitatively assessed as capable of reducing noise impact intensity from **Low** to **Negligible** (see Table 11-8). With a **Negligible** residual impact intensity, residual impact consequence was consequently reduced to **Very Low** (refer to Table 6-7) and the overall residual impact significance was reduced from **Moderate** to **Minor** with a likelihood of occurrence of **Likely** (see Table 6-8).

While for Group A Priority 2 noise sensitive receptors, these receptors are mainly comprised of high-rise residential buildings that will continue to have a direct line of sight into the proposed construction worksites at higher levels regardless of the noise barrier height. As such, overall residual impact intensity for Group A Human Receptors were qualitatively assessed to remain unchanged post-mitigation as **Low**. Hence, no changes were also determined for impact consequence, remaining as **Low** (see Table 6-7), and residual impact significance remains unchanged as **Moderate** (refer to Table 6-9).

For Group A Priority 3 noise sensitive receptors, similar to Priority 1 receptors are mainly comprised of low-rise buildings. As such, the direct line of sight of human receptors (receivers) in to the proposed construction worksites (source) would likely be eliminated proposed noise barriers of up to 8 m tall, resulting in a reduced residual impact intensity from **Low** to **Negligible** (see Table 11-8), reduced impact consequence from **Very Low** to **Imperceptible** (see Table 6-7) and overall residual impact significance of **Negligible** (refer to Table 6-9).

11.9.1.2.2 (Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites

No mitigation measures were proposed for Group B human receptors as discussed in Section 11.7.1.2.2, however Group B human receptors will still benefit from mitigation measures imposed to reduce impact intensity of other groups of human receptors.

As observed in Figure 11-8, with the implementation of proposed noise barriers of up to 8 m tall near Group B human receptors, these low-rise establishments are likely to experience a reduction in impact intensity with residual impact intensity qualitatively assessed as **Negligible** (refer to Table 11-8) and corresponding residual impact consequence reduced to **Imperceptible** (see Table 6-7). With a reduction of impact intensity and impact consequence, the overall residual impact significance for Group B human receptors were reduced to **Negligible** (refer to Table 6-9) with a likelihood of occurrence of **Likely** (refer to Table 6-8).

11.9.1.2.3 (Group C) Human receptors along Bukit Chermin Road

For Group C human receptors along Bukit Chermin Road, receptors of different sensitivities were qualitatively assessed to benefit from the implementation of mitigation measures proposed in Section 11.8 differently. For Group C Priority 2 receptors, are mainly comprised of low-rise to high-rise residential buildings at Reflections at Keppel Bay of heights of up to 42 stories. Hence, although the proposed noise barriers of heights up to 12 m tall may be able to eliminate the direct line of sight of low-rise residential buildings to the proposed construction worksites, the overall residual impact intensity is likely to remain unchanged as **High** (see Table 11-8) as the same cannot be achieved for receptors at higher elevations. As such, overall residual impact significance for Group C Priority 2 receptors are qualitatively predicted to remain unchanged with an overall residual impact significance of **Major** (refer to Table 6-9) as reflected in Table 11-27 below.

While for Group C Priority 1 human receptors, these receptors found in Bukit Chermin reserve site are mainly low-rise buildings where the proposed noise barriers of 8 m height are predicted as sufficient to eliminate the direct line of sight of these receptors to the proposed construction worksites. It should be noted that alternative siting of access routes to the proposed construction worksites not facing these receptors must also be considered in order to achieve mitigated results with the proposed noise barriers so as to prevent noise leak from any openings to the receptors. With that, overall residual impact intensity is predicted to be reduced from **High** to **Low** (see Table 11-8). By relating this to a reduced corresponding residual impact consequence of **Low** (refer to Table 6-7), the overall residual impact significance was predicted to be reduced from **Major** to **Moderate** (see Table 6-9) with a likelihood of occurrence of **Likely** (see Table 6-8). Despite no changes towards the impact significance of Group C Priority 1 human receptors, it should be noted that predicted impact intensity has already been assessed to be as low as reasonably practicable.

11.9.1.2.4 (Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway

For Group D Priority 2 human receptors, these human receptors are mainly comprised of low-rise residential buildings from both Reflections at Keppel Bay and Caribbean at Keppel Bay of up to 8 stories. The proposed noise barriers of up to 12 m tall in height were predicted to be sufficient in eliminating the direct line of sight of receptors at lower levels to the proposed construction worksites but receptors at higher levels are not likely to experience the same benefits. As such, similar to the findings of Group C Priority 2 receptors, the overall residual impact intensity of noise impacts on Group D human receptors were predicted to remain unchanged as **Medium** (see Table 11-8) with an overall residual impact significance remaining unchanged as **Moderate** (see Table 6-9) as reflected in Table 11-27 below.

Table 11-27 Summary of residual construction noise impact evaluation (human)

Location/ Nearest Sound Level Meter	Noise Receptor Sensitivity	Pre-mitigation				Post-mitigation				Remark(s)
		Impact Intensity	Impact Consequence	Likelihood	Impact Significance	Impact Intensity	Impact Consequence	Likelihood	Impact Significance	
(Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites										
N3	(a) Noise Sensitive (Priority 1)	Low	Low	Likely	Moderate	Negligible	Very Low	Likely	Minor	Group A Priority 1 noise sensitive receptor buildings are mainly found to be of lower heights/ low-rise. Hence, the proposed low noise barriers of up to 8 m tall is likely to be able to reduce noise impact intensity from **Low** to **Negligible**.
	(b) Residential (Priority 2)	Low	Low	Likely	Moderate	Low	Low	Likely	Moderate	Group A Priority 2 noise sensitive receptors are comprised of high-rise residential buildings that will still have a direct line of sight into the proposed construction worksites regardless of the noise barriers. Hence overall impact intensity for Group A Priority 2 noise sensitive receptors remains unchanged as **Low**.
	(c) Others (Priority 3)	Low	Very Low	Likely	Minor	Negligible	Imperceptible	Likely	Negligible	Group A Priority 3 noise sensitive receptor buildings are mainly found to be of lower heights. Hence, the proposed low noise barriers of up to 8 m tall is likely to be able to reduce noise impact intensity from **Low** to **Negligible**.
(Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites										
N3	(c) Others (Priority 3)	Low	Very Low	Likely	Minor	Negligible*	Imperceptible	Likely	Negligible	Group B human receptors are mainly low-rise buildings where the proposed 8 m tall noise barriers (see Figure 11-8) will be able to eliminate the direct line of sight of receptors into the proposed construction worksite areas, thereby reducing noise impact intensity from **Low** to **Negligible**.
(Group C) Human receptors along Bukit Chermin Road										
N2	(a) Noise Sensitive (Priority 1)	High	High	Likely	Major	Low	Low	Likely	Moderate	Group C Priority 3 human receptors are mainly low-rise buildings (up to 2 stories) where the proposed noise barriers of 8 m height are sufficient to eliminate the direct line of sight of these receptors to the proposed construction worksites. Hence, overall impact intensity is predicted to be reduced from **High** to **Low**.
	(b) Residential (Priority 2)	High	High	Likely	Major	High	High	Likely	Major	Due to the close proximity of Group C human receptors to proposed construction worksites as well as height of high-rise residential buildings (up to 42 stories for Reflections at Keppel Bay), tall noise barriers of up to 12 m heights may be able to reduce impact intensity of noise for receptors at lower heights, eliminating their direct line of sight to the proposed construction worksites but not for receptors at higher elevations. Hence overall impact intensity for Group C Priority 2 noise sensitive receptors remains unchanged as **High**.
(Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway										
N3	(b) Residential (Priority 2)	Medium	Medium	Likely	Moderate	Medium	Medium	Likely	Moderate	Group D Priority 2 human receptors are mainly comprised of lower height residential buildings (up to 8 stories) where the proposed noise barriers of 12 m height are sufficient to eliminate the direct line of sight of these receptors at lower levels to the proposed construction worksites but not at higher levels. Hence, overall impact intensity is predicted to be remain unchanged as **Medium**.
Note: * Although no mitigation methods were proposed for Group B human receptors, overall implementation of proposed mitigation methods for other human receptor groups will result in a lower residual impact intensity and hence reduced impact significance.										

11.9.2 Operational Phase

11.9.2.1 Ecological Impacts

The residual operational noise impact assessment assumes that the mitigation measures proposed within Section 11.8.2 have been implemented at developments identified as potential sources for operational noise. The impact intensity at the receptors are expected to be reduced with the adoption of Best Available Technology (BAT) and Best Environmental Practice (BEP) noise control measures for ACMV systems, and measures to reduce traffic noise by introducing speed postings, humps and speed limit signages to slow down traffic. Furthermore, it was assumed the ecological receptors with higher mobility would potentially migrate westwards into Labrador Nature Reserve areas to distant themselves from the disturbances arising from operational noise impacts.

Based on the above assumptions, the residual operational noise impacts on the ecological receptors could be deduced to be reduced from an impact significance ranging from **Negligible** – **Minor** to **Negligible**.

11.9.2.2 Human Impacts

As discussed in Section 11.2.4.1.2, it is mandatory that the proposed developments comply with the *NEA Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings, 2018* [R-39] and *NEA Technical Guideline for Land Traffic Noise Impact Assessment, 2016* [R-38]. This is usually conducted by an appointed Noise Consultant during the detailed design stage. Hence, AECOM recommends that the developer/ developing agent to appoint a Noise Consultant(s) to assess the impacts arising from the operational phase at later stages of the development, to procure a more accurate understanding of noise impacts arising from operational conditions based on updated baseline conditions.

Following the implementation of proposed mitigation measures in Section 11.8.2, the residual impact significance on human receptors can be qualitatively deduced to be reduced to range from **Negligible** – **Minor** to **Negligible**.

11.10 Summary of Key Findings

In this study, qualitative noise impact assessment was carried out for both the construction and operational phase of the proposed residential developments within the Project proposed construction worksites to assess the noise impacts brought about by Activity 3: Foundation Works identified as the worst-case noisiest activity among six (6) construction activities proposed in this Project. Following details, the summary of key findings of the impacts arising from Activity 3 on ecological and human receptors identified for this Project.

11.10.1 Construction Phase

For the construction phase, qualitative noise impact assessment was carried out for the worst-case noisiest construction activity deduced as Activity 3: Foundation Works as outlined in Section 11.2.5.1, deduced based on the construction activities and construction schedules to assess noise impacts arising from proposed residential developments within the proposed construction worksites. This assessment was divided to assess the impact on both ecological and human receptors identified in Section 11.4 with both receptors separated into distinct groups aimed at providing fair assessment of noise impacts on receptors subjected to different conditions. The airborne noise assessment area for the construction phase was defined as 150 m from the Project proposed construction worksite viz Project area. Baseline airborne noise monitoring was also carried out for the construction phase at four (4) locations within the defined Assessment Area as reflected in Table 11-1 and Figure 11-1.

AECOM strived to develop project specific construction noise criteria through baseline monitoring and analysis to identify $L_{Aeq(12\ hours)}$, $L_{Aeq(1\ hour)}$ and $L_{Aeq(5\ mins)}$ baseline noise levels and therefore develop the corresponding criteria that need to be met at construction stage as informed by the NEA guidelines [W-13]. The Project specific construction noise criteria was used to inform the noise impact assessment to assess noise impacts arising from construction activities on the noise sensitive receptors. Due to very early stages of development of design and hence the construction methodology, only qualitative noise impact assessment was carried out in this report. Hence, when the design firms up in more detail in the detailed design stage, AECOM recommends that the developer/ developing agent Noise Consultant(s) to conduct quantitative studies on construction noise impacts assessment.

Following the agreement to conduct qualitative noise impact assessment at this stage, a set of assessment matrix relating the perceivability and noticeability of noise emissions to the impact intensity of noise experienced by the noise sensitive receptors (NSRs) were defined in Section 11.2.4.2 for ecological and human receptors respectively. As discussed in Section 11.2.5.1, the distance of receptors to the proposed construction worksites (i.e. noise source) as well as overall effective sound power levels of the powered mechanical equipment involved in Activity 3 were considered as a gauge to determine how perceivable and noticeable noise levels would be experienced by the different receptors at varying locations with considerations of current existing conditions such as existing road noise.

The likelihood of occurrence of potential noise impacts were determined based on the construction timeline of selected construction activities from Table 11-11. In determining the likelihood of occurrence of noise impacts from Activity 3: Foundation Works, overall source noise levels from other construction phases of similar magnitudes were factored in as it is not justifiable that only Foundation Works was considered the only activity that will contribute to noise impacts on the NSRs as they will occur across the same construction schedule. This resulted in Activity 3 having a likelihood of occurrence of **Likely/ Regular** as reflected in Table 11-12.

Following reflects the key findings of noise impacts on the ecological and human receptors subjected to noise from Activity 3 attained through qualitative means of assessment:

11.10.1.1 Ecological Receptors

As mentioned above, ecological receptors near different areas surrounding the proposed construction worksites were separated as part of qualitative impact assessment aimed at providing fair assessment of noise impacts on the receptors with the understanding that the receptors found at different locations may perceive additional noise impacts differently. The separated groups of ecological receptors are further separated into terrestrial ground dwelling fauna species found at ground level, and arboreal fauna species at mid to higher canopy levels as noise impacts on ground level will differ from that at higher elevation even at the same location resulting in a variation of response from ecological receptors according to the noise impact intensity as well as type of fauna inhabiting or present at the different levels, as well as for marine/ aquatic fauna species found in nearby water bodies for assessment.

Two (2) distinct groups of ecological receptors were established, namely Ecological Receptors at Berlayer Creek and Ecological Receptors found along/ near Bukit Chermin Road. Impact assessed on these groups are summarised below.

11.10.1.1.1 Ecological Receptors at Berlayer Creek

Significant noise impact intensity was predicted for ecological receptors subjected to airborne noise from Activity 3: Foundation Works and mitigation measures (see Section 11.8) were introduced to mitigate the high impact intensity deduced as part of qualitative impact assessment.

The pre-mitigation results for ecological receptors at Berlayer Creek reflects an impact intensity of **High** for terrestrial fauna and **Low** for marine/ aquatic fauna species subjected to airborne noise. As noise propagation reduces with distance, it is possible that during the construction phase that fauna species may adapt to the noise levels. However, at this stage such data are unavailable to predict the behaviour of fauna species as a result of noise impacts during the construction phase. Therefore, mitigation measures were proposed in Section 11.8.

Following the proposed mitigation measures of noise barriers of heights of up to 12 m tall (see Figure 11-8), the residual impact intensity for ecological receptors for ground dwelling fauna species found at up to 1.5 m from ground level, was reduced from **High** to **Low**. The associated impact consequence was consequently reduced from a range **Low – High** to ranging from **Very Low – Low** the corresponding impact significance reduced from **Moderate – Major** to **Minor – Moderate** with a likelihood of **Likely**.

While for marine/ aquatic fauna in nearby water bodies, the implementation of proposed noise barriers were predicted to result in further reduction of impact intensity from **Low** to **Negligible**. Corresponding impact consequence was reduced from **Very Low** to **Imperceptible** and overall impact significance reduced from **Minor** to **Negligible** with a likelihood of **Likely**.

As for terrestrial arboreal ecological receptors found at mid to higher canopy levels, proposed noise barriers were found to be beneficial in reducing noise impact intensity. However, impact intensity remains significant after reduction from **High** to **Medium** as the tall noise barriers are unlikely to eliminate the direct line of sight from the viewpoint of arboreal fauna at heights (e.g. on top of tree line) into the proposed construction worksites due to uneven terrain and limitation to height of proposed noise barriers to ensure the viability of implementation of barriers, considering the space required to stabilize and erect the barriers. The corresponding impact consequence was reduced from a range of **Low – High** to a range of **Very Low – Medium**. With a likelihood of occurrence of **Likely**, the overall residual impact significance for arboreal ecological receptors at Berlayer Creek was deduced to range from **Minor – Moderate**.

Despite the minimal improvement in overall impact significance for both ground dwelling and arboreal fauna species where the highest overall impact significance only reduced to **Moderate** and not within a range of **Negligible – Minor**, the post-mitigation results reflected in Table 11-26 below reflected a reduction in overall noise impact intensity with the application of noise barriers along the boundary of the proposed construction worksites in the vicinity of ecological receptors at Berlayer Creek qualitatively assessed to experience significant impact intensity (see Section 11.7.1.1). This potentially reduces the areas where more mobile fauna such as avian species of high auditory sensitivity (Priority 1) have to retreat from, thereby potentially aiding in preserving the biodiversity of fauna species found at Berlayer Creek.

11.10.1.1.2 Ecological Receptors found along Bukit Chermin Road

For ecological receptors found along Bukit Chermin Road, considerable noise impact intensity was predicted for ecological receptors subjected to noise from Activity 3: Foundation Works and mitigation measures (see Section 11.8) were introduced to mitigate the high impact intensity deduced as part of qualitative impact assessment.

The pre-mitigation results for ecological receptors found along Bukit Chermin Road reflects an impact intensity of **Medium** for terrestrial fauna and **Low** for marine/ aquatic fauna species. As noise propagation reduces with distance, it is possible that during the construction phase that fauna species may adapt to the noise levels. However, at this stage such data are unavailable to predict the behaviour of fauna species as a result of noise impacts during the construction phase. Therefore, mitigation measures were proposed in Section 11.8.

Following the proposed mitigation measures of noise barriers of heights of up to 8 – 12 m tall (see Figure 11-8), the residual impact intensity for ecological receptors for ground dwelling fauna species found at ground level was reduced from **Medium** to **Negligible**. The associated impact consequence was consequently reduced from a range

Very Low – Medium to ranging from **Imperceptible – Very Low** the corresponding impact significance reduced from **Very Low – Medium** to ranging from **Imperceptible – Very Low** with a likelihood of **Likely**.

For marine/ aquatic fauna found in water bodies near Bukit Chermin Road, the implementation of proposed noise barriers were predicted to result in further reduction of impact intensity from **Low** to **Negligible**. Corresponding impact consequence was reduced from **Very Low** to **Imperceptible** and overall impact significance reduced from **Minor** to **Negligible** with a likelihood of **Likely**.

While for terrestrial arboreal ecological receptors found at mid to higher canopy levels along Bukit Chermin Road, proposed noise barriers of heights up to 8 – 12 m were found to be beneficial in reducing noise impact intensity from **Medium** to **Low**. The corresponding impact consequence was reduced from a range of **Very Low – Medium** to a range of **Very Low – Low**. The overall residual impact significance for arboreal ecological receptors at Berlayer Creek was however deduced as unchanged, ranging from **Minor – Moderate** due to a **Likely** likelihood of occurrence.

As deduced above, while ground dwelling and marine/ aquatic fauna species found along Bukit Chermin Road were predicted to benefit significantly from the implementation of mitigation efforts with a reduction in overall impact significance, no changes were predicted for arboreal fauna species with the highest overall impact significance remaining as **Moderate** and not within a range of **Negligible – Minor**. Despite this, post-mitigation results reflected in Table 11-26 below reflected a reduction in overall noise impact intensity with the application of noise barriers along the boundary of the proposed construction worksites in the vicinity of ecological receptors found along Bukit Chermin Road assessed to experience significant impact intensity. This potentially reduces the areas where more mobile fauna such as avian species of high auditory sensitivity (Priority 1) have to retreat from, thereby potentially aiding in preserving the biodiversity of fauna species found along Bukit Chermin Road.

11.10.1.2 Human Receptors

Similarly, for human receptors, distinction of groups of human receptors was made to establish the current environmental conditions the different human receptors are subjected to, to allow for an understanding on the additional noise impacts arising from the proposed construction activities.

As observed in Section 11.4.1.2, human receptors were classified based on the type of establishments and nearest sound level meters, recording the baseline noise levels representative of current noise conditions experienced by the various receptors. Based on this information, following distinctions were established to facilitate qualitative impact assessment of human receptors.

Four (4) distinct groups of human receptors were identified as discussed in Section 11.7.1.2 based on their location in relation to the proposed construction worksites (see Figure 11-6). The key findings of noise impacts on human receptors are reflected in sections below:

11.10.1.2.1 Group A) Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites

For Group A human receptors, low noise impact intensity was predicted for human receptors subjected to noise from Activity 3: Foundation Works and mitigation measures (see Section 11.8) were introduced to mitigate the considerable impact significance deduced as part of qualitative impact assessment.

The pre-mitigation results for Group A human receptors reflects an impact intensity of **Low** and a corresponding significant impact intensity of ranging from **Minor – Moderate** due to a **Likely** likelihood of occurrence. Therefore, mitigation measures were proposed in Section 11.8 aimed at reducing impact significance to **Negligible – Minor** as much as possible.

For Group A human receptors, receptors of different receptor sensitivities were qualitatively assessed to benefit from the implementation of mitigation measures proposed in Section 11.8 differently. For Group A Priority 1 noise sensitive human receptors, it was noted that these establishments are mainly comprising of low-rise buildings housing places of worship or welfare homes where proposed noise barriers of up to 8 m tall were qualitatively assessed as capable of reducing noise impact intensity from **Low** to **Negligible**. With a **Negligible** residual impact intensity, residual impact consequence was consequently reduced to **Very Low**, and the overall residual impact significance was reduced from **Moderate** to **Minor** with a likelihood of occurrence of **Likely**.

While for Group A Priority 2 noise sensitive receptors, these receptors are mainly comprised of high-rise residential buildings that will continue to have a direct line of sight into the proposed construction worksites at higher levels regardless of the noise barrier height. As such, overall residual impact intensity for Group A Human Receptors were

qualitatively assessed to remain unchanged post-mitigation as **Low**. Hence, no changes were also determined for impact consequence, remaining as **Low**, and residual impact significance remains unchanged as **Moderate**.

For Group A Priority 3 noise sensitive receptors, similar to Priority 1 receptors are mainly comprised of low-rise buildings. As such, the direct line of sight of human receptors (receivers) in to the proposed construction worksites (source) would likely be eliminated proposed noise barriers of up to 8 m tall, resulting in a reduced residual impact intensity from **Low** to **Negligible**, reduced impact consequence from **Very Low** to **Imperceptible** and overall residual impact significance of **Negligible**.

11.10.1.2.2 (Group B) Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites

For Group B human receptors, insignificant noise impact intensity was predicted for human receptors subjected to noise from Activity 3: Foundation Works due to the nature of the establishments and existing noisy conditions. As such, pre-mitigation results revealing an overall impact significance of **Minor** deduces that mitigation efforts to reduce noise impacts will not be required for Group B human receptors.

However, Group B human receptors will still benefit from mitigation measures imposed to reduce impact intensity of other groups of human receptors.

As observed in Figure 11-8, with the implementation of proposed noise barriers of up to 8 m tall near Group B human receptors, these low-rise establishments are likely to experience a reduction in impact intensity with residual impact intensity qualitatively assessed as **Negligible** and corresponding residual impact consequence reduced to **Imperceptible**. With a reduction of impact intensity and impact consequence, the overall residual impact significance for Group B human receptors were reduced to **Negligible** with a likelihood of occurrence of **Likely**.

11.10.1.2.3 (Group C) Human receptors along Bukit Chermin Road

For Group C human receptors, considerable noise impact intensity was predicted for human receptors subjected to noise from Activity 3: Foundation Works and mitigation measures (see Section 11.8) were introduced to mitigate the considerable impact significance deduced as part of qualitative impact assessment.

The pre-mitigation results for Group A human receptors reflects an impact intensity of **High** and a corresponding impact significance of **Major** due to a **Likely** likelihood of occurrence. Therefore, mitigation measures were proposed in Section 11.8 aimed at reducing impact significance to **Negligible – Minor** as much as possible.

For Group C human receptors along Bukit Chermin Road, receptors of different sensitivities were qualitatively assessed to benefit from the implementation of mitigation measures proposed in Section 11.8 differently. For Group C Priority 2 receptors, are mainly comprised of low-rise to high-rise residential buildings at Reflections at Keppel Bay of heights of up to 42 stories. Hence, although the proposed noise barriers of heights up to 12 m tall may be able to eliminate the direct line of sight of low-rise residential buildings to the proposed construction worksites, the overall residual impact intensity is likely to remain unchanged as **High** as the same cannot be achieved for receptors at higher elevations. As such, overall residual impact significance for Group C Priority 2 receptors are qualitatively predicted to remain unchanged with an overall residual impact significance of **Major**.

While for Group C Priority 1 human receptors, these receptors found in Bukit Chermin reserve site are mainly low-rise buildings where the proposed noise barriers of 8 m height are predicted as sufficient to eliminate the direct line of sight of these receptors to the proposed construction worksites. It should be noted that alternative siting of access routes to the proposed construction worksites not facing these receptors must also be considered in order to achieve mitigated results with the proposed noise barriers so as to prevent noise leak from any openings to the receptors. With that, overall residual impact intensity is predicted to be reduced from **High** to **Low**. By relating this to a reduced corresponding residual impact consequence of **Low**, the overall residual impact significance was predicted to reduce from **Major** to **Moderate** with a likelihood of occurrence of **Likely**. Despite the mitigation efforts not reducing impact significance to within acceptable levels of Negligible – Minor, it should be noted that the impact intensity of noise impacts experienced by Group C priority 1 human receptors has been reduced to as low as reasonably practicable.

11.10.1.2.4 (Group D) Human receptors along Bukit Chermin Road and fronting West Coast Highway

For Group D human receptors, considerable noise impact intensity was predicted for human receptors subjected to noise from Activity 3: Foundation Works and mitigation measures (see Section 11.8) were introduced to mitigate the considerable impact significance deduced as part of qualitative impact assessment.

The pre-mitigation results for Group D human receptors reflects an impact intensity of **Medium** and a corresponding significant impact intensity of ranging from **Minor – Moderate** due to a **Likely** likelihood of occurrence. Therefore, mitigation measures were proposed in Section 11.8 aimed at reducing impact significance to **Negligible – Minor** where practically achievable.

For Group D Priority 2 human receptors, these human receptors are mainly comprised of low-rise residential buildings from both Reflections at Keppel Bay and Caribbean at Keppel Bay of up to 8 stories. The proposed noise barriers of up to 12 m tall in height were predicted to be sufficient in eliminating the direct line of sight of receptors at lower levels to the proposed construction worksites but receptors at higher levels are not likely to experience the same benefits. As such, similar to the findings of Group C Priority 2 receptors, the overall residual impact intensity of noise impacts on Group D human receptors were predicted to remain unchanged as **Medium** with an overall residual impact significance remaining unchanged as **Moderate**.

11.10.2 Operational Phase

For the operational phase, operational noise impact assessment focused on the air conditioning and mechanical ventilation (ACMV) systems of non-industrial buildings and increased traffic noise arising from the increase in vehicular volumes from existing/ new road networks. Following details, the key findings of the operational noise impacts on ecological receptors and human receptors from the two (2) identified sources of operational noise:

11.10.2.1 Ecological Receptors

As observed in Figure 11-4, the forested areas and water bodies surrounding the proposed construction worksites is home to several ecological receptors identified in Section 11.4.2.1 of auditory sensitivities ranging from Priority 1 (most sensitive) – Priority 3. It was noted that the larger impact on this area regardless of noise is due to the redevelopment of the forested area into urbanized developments, removing the habitats where these identified fauna species reside in and impacting them directly (e.g. clearance of Keppel Club golf course area inhabited by fauna). Whether the fauna species will eventually move westwards to take shelter in less disturbed areas of nearby Labrador Nature Reserve or develop new habitats elsewhere is uncertain at this stage making it difficult to analyse the impact of noise on these fauna species.

For fauna species found to reside further away from the boundary of the proposed construction worksites, as noise propagation reduces with distance, it is possible that with time in the operational phase, that the fauna species may adapt itself to a continuous noise level (i.e. new baseline). As discussed in Section 11.2.4.1.2, the developer/ developing agent should appoint a Noise Consultant(s) to assess the impacts arising from the operational phase to procure a more accurate understanding of noise impacts arising from operational conditions based on updated baseline conditions as required by NEA as part of the detailed design process.

Baseline noise monitoring results at N1 and N4 were used to assess the potential operational noise impacts on the ecological receptors indicatively. As observed the average baseline noise levels at N1 and N4 for $L_{Aeq(15\,mins)}$ ranged from 47 – 57 dB(A). This was compared against the NEA's ACMV boundary noise limits for the most stringent noise sensitive criteria (see Section 11.2.4.1.2) and it reflected that current baseline noise levels were relatively lower than the noise limits. Assuming that this regulation will be met by the contractors, there will be significant detectable changes in noise levels in the area differing from daytime and night-time. As a conservative means, the lower recorded baseline noise levels should be established as the noise criteria to ensure that noise sensitive fauna species will not face significant impacts from noise disturbances.

Hence, assuming if the regulation will be met by the contractors, fauna species may potentially face **Negligible – Moderate** impacts due detectable disturbances from increased noise levels in the surrounding nature areas if ACMV systems are designed to be fronting those noise sensitive areas. However, if a more conservative criteria (i.e. no worse off than baseline) was adopted, the operational noise impact significance on the ecological receptors can be qualitatively assessed as **Negligible – Minor**.

The impact intensity if abiding by the conservative criteria would potentially range from **Negligible – Low** and the corresponding impact consequence may range from **Imperceptible – Low**. The likelihood of noise levels exceeding the criteria would be **Occasional**, dependant on human activities and how frequently ACMV systems are engaged. Hence, the overall impact significance can be qualitatively assessed to range from **Negligible – Minor** for ecological receptors found in forested areas and water bodies in vicinity of the proposed residential development site.

Thereafter, mitigation measures to reduce operational noise impacts were introduced in Section 11.8.1 and for human receptors and adopted for ecological receptors. With the implementation of the mitigation measures, the impact significance of operational noise impacts on the ecological receptors were qualitatively assessed to be reduced to range from **Negligible** – **Minor** to **Negligible**.

11.10.2.2 Human Receptors

For operational noise impacts on human receptors, it is mandated by law for the proposed developments to comply with NEA's guidelines for boundary noise impacts assessment for ACMV systems of non-industrial buildings and traffic noise impact assessment (TNIA) for existing/ new road networks for the developments within the Project proposed construction worksites. Usually conducted by an appointed Noise Consultant during the development stage, AECOM recommends that the works for ACMV boundary noise impact assessment and TNIA be conducted at the detailed design stage in accordance to NEA's guidelines as discussed in Section 11.7.2. As part of qualitative impact assessment for operational noise impacts on human receptors, the impact intensity was deduced to be **Negligible** with corresponding impact consequence determined to range from **Imperceptible** – **Very Low**. The consequent impact significance of operational noise on human receptors was deduced to range from **Negligible** – **Minor** following an **Occasional** likelihood dependant on human activities and frequency of use of ACMV systems and roads. It should be noted that this qualitative assessment for operation phase is not definitive and as re-emphasized, it is mandatory for proposed developments to comply with NEA's guidelines. Hence, AECOM recommends that the developer/ developing agent to perform installations of ACMV systems at later stages of the Project development, conduct a boundary noise impact assessment and monitoring at the commissioning stage for non-industrial buildings with ACMV systems in accordance with NEA regulations.

Table 11-28 Summary of airborne noise impact assessment (distinct groups)

Potential Source of Impact	Impact Significance with Minimum Control	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase		
Ecological Receptors		
Ecological Receptors found at Berlayer Creek (Terrestrial)		
Activity 3: Foundation Works	Moderate – Major	Minor – Moderate
Ecological Receptors found at Berlayer Creek (Marine/ Aquatic)		
Activity 3: Foundation Works	Minor	Negligible
Ecological Receptors found along Bukit Chermin Road (Terrestrial)		
Activity 3: Foundation Works	Minor – Moderate	Negligible – Moderate
Ecological Receptors found along Bukit Chermin Road (Marine/ Aquatic)		
Activity 3: Foundation Works	Minor	Negligible
Human Receptors		
Group A Human receptors fronting West Coast Highway, Telok Blangah Road across from proposed construction worksites		
Activity 3: Foundation Works	Minor – Moderate	Negligible – Moderate
Group B Human receptors fronting West Coast Highway, Telok Blangah Road along proposed construction worksites		
Activity 3: Foundation Works	Minor	Negligible
Group C Human receptors along Bukit Chermin Road		
Activity 3: Foundation Works	Major	Moderate – Major
Group D Human receptors along Bukit Chermin Road and fronting West Coast Highway		
Activity 3: Foundation Works	Moderate	Moderate
Operational Phase		
Ecological Receptors	Negligible – Minor	Negligible
Human Receptors	Negligible – Minor	Negligible

Table 11-29 Summary of airborne noise impact assessment (overall)

Potential Source of Impact	Impact Significance with Minimum Control	Residual Impact Significance with Mitigation Measures (if required)
Construction Phase		
Ecological Receptors	Minor – Major	Negligible – Moderate
Human Receptors	Minor – Major	Negligible – Major
Operational Phase		
Ecological Receptors	Negligible – Minor	Negligible
Human Receptors	Negligible – Minor	Negligible

12 Environmental Monitoring and Management Plan

The proposed Environmental Monitoring and Management Plan (EMMP) is prepared for environmental impacts of the construction and operational phases associated with the project, and that were assessed in this EIS study, namely biodiversity, hydrology and water quality, soil and groundwater, air quality and airborne noise. The EMMP details how the recommended mitigation measures prepared for the impact assessment are to be implemented and specifies recommended monitoring measures to assess the effectiveness of the mitigation measures. This document is also intended to provide a broad framework for the ECO to develop a more contract-specific EMMP, as per their responsibilities in Section 12.4.5. Since the project will evolve over time, the EMMP is an adaptive document meant to be amended where necessary. Copies of the EMMP must be kept on-site for reference at all times.

This section outlines the objectives of the EMMP, the project organisation, describes the roles and responsibilities relevant to implementation of the EMMP, and summarises the EMMP requirements for each discipline.

12.1 EMMP Objectives

The Environmental Monitoring and Management Programme (EMMP) details the implementation and deliverables of the recommended mitigation measures identified from the impact assessment for each technical discipline. The EMMP progressively scrutinizes construction and operational activities as they ensue and applies flexible monitoring and management procedures to protect the project's environmental values throughout the construction and operational phases. The objective of the EMMP is twofold:

a) Environmental monitoring focuses on overseeing that impacts to the project's environmental values from construction and operation are within the anticipated level and tackle unforeseen impacts that may arise; and

b) It also tracks the effectiveness of the recommended mitigation measures to allow amendment or review of the mitigation measures to better address any issues faced during construction and operation of the project.

Environmental management employs a more active approach to ensure that impacts to flora and fauna are directly avoided through documentation, auditing and enforcement.

12.2 Project Organisation during the Construction Phase

The roles and responsibilities of the various parties responsible for implementing the EMMP during the construction phase are outlined below. The proposed project organization and lines of communication with respect to environmental protection works are presented in Figure 12-1.

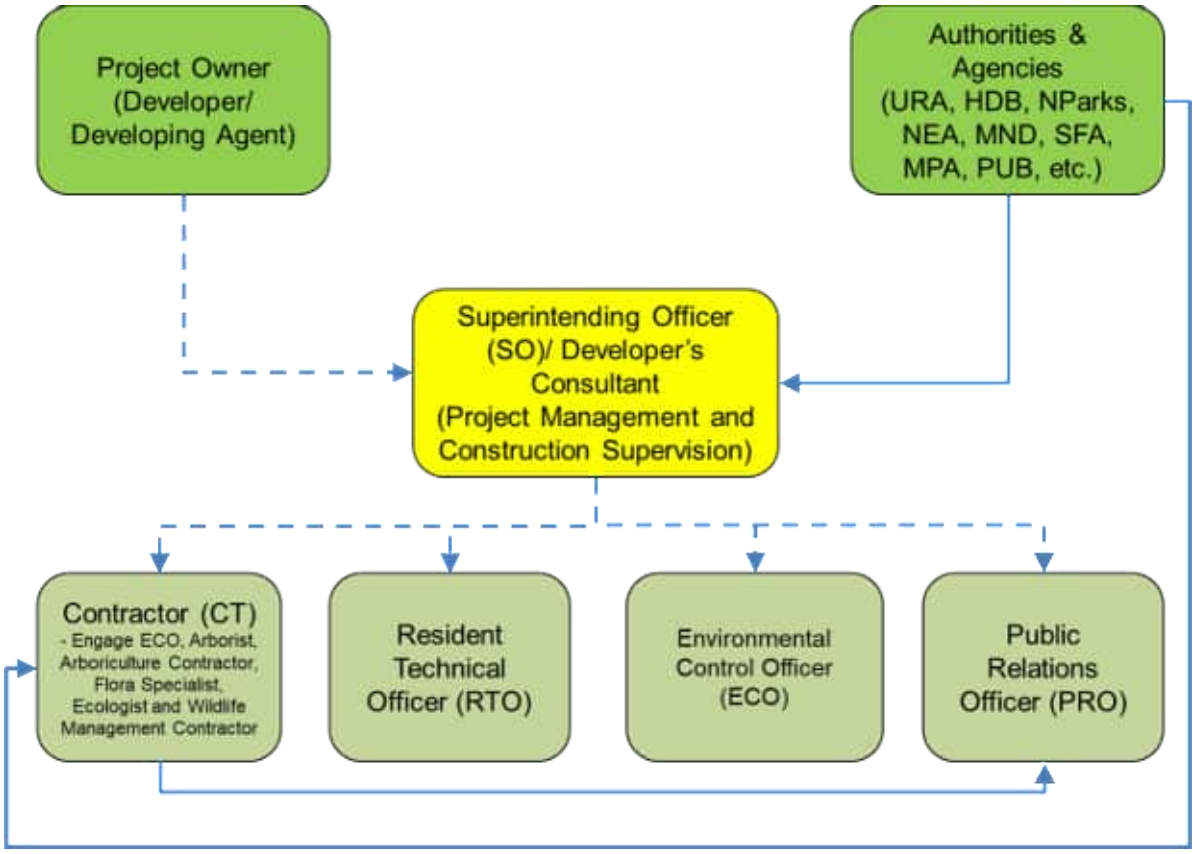


Figure 12-1 Project organization and lines of communication during the construction phase

12.3 Project Organisation during the Operational Phase

The roles and responsibilities of the various parties responsible for implementing the EMMP during the operational phase are outlined below. The proposed project organization and lines of communication with respect to environmental protection works are presented in Figure 12-2.

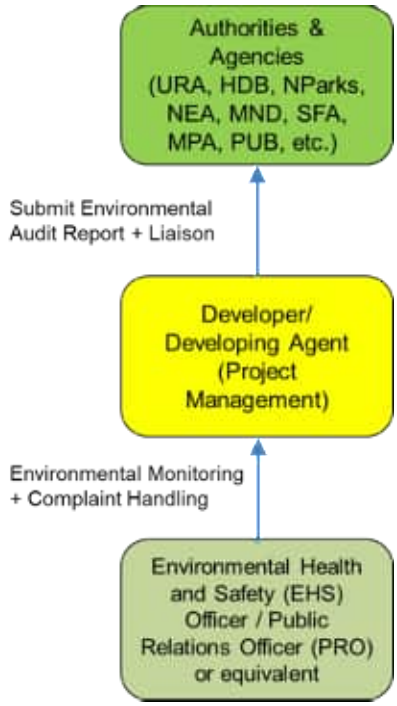


Figure 12-2 Project organization and lines of communication during the operational phase

12.4 Roles and Responsibilities of the EMMP for the Construction Phase

12.4.1 Technical Agencies

Technical agencies constitute but are not limited to URA, HDB, NParks, PUB, NEA and LTA. These agencies shall assess and approve the detailed EMMP for the construction and operational phases prior to commencement of works and where required during the course of the project.

12.4.2 Project Owner and Resident Technical Officer

The developer/ developing agent, being the project owner, will oversee the construction phase of the project in accordance with the design. In conjunction with the Resident Technical Officer (RTO) (Contractor), the developer/ developing agent is required to:

- Ensure resources are available to achieve the requirements of the EMMP;
- Provide leadership in the development and implementation of the EMMP;
- Ensure all environmental incidents and near misses are promptly investigated and reported;
- Resolve any non-compliance issues;
- Record, respond to, and action any complaints from members of the public, if any, with inputs from the Technical agencies, if required; and
- Reporting to the Technical Agencies regarding implementation of the EMMP.

12.4.3 The Contractor

The term “Contractor” refers to all construction contractors and sub-contractors working onsite at any time. In addition to reporting to the SO, the Contractor should:

- Work under the relevant contract scope, specifications, and other tender conditions;

- Ensure that the roles of RTO, Environmental Control Officer (ECO), Certified Arborist, and Fauna Specialist/s are adequately resourced, under guidance of the Contractor and/or the SO when necessary;
- Participate in the required environmental site audits undertaken by the ECO and undertake any corrective actions;
- Provide up-to-date information to the RTO, ECO, Certified Arborist, and Fauna Specialist/s regarding any work activities which may contribute or continuously create adverse environmental conditions, or any changes to the work plan;
- Implement measures to reduce impacts where emission/discharge levels are exceeded;
- Prepare a detailed contract-specific EMMP, incorporating the relevant mitigation measures and monitoring works recommended in this EIS report and seek technical agencies' approval prior to the commencement of any works. This detailed EMMP shall include, as a minimum, a Standard Operating Procedure (SOP) detailing:
  - Handling and storage of hazardous chemicals;
  - Biodiversity management plan;
  - Individual environmental management plans as detailed in the NEA's SHE Specifications (air, vector, waste, noise, water pollution management plans);
  - Monitoring plans (including but not limited to noise, air, waste, ecology and water pollution);
  - Existing legislation and environmental best practices to be implemented; and
  - Contingency planning during emergency situations.

Besides, for site and/or vegetation clearance before the commencement of actual construction, the Contractor shall engage a certified Qualified Erosion Control Professional (QECP) to prepare an Erosion Control Plan (ECP) and obtain approval from the Public Utilities Board (PUB).

For tree-felling, the Contractor shall also map the trees on site and the trees planned for removal or retention and NParks' approval, where the Contractor shall consider the following requirements:

- An area rich in trees of conservation interest, the contractor should employ a certified arborist to map the trees carefully while applying for tree felling approval. This is to gauge the health, species, size and conservation significance of the tree;
- If there are trees that must be transplanted, this should be done prior to commencing site clearance;
- If the area is rich in wildlife, the contractor shall consult wildlife specialist and prepare a wildlife shepherding plan, obtain NParks' approval and execute it prior to/ along the site clearance process.

12.4.4 The Superintending Officer (SO)

The Superintending Officer is responsible for overseeing the construction works undertaken by various staff, contractors and sub-contractors. The SO should ensure that the construction works are performed by the contractors and personnel in accordance with the specification, contractual requirements, and EMMP. The SO should also:

- Communicate the requirements of this plan to all staff, contractors and sub-contractors
- Monitor all staff, contractor's and sub-contractor's compliance with contract specifications and regulatory requirements, including the implementation of the environmental mitigation and monitoring measures and ensure their effectiveness, and other aspects of the environmental audit program;
- Coordinate with the project's ECO Officer to monitor and participate in the implementation of the environmental audit program, and ensure that the requirements in the environmental audit program are correctly followed;
- Implement measures to reduce impacts where emission/discharge levels are exceeded;
- Coordinate with the Project Owner and RTO for submission of environmental audit reports;
- Carry out any complaint investigations as per Section 12.8;

- Resolve any non-compliance issues; and
- Promote environmental awareness and responsibility and lead by example.

12.4.5 The Environmental Control Officer (ECO)

The ECO shall be employed by the Contractor but may not be in any way an associated body of the Contractor, the SO. The ECO is responsible for implementing the elements of the environmental monitoring program that fall within their responsibilities as outlined in the Code of Practice for Environmental Control Officers (Environmental Health Department, 2000). He/she should be a registered Environmental Control Officer (ECO) with NEA and has at least two years' experience in environmental monitoring and auditing works. Resources to implement the environmental monitoring program should be allocated time to fulfil the environmental audit requirements during construction works as specified in the EIS Report. The ECO's duties include:

- Carry out monitoring of environmental parameters and conduct laboratory analysis;
- Conduct regular site inspections, report monitoring results, and audit environmental performance as required in the EMMP;
- Coordinate with the SO regarding equipment, locations, and schedule of monitoring and auditing works;
- Analyse environmental monitoring data and audit findings, review the adequacy of implementation of mitigation measures, identify adverse environmental impacts, and liaise with the SO;
- Formulate and implement the environmental audit program and carry out regular site audits against the Contractor's site practices, equipment and work methodologies with respect to pollution control and environmental mitigation, and effect proactive actions to pre-empt problems in coordination with the SO;
- Monitor compliance with conditions in the EMMP, relevant environmental protection, pollution prevention and control regulations and contract specifications;
- Report the results of the environmental monitoring program, and any required changes to meet the requirements of the EMMP and legal obligations to the SO in a timely manner; and
- Assist the SO with the resolution of near misses/incidents, non-compliance issues, and complaint management.

12.4.6 Arborist

An Arborist certified by the International Society of Arboriculture (ISA) plays an important role as part of the biodiversity monitoring programme during both construction and commissioning phases of this Project. He/She shall possess previous work experience in developments of similar size or complexity who is able to demonstrate capability in monitoring and managing all matters related to the adequate and successful conservation of trees and flora within and adjacent to the contract boundary. A detailed description of biodiversity monitoring programme is provided in Section 12.16, where the key responsibilities of the Arborist are listed as follows:

The key responsibilities of an ISA-certified Arborist during construction phase include but not limited to:

- Carry out tree mapping and assessment;
- Implement tree protection plans;
- Provide advice on tree transplanting;
- Review Contractor's method statements for site clearance, tree felling and setting up of tree protection zones (TPZ);
- Assess forest edge effects and its associated changes;
- Implement tree maintenance and care; and
- Carry out monthly tree inspection and reporting.

12.4.7 Arboriculture Contractor

The Arboriculture Contractor should meet NParks' safety requirements for work at height and LTA's requirements for temporary works along roadsides. All arboriculture workers engaged by the Arboriculture Contractor to perform

tree climbing and chainsaw work shall possess a valid basic tree climbing certification based upon demonstrated competence in the Workforce Skills Qualifications (WSQ) module conducted by Centre for Urban Greenery and Ecology (CUGE) or an equivalent WSQ-approved training organisation; and

The arboriculture crew deployed by the Arboriculture Contractor for the Contract shall possess the following valid competences:

- Operation of chainsaw for ground work (LS-MT-103E-1);
- Chainsaw safety and maintenance (LS-MT-102E-1);
- Perform formative pruning of young trees (LS-MT-114E-1);
- Provide Arboriculture support on site (LS-MT-116E-1);
- Workplace safety and health – operators (ES-WSH-101G-1);
- Respond to Emergency (LS-HM-208E-1);
- Perform advance rigging and climbing techniques (LS-HM-308S-1);
- Perform aerial tree access and aerial rescue skills (LS-HM-204S-1);
- Implement and apply appropriate risk and safety management to sector practices (LS- BP-301S-1);
- Prepare risk assessment report (LS-HM-406S-1); and
- Operate and work from an elevated work platform (CUGE-ARB-3501).

The certified arboriculture contractor shall be responsible for pruning and maintenance of retained trees, as well as felling of trees during the construction phase of this Project.

12.4.8 Flora Specialist

For this Project, a Flora Specialist plays an important role in the implementation of flora-related EMMP measures (e.g. Flora Management Plans) as part of the biodiversity monitoring program during both construction and commissioning phases of this Project. He/She shall possess previous work experience in developments of similar size or complexity who is able to demonstrate capability in implementing flora management plans. A detailed description of biodiversity monitoring programme is provided in Section 12.16, where the key responsibilities of the Flora Specialist are listed as follows:

The key responsibilities of a qualified Flora Specialist during construction phase include but not limited to:

- Review soil investigation locations and proposed site access to minimise excessive vegetation removal;
- Identify plant species (e.g., climbers, shrubs, epiphytes, ferns) of value that can be extracted for propagation and harvesting;
- Recommend weed and invasive species management if necessary;
- Review planting palette of reforestation works and ensure that the specifications for planting are met; and
- Carry out monthly flora inspection and reporting.

12.4.9 Ecologist

For this Project, an Ecologist plays an important role in the implementation of fauna-related EMMP measures as part of the biodiversity monitoring program during both construction and commissioning phases of this Project, who can also be known as a Fauna Specialist. He/She shall possess a degree (or equivalent) in ecology-related fields with experience in implementing fauna management plans. In addition, at least two (2) valid certifications of the following:

- Animal Management Professional Certification Programme (PCP) – Basic Module (CUGE-PCP-7006A)
- Animal Management PCP – Intermediate Elective Module – Mammals (CUGE-PCTP-7006C)
- Animal Management PCP – Intermediate Elective Module – Reptiles (CUGE-PCP-7006B)

A detailed description of biodiversity monitoring programme is provided in Section 12.16, where the key responsibilities of the Ecologist are listed as follows:

Construction Phase

The key responsibilities of a qualified Ecologist during construction phase include but not limited to:

- Carry out fauna monitoring surveys including terrestrial transect surveys, aquatic sampling and camera trapping;
- Implement fauna management during site clearance;
- Carry out pre-felling fauna inspections;
- Carry out monthly fauna inspection and reporting; and
- Facilitate the implementation of the fauna response plan.

12.4.10 Wildlife Management Contractor

For this Project, the wildlife management contractor (with at least one veterinary professional with experience within the team) would be responsible in carrying out animal rescue, trapping and transport of large fauna if any human-wildlife conflicts are encountered during construction and commissioning phase on site. The wildlife management contractor shall be listed under NParks' public register of certified wildlife management contractors and have experience carrying out animal rescue, trapping and transport of large fauna.

A detailed description of biodiversity monitoring programme is provided in Section 12.16, where the key responsibilities of the wildlife management contractor are listed as follows:

Construction Phase

The key responsibilities of a qualified Wildlife Management Contractor during construction phase include but not limited to:

- Carry out fauna rescue and translocation in consultation with attending Ecologist and NParks; and
- Propose trapping of fauna in consultation with attending Ecologist and NParks to satisfy Section 10 Wildlife Act.

12.5 Roles and Responsibilities of the EMMP for the Operational Phase

12.5.1 Technical Agencies

Technical agencies constitute but are not limited to HDB, NParks, PUB, NEA, LTA and MND/ URA. These agencies shall assess and approve the detailed EMMP for the construction and operational phases, prior to commencement of works and, where required, during the course of the project.

12.5.2 Project Owner

The developer/ developing agent is responsible for overseeing and managing the environmental monitoring detailed in the EMMP for the operational phase. The developer/ developing agent is required to:

- Ensure resources and appropriate personnel are available to achieve the requirements of the EMMP;
- Provide leadership in the implementation of the EMMP;
- Ensure all environmental incidents and near misses are promptly investigated and reported;
- Resolve any non-compliance issues;
- Record, respond to, and action any complaints from members of the public, if any, with inputs from the Technical agencies, if required; and
- Reporting to the Technical Agencies and the developer/ developing agent regarding implementation of the EMMP.

12.5.3 Environmental Health and Safety Officer (or Equivalent)

The Environmental Health and Safety (EHS) officer will be appointed by the developer/ developing agent and is responsible for the overall environmental, health and safety during the operational phase of the project. With respect to the EMMP, the EHS Officer is required to:

- Carry out monitoring of environmental parameters and conduct any required laboratory analysis;
- Conduct site inspections, report monitoring results, and coordinate environmental auditing as stipulated in the EMMP;
- Coordinate with the developer regarding equipment, locations, and schedule of monitoring and auditing works;
- Analyse environmental monitoring data and audit findings, review the adequacy of implementation of mitigation measures, identify adverse environmental impacts, and liaise with the developer;
- Monitor compliance with conditions in the EMMP, relevant environmental protection and control regulations; and
- Report the results of the environmental monitoring program, and any required changes, to meet the requirements of the EMMP to the developer in a timely manner.

12.6 Construction Site Audit

Site surveillance provides a direct means to assess and ensure the project's environmental protection and pollution control measures are in compliance with the contract specifications and the EMMP. The ECO should inspect the construction activities regularly and routinely to ensure that the appropriate environmental protection and pollution control mitigation measures are properly and timely implemented, based on the EMMP's recommendations. With well-defined pollution control and impact mitigation measures outlined, and a well-established efficient remedial action reporting system, the site inspection is an effective "tool" to ensure acceptable environmental performance at the construction site.

The ECO is responsible to formulate environmental site inspections, deficiencies and the remedial action reporting system, and to carry out the site inspections. After consultation with project's SO, the ECO should prepare a procedure for the site inspections, deficiencies, remedial action, and reporting requirements. This documentation shall be agreed to by the RTO and Contractor representative and approved by the Project Owner within 21 days of the commencement of the construction contract.

Regular site inspections should be carried out at least once weekly for all the work areas during the construction phase. The inspections should cover the onsite environmental situation, pollution control and mitigation measures. Offsite environmental situations, which may be affected by onsite activities, (directly or indirectly) should also be reviewed.

12.7 Operational Phase Audit

During the operation of the project, annual monitoring (minimum frequency) for all environmental parameters should be conducted to ensure that all implemented measures are meeting their intended purpose, and that any potential changes in project conditions such as funicular maintenance issues, increased traffic, track lighting, etc are not having an adverse impact over and above the impacts identified in this assessment. A log tracking all maintenance procedures of equipment and carrying out of audits should be maintained by the Project Owner and the EHS Officer.

A minimum of annual monitoring periods also enables the Project Owner and EHS Officer to address any potential issues, not originally identified during the current impact assessment, that may arise during the course of the project. In this instance, the Project Owner should consider the impacts and, in consultation with the Technical Agencies and qualified professionals, develop measures to mitigate any identified impacts.

12.8 Complaint Handling

The Public Relation Officer (PRO) is responsible for handling complaints and managing feedback and investigative work. The PRO shall be supported by the Project Owner, ECO, EHS Officer, Contractor representatives, and any other relevant party.

During the construction phase, upon receipt of complaints, the PRO should undertake the following procedures:

- Log the complaint and record the date when the complaint is received onto the complaint database and inform the Project Owner, SO, and ECO Officer immediately;
- Investigate the complaint with the ECO to determine its validity and assess whether the source of the problem is due to construction works (the target time for response to the complainant is proposed to be 48 hours);
- If a complaint is valid and due to construction works, liaise with the ECO Officer on the mitigation measures and seek agreement from SO;
- Review the current situation and the ECO's and SO's implementation of the mitigation measures;
- Engage the ECO to undertake additional monitoring and auditing to verify the complaint if necessary. Ensure that any valid reasons for complaints do not re-occur by revising the work methods, procedures, machines and/or equipment, etc.;
- Submit complaint report (as well as the implementation of mitigation measures and the effectiveness of the mitigation measures as advised by the ECO) to the Project Owner, RTO and the SO; and
- Log a record of the complaint, investigation, follow-up actions and the results in the environmental audit reports.

The ECO and SO should provide all the necessary information and assistance to the PRO in order to complete the complaint investigation. Following the investigation, the Contractor should promptly undertake the mitigation measures. The PRO and SO should ensure that the measures have been appropriately implemented. The Contractor, RTO, and SO should also be responsible for the reporting of complaint investigation results and followed up actions to the Project Owner.

During the operational phase, upon receipt of complaints, the PRO should undertake the following procedures:

- Log the complaint and record the date when the complaint is received onto the complaint database and inform the Project Owner and EHS Officer immediately;
- Investigate the complaint with the EHS Officer to determine its validity and assess whether the source of the problem is due to construction works (the target time for response to the complainant is proposed to be 48 hours);
- If a complaint is valid and due to construction works, liaise with the EHS Officer on the mitigation measures and seek agreement from SO;
- Review the current situation and the EHS Officer's and SO's implementation of the mitigation measures;
- Engage the EHS Officer to undertake additional monitoring and auditing to verify the complaint if necessary. Ensure that any valid reasons for complaints do not re-occur by noting the root cause of the complaint;
- Submit complaint report (as well as the implementation of mitigation measures and the effectiveness of the mitigation measures as advised by the EHS Officer) to the Project Owner, RTO and the SO; and
- Log a record of the complaint, investigation, follow-up actions and the results in the environmental audit reports.

The PRO should work with the Project Owner and EHS Officer to gather all the necessary information and resources necessary to complete a complaint investigation. Following the investigation, the Project Manager and EHS Officer to undertake appropriate mitigation measures. Follow is required by the PRO to ensure that the mitigation measures have been appropriately implemented. Reporting of the complaint investigation results and followed up actions should be provided to the Project Owner and the Authorities.

12.9 Submission of Monthly Reports to Technical Agencies

During the construction phase, monthly reports on the implementation of construction EMMP should be submitted to the URA, HDB and other Technical Agencies for record purposes. The reports shall include, but is not limited to the following:

- Results of environmental monitoring programme, or any required changes to meet the requirements of the EMMP;
- Results of monthly tree, flora and fauna inspections;
- Records of environmental site inspections, deficiencies/non-compliance issues and its corresponding remedial action;
- Records of all environmental incidents and near-misses, as well as their investigation and follow-up; and
- Records of complaints, as well as the investigation, follow-up actions/implementation of mitigation measures and the effectiveness of these measures.

12.10 Biodiversity Monitoring Programme Requirement

At the construction phase, EMMP for both flora and fauna are essential in minimising and managing construction impacts.

12.10.1 Construction Phase

At the construction phase, EMMP for both flora and fauna are essential in minimising and managing construction impacts.

12.10.1.1 Flora and Arboriculture Monitoring Programme

The flora and arboriculture monitoring aims to assess the impacts of construction to vegetation and habitat, such as tree health, unauthorised and/or excessive vegetation removal, edge effects, habitat degradation from soil erosion, and rubbish dumping.

Arboriculture Monitoring Programme should include the following:

- Monitoring of the condition of trees at the new forest edge to determine the physiological health and structural stability of trees as edge effects can lead to die back of canopies, and branch and structural failures.
- Review of method statements of construction works in proximity to retained trees, if any, to determine if additional tree removal is required post-site clearance.
- Recommendation of solutions such as design changes, reduction of working space, reduction of TPZ area and reassessment of trees in cases of conflict with proposed works
- Assessment of physiological health, vigour and structural stability of retained trees. Recommend additional mitigating measures if necessary.
- Assessment of the condition of retained trees, if any, to ensure that there has been no deterioration or mechanical damage and to determine if additional tree removal is required.
- Where a tree exhibits signs of stress, the Arborist should inspect the tree and advise on strategies to reduce further impacts and rehabilitation measures. Where monitoring indicates that drying out or edge impacts are occurring, remediation measures shall be undertaken. These measures may be temporary (such as carrying out watering when there is seven continuous days without rainfall). Long-term solutions shall be investigated and implemented.
- Inspection of the integrity of TPZs
- Identification of excessive or unauthorised tree removal

Flora Monitoring Programme should include the following works:

- Monthly flora inspections shall be conducted within the worksite boundary and in forested areas adjacent to the worksite up to 15 m from the hoarding.
- Identification of any unauthorized removal of flora within areas of conservation or beyond the demarcated Project worksite (Figure 12-3).
- Identification of direct/indirect impacts to sensitive vegetation and habitats. Such impacts include soil erosion and degradation that have resulted from construction activities, and unauthorized dumping of waste material, construction debris or oil/chemical leakage.
- Identification of forest edge effects and recommendation of mitigation measures where necessary.
- Assessment of the status of invasive flora species and weeds and recommendation to remove them where necessary.
- Inspection of areas cleared of weeds to detect any seedlings of invasive species.
- Monitoring of the health of all retained and planted flora, including identification of diseases and recommendations for treatment.



Figure 12-3 Monitoring of vegetation and trees along the hoarding line for unauthorised vegetation clearance and forest edge effects.

12.10.1.2 Flora and Arboriculture Management Programme

The flora and arboriculture management programme aims to manage all matters related to the adequate and successful conservation of trees and vegetation within and adjacent to the contract boundary (up to 15-m from the contract boundary). The programme should include the following works:

Arboriculture Management Programme should include the following works:

- Tree Mapping and Assessment
    1. Trees within the worksite boundary, including any construction access roads, shall be mapped and assessed by the Arborist before work commencement.
    2. Trees within the worksite boundary, including any construction access roads, shall be mapped and assessed by the Arborist. These specimens shall be tagged with a unique serial number.
    3. The physiological health, presence of pests and diseases, and structural stability shall be assessed for all trees, single-stemmed palms and strangling Ficus species of ⩾ 1.0 m girth or spread, respectively.
    4. Species of conservation significance—i.e., listed in Chong et al. (2009) as nationally Vulnerable, Endangered, Critically Endangered or Presumed Extinct (which indicates a rediscovery)—of ⩾ 0.3 m girth or spread shall also be assessed. The locations, girth/spread, and height of these specimens shall also be recorded. These specimens shall be tagged with a unique serial number.
    5. The trees to be felled or retained shall be determined by the Arborist.
    6. A photographic report shall be provided for the trees affected by the proposed works.
    7. No trees shall be felled without prior approval from NParks.
- Tree Protection
    1. Where there are trees to be retained within the worksite, specifications shall be formulated by the Arborist for the setting up of tree protection zones (TPZ) to meet NParks requirements (Appendix Z);
- Sapling Harvesting
    1. Viable saplings and conservation significant trees that are suitable for harvesting shall be identified by the Arborist. Saplings or trees suitable for transplanting should:
        1. Exhibit good physiological health and vigour
        2. Have no structural defects
        3. Have good branch form

2. The root ball size to be extracted shall be based on the girth of the saplings or trees to be harvested as specified in Table 12-1.
3. Prior to transplanting, dead branches and climbers shall be cleared from the plant and canopy load and spread will be reduced where necessary, in consultation with the Arborist.
4. Manual trenching shall be carried out to determine the shape and size of root ball to be extracted. Where possible, feeder roots shall be retained without cutting.
5. The root ball shall be burlapped with cellophane sheet to reduce desiccation effects. When directed by the Flora specialist or Arborist, leaves of the canopy may also need to be enclosed and covered by cellophane or clear plastic bags.
6. The root ball shall be secured to the trunk to reduce risk of root ball disintegrating.
7. When handling/carrying the plant, care shall be taken not to damage any vegetative parts.

- Tree Transplanting
    1. Where trees and vegetation are moved or translocated within the Project area, the Arborist shall review the method statement proposed by the tree transplanting contractor and advise on additional recommendations necessary to ensure the tree's health during transplanting. The transplanting contract shall ensure in their best effort, intact and secured root balls at the point of extraction, during the lifting processes and during the installation at the receiving site. The transplant effort shall be documented for each individual tree to show intact root balls at all the stages mentioned. Transplanted trees shall be managed through adequate watering and monitoring of their health to ensure their long-term survival. Advice shall be sought from the Arborist if the tree exhibit signs of stress, e.g. peeling bark, withered leaves.
- Site Clearance and Tree Felling
    1. The Contractor's method statements for site clearance, tree felling and setting up of TPZ shall be reviewed by the Arborist to ensure compliance to the specifications. The site clearance and tree removal method statements shall consider directional felling methods with a hinge and back cut. Trees shall not be removed by pushing with an excavator or other heavy machinery. Cranes shall be deployed to offset the tension of trunks in the direction of the drop. Interlocking canopy branches shall be pruned prior to tree felling.
    2. In cases where design changes may affect additional trees or the retained trees, the Arborist shall work with the structural engineers and recommend solutions that will meet NParks guidelines.
    3. Whenever reasonable and practicable, cleared vegetation at sloped areas shall be covered with mulch or with 100% biodegradable fauna-friendly ECBs to control erosion of exposed soil. Closed turfing to the exposed areas where possible and maintain proper storage of soil stockpiles to stabilise surfaces and minimise re-entrainment of dust and potential for erosion of waste spoil to watercourses.
    4. Clearance activities on-site shall not occur during rainfall or when storm events are forecast to occur within the vicinity to protect forest edge from wind throw. Where forest edges are exposed to wind, temporary measures (e.g., additional hoarding) shall be discussed with the Arborist, and put in place to protect the forest edge during storm events.
    5. During site clearance, care will be taken when removing trees in riparian zones to reduce impacts to the bed and banks of waterways.
    6. Where practicable, saplings, seeds and seed banks will be retained within the soil profiles for use in forest restoration.
    7. Horticultural waste shall be removed on the same day. This is essential to reduce risk of fauna taking refuge within the cleared waste if left overnight
- Tree Maintenance and Care
    1. Where disease outbreaks are identified, the Arborist and/or Flora Specialist shall advise measures to manage them. Measures can include using selected insecticides/fungicides to control outbreaks; reduction of stressors (dust, water, etc.). The plant may be removed or quarantined if it poses a threat to surrounding individuals.
    2. Where forest edges are exposed following site clearance and where impacts to vegetation are evident (e.g., vegetation shows signs of drying out), additional watering shall be carried out to improve moisture differentials around forest edges.
    3. The use of herbicides, pesticide shall be minimised. If herbicides or pesticides are used within the Project area, techniques that limit spray or non-target spray drift shall be used. These techniques include but are not limited to cut and paint techniques and drilling injection. All use of herbicides and pesticides shall be conducted in accordance with the relevant Material Safety

Data Sheet (MSDS). Any incidents of off label use, spillage or damage to non-target species shall be reported and investigated.

4. When the site experiences seven continuous days without rainfall, the Contractor shall carry out additional watering of conserved trees within the TPZs and at the forest edge (up to 10 m) around the development boundary.
5. Post heavy rainfall, any snapped hanging branches that pose imminent hazards to workers within the site should be removed immediately

Table 12-1 Minimum root ball diameter to girth requirements

Girth (m)	Minimum root ball diameter to extract (m)
<0.1	0.4
0.1–0.2	0.6
0.2–0.3	0.8
0.3–0.4	1.2
0.4–0.5	1.5
>0.5	To be determined by Arborist

Flora Management Programme should include the following works:

A. Verification and Review of Footprints for Hoarding, Access Roads and Soil Investigation Works
   - After the worksite hoarding has been installed, the Flora Specialist shall conduct and inspection to verify that the footprint is as proposed, and that no excessive vegetation and tree removal has occurred because of deviations in the hoarding alignment.
   - The Flora Specialist shall review the proposed locations for the soil investigation works and the alignment of the construction access roads with the Client/Contractor. Feasible alternatives, if possible, shall be proposed to minimise vegetation and tree clearance.

B. Weed and Invasive Species Management
   - Weeds and invasive species shall be cleared from the Project area progressively and shall be separated and transported to an appropriate disposal location. Transport shall occur within a covered vehicle to ensure seed/vegetative matter does not dislodge. All vegetative matter and seeds will be rendered inert at the disposal location through incineration at a licensed waste disposal facility. The Project area shall be carefully cleared of all remaining vegetative matter from the weeds/invasive species. Herbicides may be used to render any stumps/root systems inert. The cleared area shall be inspected monthly to detect any seedlings of invasive species. These seedlings shall be killed using approved herbicides or removed by hand weeding. Any seedlings or vegetative matter that may sprout will be disposed of at a licensed waste management facility.
   - Specific measures shall be undertaken to control and manage flora species within the Project area that have been identified to be invasive (i.e., *Spathodea campanulata, Cecropia pachystachya, Falcataria moluccana*). The Ecologist shall be consulted when managing *Falcataria moluccana* groves as tall trees may serve as nesting sites for birds of prey. The Ecologist shall also be consulted for other weed and invasive species that may also provide important foraging resources. Material imported into the Project area shall be checked for contamination from weeds/invasive species seeds/vegetative matter at source. This is particularly important for imported building materials, such as clay and soil. Source site shall be inspected to determine presence of weeds/invasive species. Where weeds or invasive species are identified, alternative supply sources or decontamination shall occur before the material is transported to site.

C. Reforestation Planting Palette and Plant Salvaging for Reforestation And Landscaping
   - The planting palette including all flora and grasses used for reforestation and other landscape planting shall be from native indigenous stock or non-native species that are not listed as weeds or invasive species or have a low seeding rate.
   - All trees transplanted into the Project area shall have local provenance or will be from within the Johor region for all SRDB and IUCN listed species. Other species shall be obtained within the larger Sunda region. Due diligence shall be conducted on suppliers to ensure that the trees are obtained by legal means and are able to be exported/imported to Singapore. All imported trees

shall be inspected and/or undergo quarantine if required to reduce the chance of transmission of weeds and soil pathogens.

- The success of planting within landscape features shall be monitored. Where a planting strategy is not working, an alternative planting strategy shall be developed suitable for the location. Temporary measures shall be employed to reduce stress on planted individuals. The removal of sources of stress (such as dust) may also be required. If disease outbreaks are present, methods shall be used to control the outbreak or remove the diseased individual.
- The flora specialist shall also identify other plant material, including ferns, epiphytes, orchids, shrubs, grasses, etc. that are of conservation value and work with NParks for the extraction of these plants by NParks to other sites.
- The flora specialist shall formulate a salvaging protocol in consultation with NParks if salvaging of plant material is being carried out on site.

The flora specialists, arborists and the arboriculture contractor engaged should meet the expected qualifications as described in Section 12.4.6, Section 12.4.7 and Section 12.4.8 respectively.

Additionally, the Contractor should fulfil the following:

- The Contractor and the attending arborist shall complete the 'Verification of Tree Protection Checklist' prior to the start of site clearance (refer to Appendix Z: Annex A); and
- The Contractor shall instil discipline and raise awareness amongst all personnel on measures and mitigations to prevent damage to retained and protected trees throughout construction by including reminders on tree conservation guidelines within their daily toolbox briefings to workers and crane/excavator operators.

12.10.1.3 Fauna Monitoring Programme

Fauna monitoring surveys should comprise of transect surveys and site inspection surveys conducted together, at within and outside of hoarded areas. The programme should include the conducting of monthly diurnal and nocturnal fauna and site inspection surveys beginning one month prior to construction and ending two months after reinstatement. This includes both faunistic surveys and site inspections.

Faunistic Surveys

Faunistic surveys are recommended to be conducted along terrestrial sampling routes and aquatic sampling points, and should target the following fauna groups: odonates (dragonflies and damselflies), fish, decapoda, butterflies, herpetofauna (amphibians and reptiles), birds, and mammals. Comparison of species presence can be made with the baseline studies, where appropriate, to provide an indication of the changes in fauna diversity.

The methodology for the faunistic surveys should closely follow that implemented for this EIS, so as to ensure that the data collected can be used to compare against the baseline data.

Further details of the surveys should be determined in consultation with NParks and should take into account construction phases, final construction footprint, final development hoarding plan, and baseline studies.

Site Inspections

The following should be inspected for during monthly fauna site inspections (Figure 12-4):

- Visual inspection of sensitive habitats in the vicinity (e.g., streams, forests) to determine if the construction has damaged or affected them
- Presence of trapped/injured/dead fauna
- Potential fauna entrapments (e.g., ECBs, TPZs, pits, drains, ponds, trenches, tanks)
- Gaps in hoarding that may allow entry of ground-dwelling fauna
- Improperly disposed/stored food and food packaging
- Degradation of adjacent sensitive habitats (e.g., streams, forest)
- Daily roadkill surveys shall be conducted by the ECO along roads adjacent to the worksite, up to 500 m from the worksite boundary. A roadkill and investigation register shall be maintained. Appropriate mitigation measures shall be implemented where necessary.
- Reporting and documentation of all findings and recommendations



Figure 12-4 Photographs showing monthly fauna monitoring and inspection on-site.

12.10.1.4 Fauna Management Programme

Fauna management will consist of managing fauna within and around all designated work areas. It consists of pre-site clearance inspections and continued biodiversity awareness training for the site team, tree felling inspections, and fauna response plan in event of animal encounters. The objectives of fauna management are as follows:

- Minimize negative impacts to fauna, particularly to species of conservation interest;
- Inspect hoarded areas for any compromises that may allow smaller-sized animals to enter;
- Prevent human-wildlife conflicts;
- Monitor presence of trapped/injured/dead fauna inside hoarded areas;
- Monitor and compare presence of targeted fauna groups within and outside of hoarded areas; and

During each survey, fill out Fauna Inspection Form (Appendix AA).

Biodiversity Awareness Training

The Ecologist shall conduct toolbox briefings on biodiversity awareness to inform site personnel of but not limited to the following:

- Ecological value of the site and its surrounding habitats
- Types of fauna present
- Biodiversity protection strategies
- Site personnel's responsibilities towards biodiversity
- How to respond to fauna encounters
- No feeding of wildlife
- Prevention of roadkills
- Inspection of trees before felling

All site personnel shall undergo biodiversity awareness training prior to commencing work at on-site, and regularly (every six months) throughout the duration of the construction. Documentation of such trainings and briefings shall be maintained.

Pre-site Clearance Inspection

Pre-site clearance inspection should be adopted together with mitigating measures of directional clearance. Part of pre-site clearance involves pre-felling inspections. This is to minimize fauna injury and mortality during tree felling and vegetation clearance. Subsequently, site clearance should be executed outside of the key bird breeding season (March to July) where possible. Refer to Figure 12-5 for pre-felling inspection protocol. Refer to Appendix BB for Pre-felling Inspection Form.

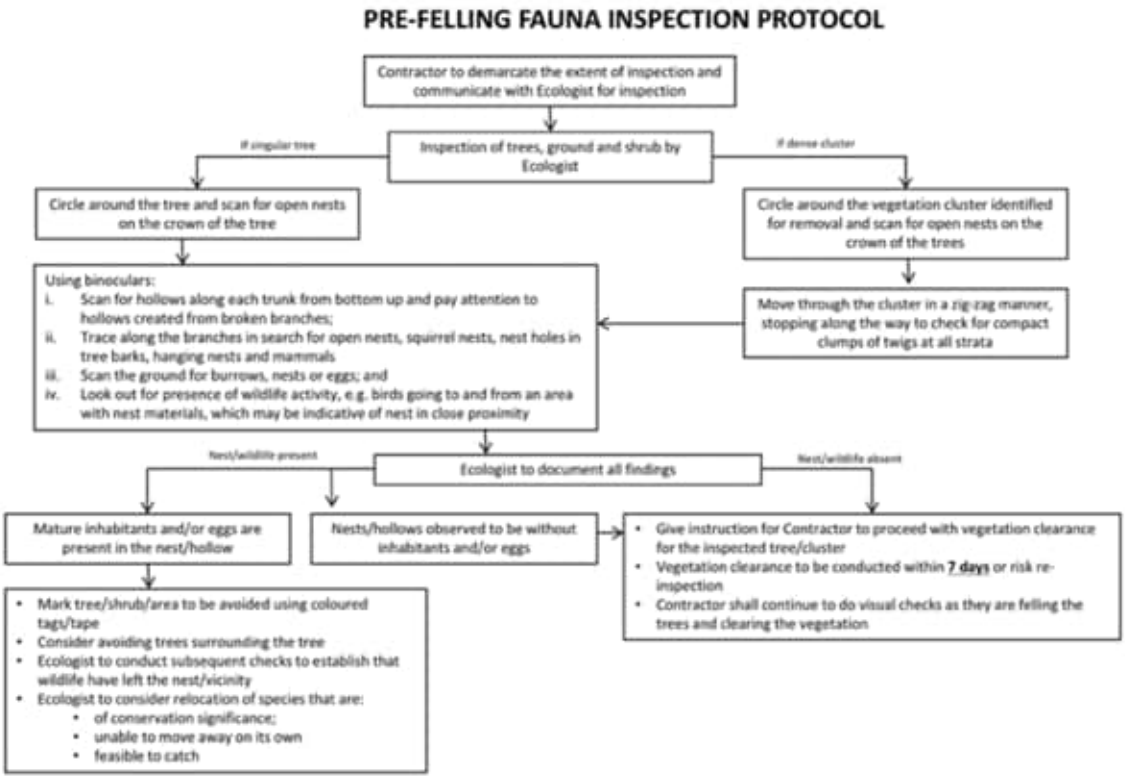


Figure 12-5 Pre-felling inspection protocol.

Fauna Response and Rescue Plan

The Fauna Response and Rescue Plan (Appendix CC) should be enacted when a trapped/injured/dead/dangerous animal is encountered around or within the worksite. The objective of the wildlife response plan is to minimise animal injury and mortality by responding appropriately to the different scenarios in Table 12-6. This should be emphasized during the toolbox briefings. All wildlife encounters are to be documented within 24 h using the Wildlife Incident Form (Appendix DD).

Where species of conservation significance are affected by the development, relocation works should be planned (e.g., bamboo bats). Where fauna is trapped on-site, options should be explored to remove them from site (e.g., partitioning worksite, use of one-way exit door) (Table 12-7).

In scenarios where certain animal groups are encountered around or within the worksite, external specialists may be contacted to handle the animal. These scenarios are shown below:

- For encounters with snakes that require relocation/handling, a snake specialist should be contacted.
- For animal carcasses that require disposal, an animal carcass disposal service should be contacted.
- For injured animals that require medical attention, a veterinarian should be contacted.

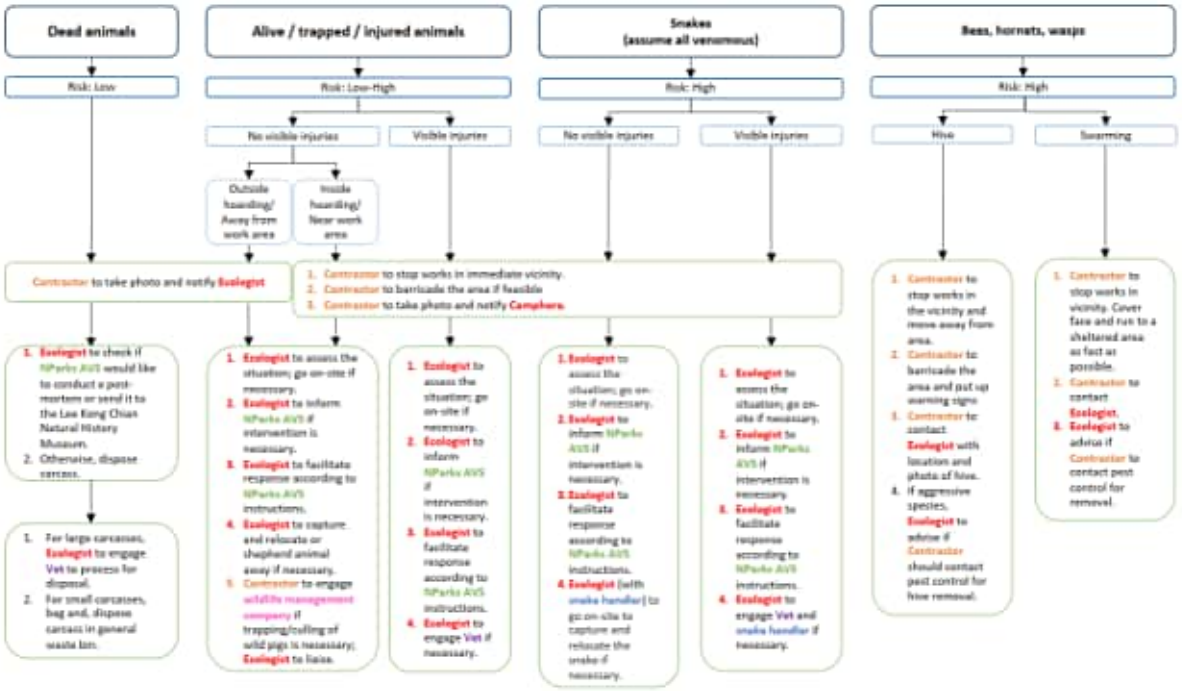


Figure 12-6 A flowchart of the wildlife response plan.



Figure 12-7 Example of one-way flap door to allow fauna to exit independently.

12.10.2 Operational Phase

At the operational phase, arboricultural services are normally not under the Contractor. Subsequently, the management of flora and fauna are also not expected of the Contractor. However, flora and fauna monitoring might still be expected of Contractor. More importantly, it is still important to monitor flora and fauna during post-construction through to at least a year into the operational phase to account for seasonality. This will allow

contractor to review the effectiveness of mitigation measures proposed during design phase and rectify biodiversity problems that arise due to operational works.

12.10.2.1 Flora Monitoring Programme

The flora monitoring aims to assess the impacts of operational works to surrounding vegetation and/or adjacent forest, and rectify issues when identified. The programme should include the following:

- Assess impact of operational on the physiological health and structural stability of vegetation and trees at proximity to the development;
- Determine whether there has been excessive and unauthorized removal of vegetation and trees beyond the development boundary;
- Monitor and assess potential edge effects (e.g., predictable failures, accelerated growth of climbers on canopy, change in species composition at the edge) within vegetation adjacent to the development;
- Determine if there was unauthorized dumping of rubbish (e.g., food materials), construction debris and materials, oil/chemical leakage that may contaminate soil waterbodies, from post-construction water bodies post-construction.

12.10.2.2 Fauna Monitoring Programme

The fauna monitoring aims to assess the impacts of operational works to fauna residing within adjacent forest, and rectify issues when identified. The programme should include faunistic surveys. Faunistic surveys are recommended to be conducted along terrestrial sampling routes and aquatic sampling points, and should target the following fauna groups: odonates (dragonflies and damselflies), fish, decapoda, butterflies, herpetofauna (amphibians and reptiles), birds, and mammals. Comparison of species presence can be made with the baseline studies, where appropriate, to provide an indication of the changes in fauna diversity.

The methodology for the faunistic surveys should closely follow that implemented for this EIS, so as to ensure that the data collected can be used to compare against the baseline data and data from construction monitoring.

12.11 Hydrology and Surface Water Quality Monitoring Programme Requirement

12.11.1 Construction Phase

In order to ensure that procedures are followed appropriately, the construction phase of the projects should be accompanied by an EMMP.

Water quality monitoring is essential as discharge of excess contaminants, especially pH, nutrients and heavy metals, may lead to severe consequences (e.g. algae blooms).

Discharges via settling ponds will take place during the construction phase, therefore monitoring of settling pond discharge waters was recommended to be undertaken to complement surface water quality to assure compliance with the relevant standards. It was also recommended to monitor their water quality throughout the construction period to ensure minor construction impacts on their water quality. For all discharge points from construction worksites, it is recommended to monitor water quality following Singapore NEA's Allowable Limits for Trade Effluent Discharge to Sewer/Watercourse/Controlled Watercourse. Meanwhile, the water quality of sensitive natural streams should also be recorded and compared with the water quality criteria for aquatic life as listed in Table 8-1 to make sure the aquatic condition will not be impacted by the construction activities.

Table 12-2 Recommended Monitoring Program during Construction Phase (Surface Water Quality)

Test	Parameters	Monitoring Recommendation and Frequency
In-situ	Temperature	• Online real time monitoring for TSS at the discharge point location at all the construction sites throughout the construction period. • Monthly monitoring for temperature, pH, conductivity, TDS and DO at all the discharge point locations at the construction sites throughout the construction period.
	pH	
	Conductivity	
	Total Dissolved Solids (TDS)	
	Turbidity and Total Suspended Solids (TSS)	
	Dissolved Oxygen (DO)	
Ex-situ	Biochemical Oxygen Demand (BOD_5)	• Monthly monitoring for all the ex-situ parameters at the discharge point if discharging during the construction period.
	Chemical Oxygen Demand (COD)	
	Ammoniacal Nitrogen (NH_4-N)	
	Total Nitrogen (TN)	
	Nitrate (NO_3-N)	
	Total Phosphorus (TP)	
	Orthophosphate (PO_4)	
	Total Organic Carbon (TOC)	
	Oil & Grease (Total)	
	Oil & Grease (Hydrocarbon)	
	Lead (Pb)	
	Zinc (Zn)	
	Mercury (Hg)	
	Enterococcus	

Beside the water quality monitoring, hydrological conditions of drainage system within construction site and at immediate vicinity should also be closely monitored during construction phase. Before draining to public drains or waterbodies, surface runoff from the construction site should be drained to the ECM treatment system to be filtered and to reduce peak runoff. The hoarding and perimeter drains should be inspected daily to ensure no surface runoff flowing out from the site untreated and no clogging which would affect the flow capacity of the drains/streams. During heavy storm event, site inspection should be carried out to ensure no flooding. Monthly audit on the site should also be carried out by EMMP consultant.

12.11.2 Operational Phase

The operational phase of the projects should be accompanied by an EMMP to ensure the proposed development will have minor impact on the surrounding waterbodies. Water quality monitoring is essential as discharge of excess contaminants, especially pH and suspended solids may lead to severe consequences (e.g. water with less clearance) due to the operational activities. It was recommended to monitor their water quality during the first three (3) months of operational period to ensure minor operational impacts on their water quality. For main outlets/drains of the Project footprint, it is recommended to monitor water quality following Singapore NEA's Allowable Limits for Trade Effluent Discharge to Sewer/Watercourse/Controlled Watercourse. Meanwhile, the water quality of sensitive natural streams should also be recorded and compared with the water quality criteria for aquatic life as listed in Table 8-1 to make sure the aquatic condition will not be impact by the operational activities.

Table 12-3 Recommended Monitoring Program during Operational Phase (Surface Water Quality)

Test	Parameters	Monitoring Recommendation and Frequency
In-situ	Temperature	Monthly monitoring for all the in-situ parameters at the main outlets/drains of the project footprint, during the first three (3) months of operation period.
	pH	
	Conductivity	
	Total Dissolved Solids (TDS)	
	Turbidity and Total Suspended Solids (TSS)	
	Dissolved Oxygen (DO)	
Ex-situ	Biochemical Oxygen Demand (BOD_5)	Monthly monitoring for all the ex-situ parameters at the main outlets/drains of the projectfootprint during the first three (3) months of operation period.
	Chemical Oxygen Demand (COD)	
	Total Nitrogen (TN)	
	Nitrate (NO_3-N)	
	Total Phosphorus (TP)	
	Orthophosphate (PO_4)	
	Enterococcus	

For the hydrological condition monitoring during operational phase, drainage system within the site and at immediate vicinity should be inspected especially during heavy storm event to ensure no flooding. Monthly audit on the site should be carried out by EMMP consultant during the first three (3) months of operation period.

12.12 Groundwater Level Monitoring Programme Requirement

12.12.1 Construction Phase

A summary of the recommended monitoring for soil and groundwater during the construction phase is provided below in Table 12-4.

Table 12-4 Recommended monitoring program during construction phase (soil and groundwater)

Location	Parameters	Frequency and Duration
Within the development boundary	Groundwater Level	• Continuous monitoring of groundwater level throughout the lifetime of the construction phase as per the instrumentation and monitoring plan developed by the QP; • Visual monitoring of spoil generated to be conducted daily. Refer to Figure 9-24 and Figure 9-25 of suspected contaminated soils and groundwaters; • Records on chemical waste from the waste generator should be properly kept and records produced when requested; • Inspection of hazardous chemical/substances storage condition weekly during construction phase; and • Environmental audits, quarterly during construction phase.
At locations within the Study Area where excavated soil and extracted groundwater are collected and stored	Improper management of excavated soil and extracted groundwater	
At locations within the Study Area where toxic chemical waste is generated/stored	Toxic chemical waste generation and management	
At locations within the Study Area where hazardous chemicals/substances are used/stored	Improper handling of hazardous chemicals/substances	

12.12.2 Operational Phase

A summary of the recommended monitoring for soil and groundwater during the operational phase is provided below in Table 12-5.

Table 12-5 Recommended monitoring program during construction phase (soil and groundwater)

Location	Parameters	Frequency and Duration
At location within the Study Area where waste (e.g. liquid, solid) is generated/stored	Solid and liquid waste generation	• Monitoring records of the amount and type of waste (e.g. liquid, solid, toxic chemical) generated during the first three (3) months of operation period. • Inspection of hazardous chemical/substances storage conditions during the first three (3) months of operation period.
At locations within the Study Area where hazardous chemicals/substances are used/stored	Improper handling of hazardous chemicals/substances	

12.13 Air Quality Monitoring Programme Requirement

12.13.1 Construction Phase

As noted in the mitigation measures (Section 10.8.1), continuous dust monitoring shall be undertaken during the construction phase. Continuous PM_{10} and $PM_{2.5}$ monitoring is recommended due to the potential of High consequence dust impact conducted within the ecological sensitive receptors and also a few human receptors during construction phase. Based on a review of sensitive receptors around the construction worksite areas, a continuous monitoring program as per Table 12-6 is proposed to be conducted during project construction.

Table 12-6 Recommended monitoring program during construction phase (air quality)

Location	Parameters	Frequency and Duration	Triggers
Monitoring at the following locations: • **Berlayer Creek** • **Reflections at Keppel Bay Condominium**	PM_{10} and $PM_{2.5}$	Continuous monitoring of mentioned parameters during construction phase	Investigation and corrective actions to be taken, when 1. Any of the following documentation are found inadequate / missing: Air Pollution Control Plan; Compliance certificate of an Off-Road Diesel engine; or Monitoring Log. 2. If the monitored parameters exceed Singapore long term air quality targets. 3. If complaints are received due to project activities. 4. If visual non-compliance to any of the minimum control or mitigation measures are observed on-site.

12.13.2 Operational Phase

During operational phase, ambient air quality monitoring may not be required.

12.14 Airborne Noise Monitoring Programme Requirement

12.14.1 Construction Phase

As noted in Section 11.8.1.2.4, airborne noise monitoring programme can be implemented if required. Based on a review of sensitive receptors around the Project construction worksite, a continuous monitoring program as per Table 12-7 is proposed to be conducted during Project construction. As quantitative noise impact assessment was not conducted at the pre-design stage, AECOM recommends that the developer/ developing agent engage a Noise Consultant(s) to conduct quantitative noise impact assessment as mandated by law at the detailed design stage.

Table 12-7 Recommended airborne noise monitoring programme during construction phase

No.	Location	Parameters	Frequency and Duration
1	Berlayer Creek Lookout Point	$L_{Aeq(12\ hours)}$, $L_{Aeq(1\ hour)}$ and $L_{Aeq(5\ mins)}$	For construction phase: pre-construction baseline and continuous monitoring for the entire duration of the construction phase of the aforementioned parameters at all locations.
2	Along Bukit Chermin Road		
3	HDB Block 44, Blangah Court (Telok Blangah Drive)		

12.14.2 Operational Phase

No noise monitoring programme were proposed for the operational phase due to the lack of information required regarding the air conditioning and mechanical ventilation (ACMV) system designs and traffic volumes. Usually conducted by an appointed Noise Consultant, AECOM recommends that the works for ACMV boundary noise impact assessment and traffic noise impact assessment be conducted as part of the detailed design process of the Project in accordance with the NEA guidelines as discussed in Section 11.8.2.

12.15 Vector Monitoring Programme Requirement

This section provides a vector monitoring programme to minimise the occurrence of potential impacts of vector populations near the Study Area during the construction and operational phase, whose occurrence and growth may be a result of the Project activities. Vectors are defined as any insect, including its egg, larva or pupa, and any rodent, including its young, carrying or causing, or capable of carrying or causing any disease to human beings. As such, they pose a risk to public health and should be controlled and eliminated.

In recent years, virulent vector problems have been mostly attributed to mosquitoes and rats. Mosquitoes are the most widely known disease vector, that can transmit the dengue virus. The common breeding habitats in a construction site that can cause the accumulation of stagnant water would include material storage area, site office, empty containers at workers area, water tanks at construction area and so on. If left uncontrolled, it may lead to mosquito breeding. Hence, as an effective and targeted approach, it is important to reduce/eliminate conditions that creates these suitable breeding habitats in order to control the mosquito population within the Study Area. Rodent (including rats) infestations are problematic as they can spread diseases through their urine and droppings and chew up wires, pipes and insulation [W-48]. They tend to find new habitats easily and can repopulate quickly at locations with ample food, water and shelter available – which are typically found in hawker centres and vicinity of food waste bins. The removal of potential food sources and areas of harbourages can help prevent the nesting and breeding of rodents, and thus prevents rodent infestations [W-49]. At a construction worksite, there may be poorly maintained food-waste bins, poor refuse management and a lack of housekeeping practices onsite. As such, rodents may thrive in these environments as food, water and shelter are readily available. This section will focus on preventing the creation of such breeding grounds for these two types of vectors.

12.15.1 Construction Phase

This vector monitoring program is dedicated for the construction worksites of this Project only. Areas outside of the Project boundary is not within the Project's authority and minimum control measures shall be carried out by each household or its housing/ school/ building/ public committee and other relevant party according to the stipulated legislations and guidelines. All construction worksites were identified to be the potential sources of vector impact due to accumulation of stagnant water, poor housekeeping and improper waste handing, transfer and storage of waste onsite. Vector-breeding may lead to severe consequences such as the spread of virulent diseases (e.g. dengue fever) both to the workers onsite and to other people near the worksite.

Aligning with NEA's Code of Practice for Vector Control Operator, Technician and Worker [W-52] and NEA's Mosquito and Rodent Control Measures [W-50, W-49], the Contractor shall submit a site-specific Vector Control Plan upon contract award, which encompassing the following elements:

- **Pre-existing Conditions:** To conduct a site assessment and establish vector baseline, which serves to identify high-risk areas for vectors-breeding and eliminate pre-existing vector issues before starting work. Information on the existing dengue clusters and areas with higher Aedes aegypti mosquito population can be reviewed on NEA' websites [W-53, W-54].
- **Vector Control Plan:** To develop plan in case that any person found on site is discovered to be a carrier of vector-borne disease, and when outbreak of dengue or mosquito breeding ground is detected on site.

For the implementation of Vector Control Plan, the Contractor shall provide competent personnel on site as follows:

- **A registered ECO** who undergone relevant trainings (e.g. Joint ITE-NEA Certificate in Pest Management for ECO or equivalent) shall be appointed by the Contractor to assist in investigating vector-borne disease on site as part of the ECO's responsibilities stated in NEA's Code of Practice for Environmental Control Officers (ECO) [W-52].
- **An in-house pest control team** with competent personnel who have undergone relevant trainings (e.g. ITE-NEA Certificate in Control for in-house pest control team or equivalent) shall be formed to carry out vector control and surveillance at least once a week. The in-house pest control team shall be able to identify potential vector-breeding grounds and propose measures to prevent propagation of vectors on site.
- **An external NEA-licensed PCO** shall be engaged to supplement the weekly in-house vector control and surveillance routine.

The in-house pest control team shall develop a vector control program to conduct a daily routine of "Search and Destroy [12]" activities at each construction site.

The recommended monitoring program for vectors is summarised in Table 12-8 below.

Table 12-8 Recommended Vector Monitoring Programme

Location	Parameters	Frequency and Duration
All construction worksites (including storage and resting areas).	Inspection of potential mosquito breeding grounds (stagnant water), rodent burrows and droppings of other vectors (e.g. cockroaches, flies)	• Daily inspection and housekeeping to be conducted across the construction site; and • Weekly inspection by an external NEA-licensed Pest Control Operator.

12.15.2 Operational Phase

Minimum control measures shall be carried out by each household or its housing/ school/ building/ public committee and other relevant party according to the Control of Vectors and Pesticides Act and NEA guidelines [R-50,W-49, W-51].

[12] This refers to the search for and destruction of potential mosquito breeding grounds. This includes clearing of stagnant water, removal of unwanted water-bearing receptacles and eliminating conditions that are prone to water stagnation.

12.16 Proposed EMMP

The framework for the proposed EMMP is detailed below; however, it is important to note that this is not an exhaustive list of potential impacts, monitoring requirements, and triggers. This EMMP is intended to be a living document and should be reviewed thoroughly by the Client/ Project Owner and the Contractor (CT) prior to implementation. Development of the following inputs, that have not been addressed in this report, by the CT are also required, including but not limited to:

- Stakeholder Communications Plan;
- Air Pollution Control Plan;
- Site log for all monitoring activities and complaints;
- Construction Logistics Plan;
- Standard Operating Procedures for processes identified in Table 12-9 and Table 12-10 below;
- Emergency Response Plan;
- Inventory of wastewater streams;
- Training protocols for staff, where appropriate; and
- Maintenance and Audit Schedules.

12.16.1 Construction Phase

The EMMP for construction phase of the project is described in table below.

Table 12-9 Proposed environmental monitoring and management plan for the construction phase

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
Biodiversity	Minimisation of construction impacts to flora/vegetation	• Mark out site boundary • Set up Tree Protection Zones (TPZs) around trees or other plant specimens to be retained within the worksites • Tag trees (with or without TPZs) meant to be protected or transplanted to avoid accidental removal	• Record locations, species and quantity of transplant candidates that are affected by construction	Flora and Arboriculture	Within development boundary	Prior to site clearance	-	CT, ECO, Floral Specialist	N/A
		• Establishment of TPZs • Inspect the integrity of the TPZ hoarding • Assess tree physiological health and vigour • Check for mechanical damage on trees that may impair stability • Review method statements of construction works in proximity to retained trees • Implement soil erosion control measures as soon as vegetation has been removed and soil is exposed	• Identify excessive or unauthorized tree removal • Identify trees that require management and maintenance such as tree care and pruning • Determine if there are any unauthorized removal of flora within areas of conservation (if any) or beyond the demarcated worksite • Identify areas with soil erosion and degradation that have resulted from construction activities • Determine if there are unauthorized dumping of waste material, construction debris or oil/chemical leakage that may contaminate the soil and waterbodies, and/or be detrimental to the vegetation • Identify areas that are responding poorly due to the development impacts		Within development boundary and 15m beyond hoarding line	Monthly for duration of construction	To be included in monthly report	CT, ECO, Floral Specialist, Arborist	
	Minimisation of construction impacts to fauna	-	• Implementation of directional clearing • Implementation of pre-site clearance fauna inspection	Fauna	Within development boundary	Prior to site clearance	To be included in monthly report	CT, ECO, Ecologist	
		• Ensure proper storage of machineries likely to leech harmful chemicals and fuel-powered equipment; • Store the aforementioned equipment away from waterbodies and/or sensitive habitats.	• Assess habitat quality (e.g., water quality, excessive vegetation removal); • Check for presence of trapped/injured/dead fauna, potential fauna entrapments and gaps in site hoarding; and • Conduct toolbox briefings on biodiversity awareness.		Within development boundary	Monthly for duration of construction	To be included in monthly reports.	CT, ECO, Ecologist	
		• Ensure that noise minimum control measures (as detailed in the Airborne Noise section below) are adhered to.	• Conduct biodiversity survey to monitor construction impacts on fauna activity and presence		Adjacent to development boundary	Monthly for duration of construction	To be included in monthly report	CT, ECO, Ecologist	
			• Recording of number of number of occurrences of human-wildlife conflict		Within development boundary	Daily monitoring and record-keeping	To be included in monthly report	CT, ECO	When fauna is encountered within development boundary

Hydrology and Surface Water Quality	• Solid & Toxic Waste Generation
	• Liquid Effluent and stormwater run-off Generation
	• Improper Management of Chemical Substances
	• Storage and Disposal of Domestic Liquid and Construction Solid Wastes
		• Effective ECM and monitoring implemented as recommended in the Code of Practice on Surface Water Drainage to ensure that discharge into the stormwater drainage system does not contain TSS in concentrations greater than the prescribed limits under the Sewerage and Drainage (Surface Water Drainage) Regulations;
		• Implementation of CCTV including SIDS at the public drain to monitor the surface run-off discharges from the sites as per the Public Utilities Board of Singapore's (PUB) circular on Preventing Muddy Waters from the Construction Sites (October 2015); and
		• All wastes will be disposed only in the designated waste disposal facilities and appropriately separated, i.e. by trained workers to properly sort and label the different types of waste (reusable and recyclable waste, toxic and non-toxic waste, etc.).
		• A full inventory of all anticipated wastewater streams and volumes should be finalised before the onset of the construction works;
		• No unmanaged discharge of wastewater stream permitted;
		• Reduce, reuse, and recycle hierarchy principle to be applied to wastewater on-site;
			For any construction activities that may alter the alignment of or block drains, appropriate measures such as watercourse diversion should be carried out to avoid localised flooding. As such, if the need arises the design of the flow diversion within the Keppel Club should follow PUB's Code of Practice on Surface Water Drainage. The diverted flow shall be treated to meet NEA Trade Effluent Discharge Limits.	All water quality parameters identified in Table 12-2. And any flooding issues should be recorded and inspected.	Before discharge outlet and at the sensitive natural streams.	• Permanent TSS monitor installed at every discharge outlet;
						• Implementation of CCTV including a SIDS at every discharge outlet to monitor the surface run-off discharges from the sites;
						• Monthly water quality monitoring for all discharge point locations and other public drains during construction phase;
							To be included in monthly report	CT, ECO	Investigation and corrective actions to be taken, when:
									• The following documentation are found inadequate/missing:
									  • ECM Plan;
									  • Monitoring Log;
									  • Training Log;
									  • Audit Reports;
									• If the monitored parameters

[13] Resident Technical Officer (RTO) and Site Officers (SO, WSHO and ECO) check the Study Area for construction progress and implementation of environmental mitigation measures.
[14] If there is trigger then all the mitigation and management measures should be audited in detail for compliance and corrective action must be taken in liaison with the Project Owner.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
	• Temporary Land Use Change	• Hazardous wastewater, such as oily water, thinners, solvents, or paints, are to be stored and removed for treatment and disposal off-site by an approved Waste Management Contractor. Hazardous liquids to be handled as Hazardous Waste; • Adequate drainage, cut-off drains sump pit, road kerb, piping, toe wall and/or channelling of construction process wastewater streams (e.g. concrete batching, wash water, etc.) to be assured through detailed design for capture and treatment in the settling ponds. Where applicable (e.g. in the vicinity of liquid storage or refuelling areas), this infrastructure shall include oil-water separators to capture inadvertent spills or leaked oils or greases; • Appropriate disposal of any waste listed in the Environmental Public Health (General Waste Collection) Regulations by licensed waste operator/collector. • Runoff within, upstream of, and adjacent to the work site shall be effectively drained away without causing flooding in the vicinity; • Appropriate permits for discharge to be obtained from relevant authority prior to discharge. No trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land. • Regular and dedicated procedures for the management of stormwater collection, settling, testing and eventual discharge of 'clean' water to surface waters. This should also include associated measures required to prevent high sediment concentration stormwater drainage to surface waters; and • Geotechnical aspect of site's slope stability (such as Earth Retaining and Stabilising structures (ERSS) to be included in detailed design engineering for the construction stage. • Development of SOP for safe handling, transfer and storage of toxic waste; housekeeping checks once a day to ensure all toxic waste is cleared from site; • Appropriate tests to ascertain the presence/absence of contamination of the excavated earth and sand; • Appropriate storage area (enclosed on at least 3 sides, covered and with adequate ventilation); • Appropriate construction material for toxic waste storage containers with leak detection tests conducted periodically; • Provision of secondary containment for all toxic waste stored in bulk as per the requirements in the COPPC/SS593; • Preparation of an emergency response plan, training of the emergency response team (ERT) to be competent in the response mechanism and provision of response kits for any spillages; • Consignment notification/tracking system and transport emergency response plan for transport of toxic waste; • Appropriate disposal of toxic waste as per required in the Environmental Public Health (Toxic Industrial Waste) Regulations by licensed waste operator/collector.			• Intensity of the laboratory analysis will be increased (e.g. fortnightly, weekly) if in-situ measurements and/or monthly laboratory results indicate deterioration in the water quality. Intensified monitoring will be carried out until in-situ measurements and/or laboratory results indicate 'normality'/consistency with earlier monitored conditions; and • Daily inspection on perimeter drains to ensure no surface runoff flowing out from the site untreated done by the site officer with monthly audit done by EMMP consultant.			exceed applicable values of NEA Trade Effluent Discharge Limits at discharge point (refer to Table 8-1); • If the monitored parameters exceed applicable values of Water Quality Criteria for Aquatic Life at natural stream (refer to Table 8-1); • If any flooding or clogging issues observed; • If complaints are received due to project activities; and • If visual non-compliance to any of the minimum control or mitigation measures are observed on-site.
Soil and Groundwater	• Decreased infiltration into the ground due to increased runoff from hard standing surfaces • Groundwater extraction during construction activities that require soil dewatering	• The Contractor is required to installation piezometers to monitor the changes in groundwater level in compliance with Building Control Regulations 2003 as part of its instrumentation and monitoring plan to be endorsed by the QP • Proper Earth Retaining Stabilising Structures (ERSS) should be selected and designed to limit groundwater settlement • Plan soil dewatering in phases to avoid as much as practicably possible groundwater drawdown	No additional mitigation measures needed.	Groundwater Level	Actual monitoring location to be decided by QP	To continuously monitor the groundwater level throughout the lifetime of the construction phase	To be included in monthly report	CT, ECO	Investigation and corrective actions to be taken there is a significant drawdown of groundwater level.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
	• Seepage of contaminants from excavated contaminated soil (if encountered) into the underlying soil and groundwater • Soil erosion of exposed soil from excavations and stockpiles • Seepage of contaminants from extracted contaminated groundwater (if encountered) into the underlying soil and groundwater • Discharge of toxic chemical waste • Discharge or leakage of chemicals used for refuelling and maintenance of vehicles, machinery and equipment	• Identify all types of solid waste and implement comprehensive waste management system at the site in order to ensure proper disposal and prevent pollution to the environment. This contractor should conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site. • Use approved materials, of the same or better quality as the surrounding area, for backfilling works. All backfilled material shall be free of debris, and of good material soil. • Handle and dispose excavated soil following the procedure shown in Figure 9-24. This flow chart explains how to handle excavated soils, and identify potential areas of contamination as well as potential of contamination (POC) in excavated soils. If the POC soils are tested for exceedance in DIVs, the soils can be disposed of to toxic waste collectors or undergo soil treatment. If contaminated soils were sent for treatment to an acceptable standard such as the DIV, the treated soil can be disposed in the staging ground or through a general waste collector, depending on the level of the contaminants during the staging ground testing. • Upon receipt of results on the tested parameters (chemicals, heavy metals) exceeding the regulatory limits, the construction contractor should further assess the potential inhalation and dermal contact impacts of the exceeded parameters to the site workers exposed to areas where soil and/or groundwater contamination is identified. The risk assessment should be conducted before the commencement of construction activities and the findings incorporated into the contractors' construction risk assessment and health, safety and environment plan. If health impacts to workers are foreseen, necessary precautionary measures, as per the respective chemical SDS, should be implemented on site. • A site management plan should include plans of safe handling, transfer and storage of excavated soils following the procedure in Figure 9-24. • Discharge of extracted groundwater shall be to an area approved for such disposal by the NEA and the proposed location as identified in Figure 9-24 and following the process set out in Figure 9-25. Based on the results of the soil and groundwater baseline study, the detected concentrations in groundwater do not exceed the DIVs. However, it is recommended that the construction contractor to be vigilant of site conditions and extracted groundwater to be tested at regular intervals, especially for extracted groundwater with oily sheens or noticeable odour. If a contaminant concentration in excess of the DIV is detected, the contractor shall assess the potential inhalation and dermal impacts of the chemical identified and assess potential health and safety considerations for exposure to groundwater before commencement of construction activities. Such contaminated wastewater may need to be disposed of to a licenced toxic waste collector. • Bentonite slurry used in the TBM will be pumped into the slurry treatment plant for recycling, cleaning and removal of native cut material. Treatment methodologies in the slurry treatment plant will include de-sanding (e.g., cyclones) and filtration. Handling and disposal of spoils for disposal after the treatment shall follow the procedure in Figure 9-24. • Identify all types of toxic chemical waste and implement comprehensive waste management system at the site in order to ensure proper disposal and prevent pollution to the environment. This contractor should conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site. • Inspect all equipment prior to entering the site for fuel/hydraulic lines, leaking tanks, and other potential faulty parts that could potentially cause contamination to soil or groundwater.	No additional mitigation measures needed.	Records on waste generated and hazardous chemicals used at the construction site should be properly kept and records produced when requested.	• At locations where toxic and solid wastes are generated and store. • At locations where hazardous chemicals/ substances are used and stored	• Monitoring records of the amount and type of toxic chemical waste generated, once a week. • Inspection of hazardous chemical/substances storage conditions, once a week. • Environmental audits, quarterly.		CT, ECO	Investigation and corrective actions to be taken, when: • There are no/poor records of toxic chemical waste amount and type; and • There is evidence of poor handling/storage of toxic chemical waste and hazardous chemical.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
		• Dispose all construction debris (under category C&D) at the gazetted Government dumping grounds or at such other sites or locations as directed by NEA. • Store generated toxic chemical waste under shelter within concrete bund walls or in storage containers with good ventilation. Spill trays shall be provided for all waste containers Spill trays shall be regularly maintained to prevent rain from washing out the pollutive substances. • Note that the Earth Control Measures (ECM) is for the containment and treatment of silty discharge due to the impact of rainwater. ECM is not meant for the treatment of wastewater due to construction activities (such as pipe-jacking and bore-piling works) which shall be treated to comply with the requirements under prevailing legislation. • The wastewater from construction activities should be stored and removed for treatment and disposal off-site by an approved Waste Management Contractor. • Remove any hazardous substance or chemical if there are safer alternatives. • Ensure all hazardous substance and chemical containers are labelled its movement is recorded and returned to the designated storage areas when not in use. • Assess the SDS of all the hazardous substances and chemicals prior to its entry to site for its suitability in terms of SHE hazards and consider safer alternatives. • Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land. • Ensure all activities involving repair, servicing, engine overhaul works, etc. shall be carried out on an area which is appropriately contained (e.g. concreted area and with proper containment/sumps) and all wastes are channelled for appropriate treatment or disposal to meet the regulations. • Store chemicals stored under shelter within concrete bund walls or in storage containers with good ventilation. Spill trays shall be provided for all drums, plants and machinery and potential pollutive substances used on site. Spill trays shall be regularly maintained to prevent rain from washing out the pollutive substances. • Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits						
Air Quality	Air quality impact from dust nuisance from the construction activities and gaseous emissions from the construction equipment and vehicles	• The construction footprint shall be hoarded on all sides; • No concrete batching plant to be located on-site; and • Access road construction or expansion is recommended to be completed first and paved before the construction of other development commences.	General mitigation measures to be implemented throughout construction period. Communications: • Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. • Develop and implement an Air Pollution Control Plan (APCP) Site Management: • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents# that cause dust and/or air emissions, either on-site or off- site, and the action taken to resolve the situation in the logbook. • Hold liaison meetings with other high-risk construction sites within 500m of the site boundary, if any, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. Monitoring:	PM_{10}, $PM_{2.5}$	• Berlayer Creek • Reflections at Keppel Bay Condo	Continuous monitoring of mentioned parameter	To be included in monthly report	CT, ECO	Investigation and corrective actions to be taken, when 1. Any of the following documentation are found inadequate / missing: Air Pollution Control Plan; Compliance certificate of an Off-Road Diesel engine; or Monitoring Log. 2. If the monitored parameters exceed Singapore long term air quality targets. 3. If complaints are received due to project activities.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
			• Undertake regular (daily frequency recommended) on-site and off-site inspections and record results. The log should be made available to the NEA or other Government Agencies if required. Inspections should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary. Cleaning should be provided if necessary. • Carry out regular site inspections to monitor and record compliance with the Air Pollution Control Plan. • Increase the frequency of site inspections during prolonged dry or windy conditions. • Conduct monitoring for PM_{10} and $PM_{2.5}$ at suitable locations (refer to Section 12.13.1) Preparing and maintaining the site: • Plan site layout so that machinery and dust causing activities are located away from receptors, where possible. • Erect hoarding around dusty activities and at the site boundary wherever possible. Boundary screens should be at least as high as any stockpiles or dust emission sources on site. • Fully enclose specific activities where there is a known high potential for dust production and the site will be active for an extensive period of time. • Keep site fencing, barriers, and scaffolding clean by cleaning regularly using wet methods (dry methods may give rise to fugitive dust). • Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, stockpiled material should be covered, seeded, fenced or enclosed to prevent fugitive dust formation. Operating vehicle/machinery and sustainable travel: • Impose and signpost a maximum-speed-limit of 25 km/hr on paved or surfaced haul roads and 15 km/hr on unpaved haul roads and work areas. • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. • Ensure all vehicles and engine powered equipment comply with the legislative requirements of Singapore • Ensure all vehicles and equipment switch off their engines when stationary – i.e. no idling vehicles or engines. Clear signs shall be erected at site entrance to inform all visitors. • Where practicable, avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment Construction: • Only use cutting, grinding or sawing equipment fitted with, or in conjunction with, suitable dust suppression techniques such as water sprays or local extraction e.g. local exhaust ventilation system. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Use enclosed chutes and conveyors and covered skips wherever possible. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • A stringent “Clean as you go” Policy should be implemented on site to ensure no loose dry material is left exposed when not in use. Equipment should be readily available on site to clean and dry spillages, and cleaning should be conducted as soon as reasonably practicable after the event using wet cleaning methods. Waste Management: Avoid burning of waste or other materials					4. If visual non-compliance to any of the minimum control or mitigation measures are observed on-site.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
			MITIGATION MEASURES FOR EARTHWORKS • Closed turfing to the exposed areas where possible and maintain proper storage of soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or soil tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Soil erosion blankets may also be used as an alternative. • Only remove the cover in intended working areas and not all at once. MITIGATION MEASURES FOR CONSTRUCTION • Avoid scabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. MITIGATION MEASURES FOR TRACKOUT • Use water-assisted dust sweeper(s) on the access and affected local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Record all inspections of haul routes and any subsequent action in a site log book. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Site access gates to be located at least 10m from receptors where possible						
Airborne Noise	Noise from construction machines and equipment, especially rotational and vibratory equipment (e.g. dozers, cranes, excavators, trailers, generators, etc.)	• All machinery and equipment used will be labelled with a weather-proof sticker clearly indicating its noise emission level (at source) under normal operating conditions; • All machinery and equipment used on site will be sound reduced, as far as is practicable; • Stationary noisy equipment will be housed in enclosures on site where necessary; • Machine operators and workers will be trained and briefed on quieter work techniques; • Ad-hoc noise monitoring will be carried out when work progresses during noisy operations; and • Additional noise measures will be implemented when noise monitoring indicates the noise levels are approaching or exceeding permissible noise levels (refer to Section 11.2.4.1.1, Table 11-2, Table 11-3, Table 11-4 and Table 11-5). Note: As current means of noise impact assessment were only performed qualitatively, quantitative noise impact assessment must be conducted the developer/ developing agent at a later stage to assess	MITIGATION MEASURES FOR GENERAL CONSTRUCTION NOISE CONTROL: • Control of noise sources at the source from construction site – Analyse construction inventory list and check equipment causing high noise levels. The equipment with lower noise level shall be prioritized; and • Where controlling noise sources at the source is not feasible, acoustic enclosures or sheds are to be introduced to mitigate noise at the source. Typical acoustic enclosure covers the machine as fully as possible (with or without ventilation where applicable) to provide sound insulation. MITIGATION MEASURES FOR CONSTRUCTION NOISE: • Noise barriers of up to 8 - 12 m height are proposed at the construction boundary fronting noise sensitive receptors (see Figure 11-8);	$L_{Aeq(12\ hours)}$, $L_{Aeq(1hour)}$ and $L_{Aeq(5\ mins)}$	• Berlayer Creek Lookout Point; • Along Bukit Chermin Road; and • HDB Block 44, Blangah Court (Telok Blangah Drive).	Records on noise levels from construction sites should be properly kept and produced when requested.	To be included in monthly report	CT, ECO	Investigation and corrective actions to be taken, when Any of the following documentation are found inadequate / missing: • Construction Noise Management Plan; • Monitoring Log. 1. If the monitored parameters exceed applicable values of

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Monthly Reporting	Site Responsibility	Triggers[13,14]
		noise impacts arising from the construction phase related activities as mandated by law at later stages of the Project.	• Consider buildings of staggered heights with lower buildings designed for build near noise sensitive areas to reduce duration of noise impacts; and • Avoid placement of access routes near noise sensitive receptors or facing noise sensitive receptors to prevent sound leak along worksite boundaries with proposed noise barriers and prevent increase in noise from road traffic by potential increase of heavy-duty vehicles (HDVs) volume.						EPM regulations. 2. If complaints are received due to project activities. 3. If visual non-compliance to any of the minimum control or mitigation measures are observed on-site. 4. If there are any cracks / leaks present on the noise barrier erected.
Vectors	Accumulation of stagnant water, poor housekeeping and improper handling/ disposal of solid waste (especially food waste)	• Adhere to Control of Vector and Pesticide Act (CVPA) and ensure good housekeeping on-site. • Preparation and implementation of an effective vector control plan and measures as required under NEA's Code of Practice for Environmental Control Officers. (See Section 12.15.1) • Ensure water-bearing receptacles, gaps on grounds and equipment (e.g. openings at concrete barriers), as well as stockpiled areas are covered or sheltered, especially during the northeast monsoon season between November to January. • Scheduled daily housekeeping to ensure clearance of stagnant water and unwanted items are discarded properly. • Site entrance shall be paved to avoid ground depression. • Milled waste can be used to level the ground before laying steel plates. • Provide movable roof over shaft to prevent rainwater ingress. • Pump shall be deployed to clear water at areas where drainage is not possible, as well as for larger recessed surfaces. • Install pitched roof on top and/or seal up bottom of site container office. • After trees clearance, top of tree stumps has to be either remove thoroughly or patched up. • Pipette can be used for larvae-checking at the hard-to-reach parts of a tree. • Food disposal should be clearly allocated and disposed of on a daily basis to discourage rodents from establishing nests on site and to prevent cockroaches/ flies' infestation. • Store food in rodent proof storage containers/ cabinets with at least 60 cm clearance above ground level. • Thermal Fogging is not recommended onsite, due to its proximity to areas of high ecological value. Instead, preventive methods such as inspection and good housekeeping practices should be adhered to instead, in order to ensure no mosquito breeding occurs onsite.	Not Applicable.	• Inspection of potential mosquitoes breeding grounds (water ponding) • Inspection of rodent burrows • Inspection of cockroaches and flies' droppings	• Within and/or at boundary of construction worksites, as well as any other temporary and permanent utilities diversion work areas or any other relevant work areas associated with this Project.	• Daily inspection and housekeeping to be conducted across the construction site; and • Weekly inspection by an external NEA-licensed PCO.	To be included in monthly report	ECO personnel, CT	Investigation and corrective actions (i.e. Stop Work Orders) to be taken, when: a. Worksite is found to have vector-breeding habitats. There is an occurrence of suspected dengue outbreak cases.

12.16.2 Operational Phase

The EMMP for operational phase of the project is described in Table 12-10.

Table 12-10 Proposed environmental monitoring and management plan for the operational phase

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Site Responsibility	Triggers[15,16]
Biodiversity	Minimisation of operational impacts to flora/vegetation	-	• Identify of areas that are responding poorly due to operational activities • Ensure that post-construction planting is responding well to development surrounding	Flora and Arboriculture	Softscape of operational boundary	Monthly for duration of 1 year	CT, EHS, Floral Specialist, Arborist	N.A.
		-	• Ensure integrity of adjacent forest (if any) • Identify signs of edge effects on new forest edge of adjacent forest (if any)		Adjacent forest to development boundary			
	Minimisation of operational impacts to fauna	• Ensure water quality minimum control measures listed below are adhered to.	• Assessment of habitat quality (e.g., water quality, excessive vegetation removal) • Inspection for presence of trapped/injured/dead fauna, potential fauna entrapments and gaps in site hoarding • Recording of number of number of occurrences of human-wildlife conflict • Conduct biodiversity survey to monitor construction impacts on fauna activity and presence	Fauna	Adjacent forest to development boundary		CT, EHS, Ecologist	
Hydrology and Surface Water Quality	• Stormwater run-off generation • Permanent land use change • Improper management of liquid and solid wastes	• Regular and dedicated procedures for the inspection and maintenance of stormwater collection, storage, and treatment infrastructure, such as pipes, oil water separation, silt screens, etc.; • Regular and dedicated procedures for the management of stormwater collection, settling, testing and eventual discharge of 'clean' water to surface waters. This should also include associated measures required to prevent high sediment concentration stormwater drainage to surface waters; • Potential increase of peak-flow due to the change in the land use at the new developments can be mitigated by providing detention tanks within the study area. Detention tanks can capture stormwater during heavy storm events to reduce the peak runoff. Stored water can then be discharged back to the system after the storm event. As required by PUB, the storage system needs to be in place to reduce the peak flow at the operational phase to be the same or less than that of the existing condition. • Providing more softscape area should be considered in the design of the development to reduce the run-off coefficient which will help to reduce the peak flow and reduce flood risk at downstream area; • Provide more pervious areas to increase the seepage of surface water into the soil; • Geotechnical aspect of site's slope stability (such as ERSS) to be included in detailed design engineering for the operational stage; • To prepare sufficient disposal bins surrounding of the Project to avoid improper disposal of waste; • To conduct regular inspection on wastes' storage system of the Project; • To monitor the proposed water features and its surroundings with CCTV surveillance regularly to ensure no contamination occurred; • To develop an emergency response plan and conduct adequate training to maintenance workers to cope the accidental water contamination; and	• Provide ABC Waters Design features within the development (wetland, bioretention swales, rain garden, etc.) • To create green areas around watercourses to buffer against the edge effect of future development. • To design protection structures at proposed stormwater outlets discharging from the development to Berlayer Creek to minimise local scouring at mangrove area along Berlayer Creek.	All parameters identified in Table 12-3. And any flooding issues should be recorded and inspected.	At the main outlets/drains of the Study Area, as well as the sensitive natural streams in the vicinity of proposed project.	Monthly inspection for the surface water quality and hydrology, especially during heavy storm event for hydrological conditions during first three (3) month of operational period.	EHS Officer	Investigation and corrective actions to be taken, when: • If the monitored parameters of all discharge points exceed applicable values of NEA Trade Effluent Discharge Limits at discharge point (refer to Table 8-1); • If the monitored parameters of natural streams exceed applicable values of Water Quality Criteria for Aquatic Life at natural stream (refer to Table 8-1); • If any flooding issues observed; • If complaints are received due to project activities; and • If visual non-compliance to any of the minimum control or mitigation measures are observed on-site.

[15] Resident Technical Officer (RTO) and Site Officers (SO, WSHO and ECO) check the Study Area for construction progress and implementation of environmental mitigation measures.
[16] If there is trigger then all the mitigation and management measures should be audited in detail for compliance and corrective action must be taken in liaison with the Project Owner.

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Site Responsibility	Triggers[15,16]
		• Raising awareness of various stakeholders with community/stakeholder engagement (e.g. signage boards, warning signs, etc.).						
Soil and Groundwater	More areas with impervious surfaces in the new development leading to decrease in infiltration of surface water/ stormwater into the soil	• Incorporate more pervious surfaces in the development plan	No additional mitigation measures needed.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	• Heavy rain and stormwater wash-off pollutants built-up in the new development area and discharge to surrounding soil and groundwater • Discharge or leakage of waste and chemicals into the soil	• Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land. • Store all toxic chemical waste and hazardous substances/chemicals at designated sheltered area provided with access-controlled entrance and concrete bund walls or in storage of containers with good ventilation. Spill trays shall be provided for all chemical drums and potentially pollutive substances. Spill trays shall be regularly maintained to prevent the rain from washing out the pollutive substances • Dispose all toxic waste chemicals (if any) to licensed Toxic Industrial Waste (TIW) collectors for treatment • Ensure all hazardous chemicals/substances are labelled, its movement is recorded and returned to the designated storage areas when not in use • Ensure all activities including repair, servicing, engine overhaul works, etc. involving the use of hazardous chemicals/substances are carried out on an area which is appropriately contained (e.g. concreted area and with proper containment/sumps). • Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits	No additional mitigation measures needed.	• Records on waste generated and hazardous chemicals used at the Study Area should be properly kept and records produced when requested.	• At locations where toxic chemical waste are generated and store. • At locations where hazardous chemicals/substances are used and stored.	• Monitoring records of the amount and type of waste generated, monthly. • Inspection of hazardous chemical/substances storage conditions, monthly.	CT, EHS	• Investigation and corrective actions to be taken, when: • There are no/poor records of toxic chemical waste amount and type; and • There is evidence of poor handling/storage of toxic chemical waste and hazardous chemical.
Airborne Noise	Noise from Air-conditioning and Mechanical Ventilation, Traffic Noise	MINIMUM CONTROLS FOR ACMV NOISE: Minimum Controls below should be applied at the prelim design stage of the development by the appointed M&E consultants. An appointed Noise consultant should validate the noise in accordance with *NEA's Technical Guideline on Boundary Noise Limits for Air Conditioning and Mechanical Ventilation Systems in Non-Industrial Building.* In addition, mitigation measures will be provided by the appointed Noise Consultants during the prelim design stage. • Use low air-conditioning and mechanical ventilation system equipment; • Ensure that any exhaust outlet or intake from the mechanical ventilation system is designed to be adequately set back as far as possible from the boundary line of the development; • Acoustic treatment if any to be designed and implemented; • AC system to be designed with the AHU units placed at appropriate locations as set back from the boundary line of the development as possible; and • Acoustic enclosures for outdoor equipment. MINIMUM CONTROLS FOR TRAFFIC NOISE: • Consider alternative siting of new road networks away from noise sensitive receptors at pre-design stage; and • Due to the lack of information at this juncture of reporting, assessment, minimum controls, and mitigation will be provided by the appointed Noise Consultant during the prelim design stage and in accordance with Technical Guideline for Land Traffic Noise Impact Assessment. Note: As current means of noise impact assessment were only performed qualitatively, quantitative noise impact assessment must be conducted by the developer/ developing agent at a	MITIGATION MEASURES FOR ACMV NOISE: • Noise attenuators and other Best Available Technology (BAT) and Best Environmental Practice (BEP) noise control measures shall be utilized; and • Ample setback of developments with ACMV systems fronting noise sensitive receptors should be provided such as provision of park areas to ensure that operational noise sources are at a distance away from the receptors. MITIGATION MEASURES FOR TRAFFIC NOISE: • Traffic noise at drop-off points and parking areas shall be mitigated with low speed postings, speed humps and speed limit signages. The addition of these speed control measures will likely lower noise levels for traffic as the vehicles would be cruising at lower speeds; and • Consider alternative siting of roads away from areas with noise sensitive receptors.	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Environmental Parameter	Environmental Issue	Minimum Control Measures	Mitigation Measures	Monitoring Parameter	Monitoring Locations	Recommended Frequency of Monitoring	Site Responsibility	Triggers[15,16]
		later stage to assess noise impacts arising from the operational phase related activities as mandated by law at later stages of the Project.						
Vector	Accumulation of stagnant water, poor housekeeping and improper handling/ disposal of solid waste (especially food waste)	• Adhere to Control of Vector and Pesticide Act (CVPA) and ensure good housekeeping on-site/in the development. • Weekly inspections for potential breeding sites should be conducted for areas such as unused containers in open areas and under bushes, open and closed drains, gully traps, tree holes and bifurcations between branches, leaf axils of banana trees, Travellers Palms and other palms, outdoor litter bins etc; • Fortnightly application of sand granular insecticides gully traps, manhole cover handle depressions, lightning conductor pits, stop-cock pits, valve chambers, and sumps; • Immediate application of insecticide should be conducted to destroy breeding habitats identified during inspections and to immediately eliminate the identified potential breeding habitats (i.e. source of stagnant water or waste). Proper recording of these incidents should also be conducted once the breeding habitats or potential breeding grounds have been eliminated; • Thermal Fogging is not recommended, due to its proximity to areas of high ecological value. Instead, preventive methods such as inspections and good housekeeping practices should be adhered to instead, in order to ensure no mosquito breeding occurs onsite. Monthly routine pest control checks should be conducted at all locations; • Fortnightly application of sand granular insecticide to sources of stagnant water in schools and boarding schools (e.g. toilet bowls, cisterns, and gully traps in toilets), during school vacation.	No mitigation measures required to be proposed, as minimum controls for vectors should be practised as advised by NEA.	Not applicable	Not applicable	Not applicable	Each household or its housing/ school/ building/ public committee and other relevant party	Not applicable

13 Conclusion

This section will present the summary of conclusions and recommendations from the assessed potential environmental impacts. The unmitigated impact significance and potential residual impact significance of the assessed environmental aspects are summarised in table below.

Table 13-1 Summary of potential residual impact significance during construction phase

Environmental Parameter	EIS Section	Unmitigated Impact Significance	Key Mitigation Measures (if any)	Residual Impact Significance
Biodiversity	Section 7	Negligible – Major	• The future development should, preferably, avoid areas with high value habitats. • The proposed 30-m buffer to Berlayer Creek and areas of high conservation value should be observed at all times. • Enhance ecological connectivity through the provision of ecological corridors as outlined in Figure 1-6. • Avoid felling trees and clearing vegetation during the peak bird breeding season (March to July). • Wildlife shepherding via directional clearing should be adopted. • Pre-felling fauna inspection should be conducted before felling any trees or removing any vegetation.	Negligible – Major
Hydrology and Surface Water Quality	Section 8	Minor to Moderate	• For any construction activities that may alter the alignment of or block drains, appropriate measures such as watercourse diversion should be carried out to avoid localised flooding. The design should follow PUB Code of Practice on Surface Water Drainage, and the diverted flow shall be treated to meet NEA Trade Effluent Discharge Limits prior to discharge. • Ensure strict compliance with PUB Code of Practice on Surface Water Drainage: – Design of roadside drains and diversion drains; – Implementation of Earth Control Measures, to ensure no flood risk and no water quality impact during the construction; – Implement CCTV and Silt Imagery Detection System (SIDS) to monitor surface runoff discharges from sites. • Provide silt curtains at each of the main outlets which discharges flow from the proposed construction sites into the surrounding watercourses. • Provide enclosed bins and designated waste disposal facilities, with frequent housekeeping checks conducted. • Schedule frequent waste collection by licensed waste operator/collector. • Regular and dedicated procedures for the inspection and maintenance of each of the following items: – Wastewater collection, storage and treatment	Minor
Hydrodynamics and Marine Water Quality	Section 8	No Impacts to Minor		N.A.

Environmental Parameter	EIS Section	Unmitigated Impact Significance	Key Mitigation Measures (if any)	Residual Impact Significance
			infrastructure (e.g. silty water treatment plant, holding ponds); and – Stormwater collection, storage and treatment infrastructure (e.g. cut-off drains etc).	
Soil and Groundwater	Section 9	Negligible to Minor	• Install piezometers to monitor the changes in groundwater level in compliance with Building Control Regulations 2003 as part of its instrumentation and monitoring plan to be endorsed by the Qualified Professional; • Conduct a construction risk assessment and prepare a comprehensive construction health, safety and environment plan. If health impacts to workers are foreseen due to the handling of such waste, necessary precautionary measures as per the safety data sheets (SDS) including personal protective equipment should be implemented on site; • Ensure generated toxic chemical waste and chemicals used on-site are stored under shelter within concrete bund walls or in storage containers with good ventilation. Spill trays shall be provided for all waste/chemical containers. Spill trays shall be regularly maintained to prevent rain from washing out the pollutive substances; and • Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits.	N.A.
Air Quality	Section 10	Major	• Implement dust control measures e.g. dust screens, etc. • Install hard surfaced haul routes. • Only use cutting, grinding and sawing equipment with dust suppression water spray mechanisms. • Erect hoarding around dusty activities and site boundary min. 1.8m height in line with BCA guideline. • Impose and signpost maximum speed-limit of 25km/hr on paved roads and 15 km/hr on unpaved roads and work areas. • No burning of waste allowed on site. • Closed turfing to the exposed areas where possible and maintain proper storage of soil stockpiles.	Minor
Airborne Noise				
Ecological Receptors	Section 11	Minor - Major	• Use equipment with lower noise levels; • Access routes should avoid facing receptors; • Staggered building heights should be considered to reduce duration of noisy activities near receptors; and • Noise barriers should be erected along boundary of worksites facing noise sensitive receptors (where necessary) Note: As current means of noise impact assessment were only performed qualitatively, quantitative noise impact	Negligible – Moderate
Human Receptors		Minor - Major		Negligible – Major

Environmental Parameter	EIS Section	Unmitigated Impact Significance	Key Mitigation Measures (if any)	Residual Impact Significance
			assessment must be conducted by the developer/ developing agent at a later stage to assess noise impacts arising from the construction phase related activities as mandated by law at later stages of the Project.	

Table 13-2 Summary of potential residual impact significance during operational phase

Environmental Parameter	EIS Section	Unmitigated Impact Significance	Key Mitigation Measures (if any)	Residual Impact Significance
Biodiversity	Section 7	Negligible – Major	• Forest species composition in planting scheme should be as similar to adjacent forest patches and include as many native species as possible. • Regular site inspections in the initial phase (first 12 months) to ensure proposed mitigating measures are effective.	Minor
Hydrology and Surface Water Quality	Section 8	Minor – Moderate	• Provide ABC Waters Design features within the development (wetlands, bioretention swales, rain garden, etc.) or more softscape areas and pervious areas within the development to increase seepage of surface water into the soil to reduce peak flow and flooding risks within the development. • To create green areas around watercourses to buffer against the edge effect of future development. • Ensure strict compliance with PUB Code of Practice on Surface Water Drainage during design of storage system, to reduce peak flow during operational phase to be the same or lower than that of the existing condition. • To design protection structures at proposed stormwater outlets discharging from the development to Berlayer Creek to minimise local scouring at mangrove area along Berlayer Creek. • Provide sufficient disposal bins within the development to avoid improper waste disposal.	Positive – (Negative) Minor
Hydrodynamics and Marine Water Quality	Section 8	No Impacts to Minor		N.A.
Soil and Groundwater	Section 9	Negligible – Minor	• Incorporate more pervious surfaces in the development plan • Installation of recharge wells, if necessary; • Ensure no trade effluent other than that of a nature or type approved by NEA Director-General shall be discharged into any watercourse or land. • Conduct regular inspections on waste storage system within the Project to prevent system's clogging and leachate entering the underlying soil • Store all toxic waste and hazardous substances/chemicals (if any) at designated sheltered area provided with access-controlled entrance and concrete bund walls or in storage of containers with good ventilation. Spill trays shall be provided for all chemical drums and potentially pollutive substances. Spill trays shall be regularly maintained to prevent the rain from washing out the pollutive substances; and	N.A.

Environmental Parameter	EIS Section	Unmitigated Impact Significance	Key Mitigation Measures (if any)	Residual Impact Significance
			• Provide emergency spill kits on site in the event of any chemical spillages. The emergency response team shall also be competent in the use of these spill kits.	
Air Quality	Section 10	Minor	No mitigation measures to be proposed as the predicted increase in air quality pollutant levels is likely to be insignificant, due to: • Current large traffic volume along existing roads, and thus, any increase in traffic due to the development will not lead to a significant change in air quality. • Continued implementation of increasingly stringent Euro emission standards on new vehicles.	Minor
Airborne Noise				
Ecological Receptors	Section 11	Negligible – Minor	• Utilize noise attenuators and other Best Available Technology (BAT) and Best Environmental Practice (BEP) to mitigate potential noise from air conditioning and mechanical ventilation (ACMV) systems; • Utilize low speed postings, speed humps, speed limit signages at drop-off points and parking areas to mitigate noise from increased road traffic; and • Consider alternative siting of roads away from areas with noise sensitive receptors. Note: As current means of noise impact assessment were only performed qualitatively, quantitative noise impact assessment must be conducted by the developer/ developing agentat a later stage to assess noise impacts arising from the operational phase related activities as mandated by law at later stages of the Project.	Negligible
Human Receptors		Negligible – Minor		Negligible

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Appendix A
AECOM Health and Safety Plan

Delivering a better world

APPENDIX A:

HEALTH AND SAFETY PLAN

TENDER FOR BIODIVERSITY AND HYDROLOGY BASELINE STUDIES AND ENVIRONMENTAL IMPACT STUDY FOR KEPPEL CLUB, PSA CLUB, BUKIT CHERMIN, BERLAYER CREEK AND FORMER BP OIL REFINERY SITE

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Project Number: 60645518

HEALTH AND SAFETY PLAN
APPROVAL PAGE

This project Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the chemical, physical and biological hazards known or suspected to be present on the projects site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards, which may be encountered during the completion of the projects, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury.

By signing below, I acknowledge that I have reviewed and hereby approve this HASP. This HASP has been written for the exclusive use of AECOM, its employees, and subcontractors. The plan is written for specified site conditions, dates and personnel, and must be amended if these conditions change.

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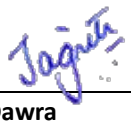
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Attachment B – Emergency Response Information

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1.0 Introduction

This Health and Safety Plan (HASP) was developed by AECOM's Environment Business Line (AECOM) for implementing the site survey for Biodiversity and Hydrology Baseline Studies and Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site. This establishes the health and safety procedures required to minimize potential risk to personnel for the duration of the activity. This is a project and site-specific HASP and should be used concurrently with the AECOM Field SH&E Manual and standard operating procedures (SOPs) and a completed site specific Emergency Response Information Form (Attachment B).

1.1 Policy

AECOM, as a leading global provider of environmental, health and safety services, is committed in protecting the safety and health of our employees and meeting our obligations with respect to the protection of others affected by the implementation of all our operations. We are also committed to protecting and preserving the natural environment in which we operate. The safety of persons and property is of vital importance to the success of this project and accident prevention measures shall be taken toward the avoidance of needless waste and loss. It shall be the policy of this project that all operations be conducted safely as stated in *AECOM SH&E Policy Statement*.

1.2 Scope and Application

The provisions of this HASP apply to all AECOM project staff who may potentially be exposed to safety and/or health hazards related to activities described in Section 3.0 of this document. Unanticipated site-specific conditions or situations may occur during the implementation of this project. Also, AECOM and/or the contractors may elect to perform certain tasks in a manner that is different from what was originally intended due to a change in field conditions. As such, this HASP must be considered a *working document* that is subject to change to meet the needs of this project.

1.3 Regulatory Compliance

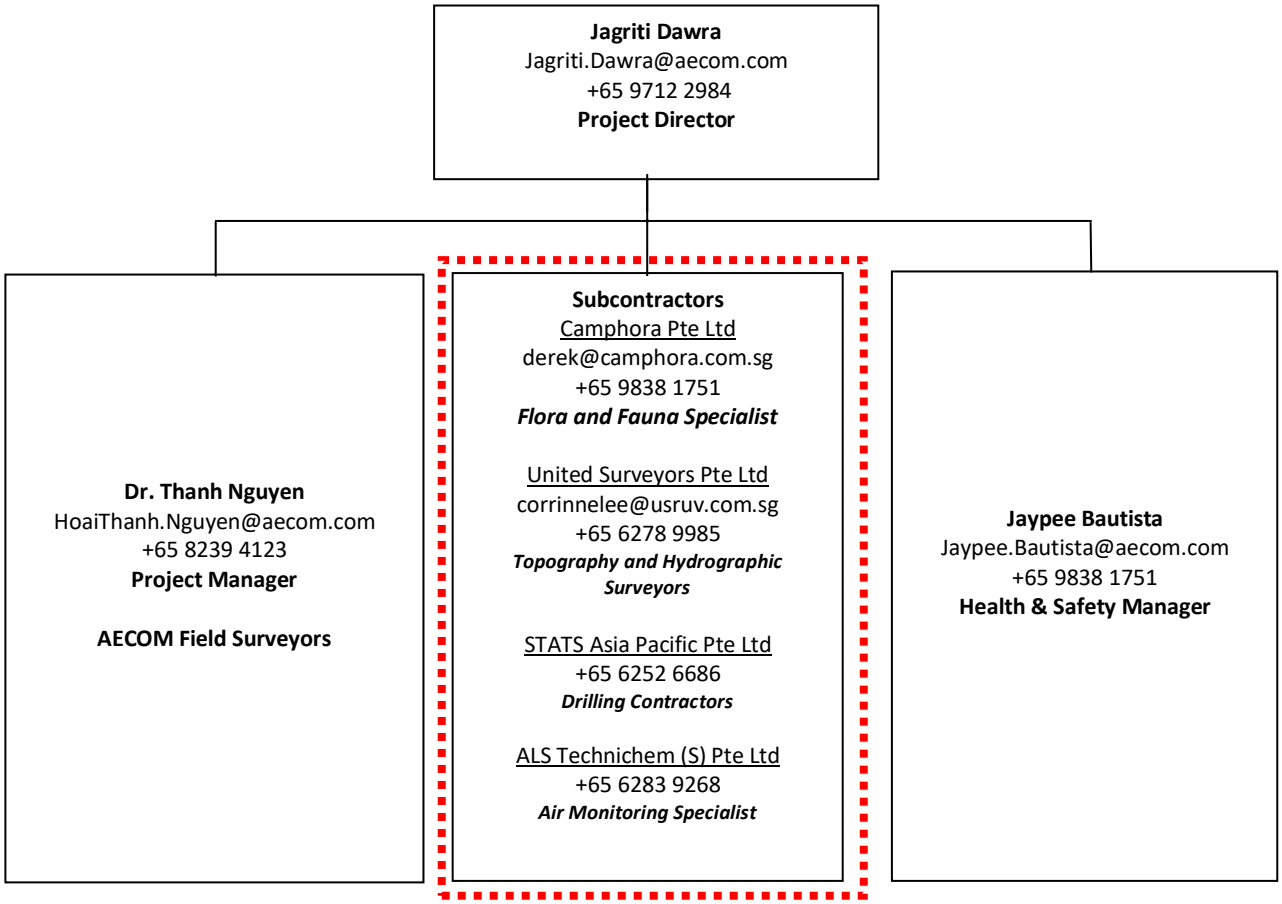
All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable environmental, health and safety regulations of Singapore. Additionally, all work will be conducted in accordance with AECOM SH&E Policies and Procedures found in the *AECOM Field SH&E Manual* and Singapore Occupational Safety and Health Administration (OSHA) framework. Personnel covered by this HASP who cannot or will not comply with any of these requirements will be excluded from site activities.

1.4 Management of Change

The procedures in this HASP have been developed based on current knowledge regarding the specific biological and physical hazards, which are known or anticipated for the proposed onsite baseline survey. Site specific requirements and hazards for this project will be taken into consideration and will be included in any update of this HASP. Should additional information become available regarding unique site hazards or operational change, it may be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the AECOM Project Manager (PM) and HSSE Focal before such modifications are implemented. The Receipt and Acceptance Sign-off sheet must be submitted to the AECOM PM. The HASP Receipt and Acceptance Sign-off Sheet are included in this HASP as Attachment A.

1.5 Health and Safety Organization

The implementation of health and safety at the site location will be the shared responsibility of the Project Manager (PM), the Project Field Surveyors (FS), the HSSE Focal (HSSEF), and other site-based personnel and contractors implementing the proposed scope of work. The responsibilities of the PM, FS and HSSEF are shown in detail in the *AECOM SH&E Field Manual*. For the implementation of this project, the following Health and Safety Organizational Chart will apply:



1.5.1 Project Manager

The Project Manager (PM) has overall management authority and responsibility for the project, including safety. The PM will provide the FS with work plans, safety personnel, and budgetary resources, which are appropriate to meet the safety needs of the project operations. Helping the PM with the management of the project is the Deputy Project Manager (DPM).

1.5.2 AECOM Field Surveyors

The AECOM Field Surveyor (FS) has the overall responsibility and authority to complete the work according to the provided scope of work. The FS must verify that all tasks are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment.

1.5.3 Subcontractors

Subcontractors (in red box) involved in this project should review and understand the contents of this HASP prior to the start of on-site work. However, as part of the contract with the subcontractors, they are expected to follow their internal health and safety protocols. The subcontractor shall be fully responsible and shall indemnify AECOM for any losses, liabilities and claims as stipulated in Clause 9 and Clause 13 of the signed Subconsultant Engagement. Moreover, the subcontractors are expected to maintain proper and adequate insurances to cover health and safety related emergencies.

1.5.4 Other Field Personnel

All other field personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner.

1.6 Stop Work Authority

AECOM Stop Work Procedures (S3AS-106-PR) grants all AECOM employees, including employees of any of its subcontractors the right and responsibility to exercise a 'Stop Work Authority' any time that an employee identifies a discrepancy,



2.0 Project Background and Scope of Work

2.1 Project Background

AECOM Singapore Pte Ltd was appointed by the Urban Redevelopment Authority (URA) of Singapore, through the Letter of Acceptance dated 29 October 2020, to carry out Biodiversity and Hydrology Baseline Studies and Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site along the northwest coast of Keppel Bay. The indicative proposed boundary of the study area is shown below in **Figure 1**. The proposed study area is estimated to be 76 ha and subjects to further review.

As the existing terrain is partially vegetated and undulating, the proposed study area would entail civil engineering works such as site clearance (demolition of all buildings/structures, removal of existing trees and vegetation), earthworks cutting/filling within site to achieve desirable platform levels required for the proposed residential development from the drainage and sewerage perspectives; construction of roads, drainage works, sewerage works etc; and building works such as foundation, superstructure construction, utilities/services laying, etc.



Figure 1 Project Location

2.2 Scope of Work

To assess the nature and existing baseline of study area, URA would like to conduct an EIS. The scope of the field work for the project is composed of the following items:

2.2.1 Biodiversity

This study will include baseline study which comprised of fauna, flora, habitats and areas of conservation interest. The EIS will assess the impacts on flora and fauna communities, habitats and/or ecological processes due to risk of pollution to aquatic habitats, noise and air pollution from construction and operational phases of the project. Impacts on bird migratory flyways and stopover sites by birds will also be assessed for construction and operational phases of the project. Area of high conservation value and buffer zones will be identified. Appropriate mitigation measures (if warranted) and recommendations for monitoring programme will be proposed.

2.2.2 Hydrology and Water Quality

This study will map out any permanent streams and/or waterbodies in the study area and investigate the flow conditions (indicative flow velocity, depth and width during dry and wet weathers) of those waterbodies. The dimensions, patterns

and profiles of stream channels and other waterbodies will be identified and documented. Catchment delineation will be conducted to identify the water sources and how the water flows within the site. Impacts related to the stream alignment, potential runoff and water pollution will be identified for construction and operational phases. Besides, impact assessment on slope and stability caused by stormwater, etc will also be included. The baseline water quality conditions will also be established in the identified main waterbodies as well as coastal water in potential impacted area. Impacts related to possible construction and operational discharges will be identified. Contaminant concentrations will be compared to relevant water quality criteria. We will also compare the water quality data to criteria relevant to ecological uses. The impacts on water quality in the study area will be assessed quantitatively that results from construction and operational phases of the projects.

2.2.3 Hydrodynamics/Flood

This study will establish baseline of hydrodynamic condition of the in the study area through quantitative method. EIS will assess hydrodynamic (change in currents, sheer-stress), erosion and flooding impacts on the vicinity of project site that may results from the construction and operational phases of the Project. The model results will be used to identify the impacts to Berlayer Creek and the vicinity of study area.

2.2.4 Air Quality

The study will assess the impacts from dust generated during the construction phase on the nearest sensitive receptors. A dust baseline survey will also be conducted to evaluate ambient dust (PM_{10} and $PM_{2.5}$) and a qualitative method will be used to analyse the dust impacts for construction and operation phase.

2.2.5 Airborne Noise

This study will assess potential impact from noise generated during construction phase on the neighbouring sensitive receptors. Baseline noise monitoring will be carried out to establish the baseline noise levels to develop the specific construction noise criteria for this project. Impact during construction and operational phase will be analysed qualitatively.

2.2.6 Soil and Groundwater

A soil and groundwater investigation will be conducted to determine the soil depth, soil type, groundwater level and soil and groundwater chemistry of the study area. The baseline data will be used for further soil and groundwater impact assessment, together with the use of relevant information generated from hydrological analysis. EIS will assess the impact on soil and groundwater during both construction and operational phases of the Project.

3.0 Hazard Assessment

3.1 Physical Hazards

AECOM recognizes that performing certain tasks related to executing the scope of work for the site would expose workers to a variety of physical hazards. As such, AECOM employees have been trained and mentored to carry out assessment activities following AECOM standard operating procedures (SOPs) making SH&E a priority in their operations.

3.1.1 Slip, Trip and Fall Hazards

On any work area, it is expected that the ground may be uneven. The ground surface may be unreliable due to settling. The site should be initially assessed for potential slip, trip and fall hazards. Identify excavations, open pits, holes, and trenches then place appropriate markers at locations with these hazards. Establish and follow an unobstructed walking path identified when working due to the irregular terrain.

3.1.2 Pinch Points

The use of hand tools, mechanical equipment, heavy machinery and more can create pinch points within the working area. Pinch points can be recognized when moving objects are present in the work space in close proximity to employees, and it is reasonable to assume that a part of the employee's body can be caught between the moving objects. Pinch points will be considered when performing a JSRA for the task being performed and recommendations will be made to reduce the potential for body parts to become caught in moving parts, including but not limited to:

- Guarding machinery and equipment to prevent body parts from being caught in the moving objects;
- When tools are used as an extension of the body consideration will be given to how the tool may become a hazard if it is caught within moving parts; and
- The use of PPE, e.g. gloves, boots, etc., to protect exposed body parts.

3.1.3 Manual Lifting

Most materials associated with construction-related activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use at least two people to lift, or roll/lift with your arms as close to the body as possible. Under no circumstances should any one person lift more than 12 kgs unassisted. Using the proper techniques to lift and move heavy pieces of equipment is important to reduce the potential for back injury. Use mechanical devices to move objects that are too heavy to be moved manually. If mechanical devices are not available, ask another person to assist you. Bend at the knees and not the waist when lifting loads. Let your legs do the lifting and do not twist your body while lifting. Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

3.1.4 Cuts and Lacerations

Field personnel should always look for sharp surfaces such as glass when handling sampling bottles, soil samples or debris. Always wear cut/puncture resistant gloves when hand-clearing cannot be avoided. Never attempt to remove objects caught in an auger stem with the hand and make sure the equipment is turned off.

Machine guards on generators and other mechanical equipment with rotating components are designed to protect hands and arms from being cut, amputated or crushed. Machine areas that are typically guarded include points of operation and moving points or pinch points (any point other than a point of operation at which it is possible for a part of the body to be caught).

3.1.5 Traffic Hazards

Motor vehicle traffic may impact the field team during the implementation of the proposed investigation. The FS must identify the parking location for personnel vehicles and heavy equipment, designated pedestrian walkways, position of designated traffic watcher, traffic control for offsite activities, and coordination with other third party contractors. The FS must verify installation of a barricade around the work area and proper placement of traffic cones, flags and warning signs to warn motorists and pedestrians especially for drilling locations near the access road. All employees onsite should wear an ANSI-approved Class II safety vest.

3.2 Weather Hazards

3.2.1 Heat Stress

Heat stress related problems include **heat rash, fainting, heat cramps, heat exhaustion and heat stroke.** Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. The surveyors should establish work-rest cycles (short and frequent are more beneficial than long and seldom) and rest in a shaded, cool area.

Most workers exposed to hot environments drink less fluid than needed because of an insufficient thirst. DO NOT DEPEND ON THIRST TO SIGNAL WHEN AND HOW MUCH TO DRINK. **During field work, drink at least 4 - 6 litres (120 - 200 ounces) of fluids for an 8-hour workday.** Sufficient potable water and approved beverages should be made available each day for the field team. The field surveyors should also identify the most effective technique for heat stress monitoring.

3.2.2 Sun Exposure

Field personnel are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 30, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should consider wearing safety glasses that offer protection from UVA/UVB rays.

3.2.3 Darkness

AECOM discourages field activities to be done at low light conditions, particularly at night. When working in dark areas, ensure that additional artificial lighting must be present to illuminate the work area to ensure that paths and potential site hazards are clearly visible. The field personnel should also recognize the effect of fatigue on workers not accustomed to working at night or extended periods. If night works is required, approval from the PM/DPM, HDB, PUB and SLA must be obtained prior to start of any night works. Moreover, a minimum of two personnel should be completing the work. Lone worker at night time is NOT allowed.

3.2.4 Inclement Weather and Other Natural Disasters

Severe weather can occur with little warning. Employees will be vigilant for the potential of storms, lightning, high winds, and flash flood events. The field personnel will be attentive to daily weather forecasts for the project area each morning. Predicted weather conditions of potential field impact should be considered when performing the work. No field surveys will be conducted during inclement weather, thunder or lightning in the vicinity of the study area.

Be alert to the signs of changing weather, such as darkening skies, a sudden wind shift or drop in temperature. If you are expected to be onsite, plan your evacuation and safety measures in advance. During thunderstorms, when you first see lightning or hear thunder, activate your emergency plan and go inside to the closest building or vehicle. In the event that the national weather service predicts that one of the areas where AECOM is working is in the direct path of a typhoon or cyclone, the PM will immediately contact the field personnel to determine what, if any, precautions are necessary, including the need for evacuation.

This same protocol will be followed in the event that other natural disasters (e.g., floods, landslides, earthquakes, etc.) could impact field personnel. DO NOT IGNORE INSTRUCTIONS TO GET TO SAFETY.

3.3 Biological Hazards

As the site is located in a secondary forest, biological hazards are expected to be present. The AECOM project team shall ensure that the potential for exposure to specific biological hazards are assessed prior to the commencement of work and that the procedures specified by this HASP are integrated into the project planning process and conveyed to AECOM employees conducting the field work. This information shall be communicated in the site kick-off meetings. Possible biological hazards that may be encountered at the site include mosquitoes, dogs, spiders, bees, and snakes. Where detected, assessment of trees will only be carried out at a distance.

The hazard assessments must also consider the additional hazards posed by vegetative clearing such as the increased risk of coming in contact with plants that may cause irritation, cuts and punctures. Hazards associated with the use of tools and equipment to remove vegetation.

3.3.1 Spiders

Spiders can be found in derelict buildings, sheltered areas, basements, storage areas, well heads, and even on open ground. Spiders can be found year-round in sheltered areas and are often present in well heads and valve boxes. Most spider bites produce wounds with localized inflammation and swelling. All spiders are poisonous, but fear of all spiders is unwarranted because most are either too small or possess poison that is too weak to harm humans. Only a few have bites that are dangerous to humans. However, the bite of these few species can cause serious medical problems and possible death under certain circumstances.

3.3.2 Mosquitoes

When a mosquito bites, it injects an enzyme that breaks down blood capillaries and acts as an anticoagulant. The enzymes induce an immune response in the host that results in itching and local inflammation. The tendency to scratch the bite sites can lead to secondary infections. CDC data indicates that mosquito-borne illnesses, including the strains of dengue, Zika, malaria and encephalitis, are a health risk to employees working in outdoor environments. Mosquitoes breed in stagnant water and typically only travel a quarter mile from their breeding site. Whenever possible, stagnant water should be drained to eliminate breeding areas. Project managers and client should be contacted to determine whether water can be drained and the most appropriate method for draining containers, containment areas, and other objects of standing water. Application of mosquito-repellent lotion is advised especially when working outdoors. Employees also need to consider whether they are sensitive to the use of insect repellents. Priority should be given to elimination of breeding areas.

3.3.3 Bees and Hornets

Bees, hornets and wasps may be found in derelict buildings, sheltered areas, and even on open ground. Avoid reaching into areas where visibility is limited. If stung by a wasp or bee or hornet, notify a co-worker or someone who can help should you have an allergic reaction. Stay calm and treat the area with ice or cold water. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite or sting or any swelling or numbness beyond the site of the bite or sting.

Employees with known allergies to insect stings should consult their personal physician for advice on any immediate medications that they should carry with them. AECOM recommends that employees with known allergies inform their co-workers of the allergy and the location of the medications they might carry for the allergy.

3.3.4 Snakes

Most snake bites happen when the snake is trodden on, either in the dark or in undergrowth. If you find a snake while at work, contact local authorities which will arrange for a suitably qualified snake handler to catch and relocate the snake. DO NOT attempt to catch the snake yourself as this may result in serious injury. Simply track the snake's movements and await the arrival of the snake handler. Attention to the following recommendations might reduce the number of accidents.

- Know your local snakes, the sort of places where they like to live and hide, at what times of year, day/night or in what kinds of weather they are most likely to be active.
- Be especially vigilant about snake bites after rains, during flooding, at harvest time and at night.

- Wear proper shoes or boots and long trousers, especially when walking in the dark or in undergrowth.
- Avoid working in areas where snakes are suspected present or there is a history of their presence. Wear snake chaps if it is necessary to work in or near these areas.
- Avoid snakes as far as possible. Never handle, threaten or attack a snake and never intentionally trap or corner a snake in an enclosed space.
- Avoid or take great care handling dead snakes, or snakes that appear to be dead.
- Avoid having rubble, rubbish, termite mounds or domestic animals close to human dwellings, as all of these attract snakes.
- If you suspect that snake is present in close proximity to your work location, back off and request for help.

The hazard assessments must also consider the additional hazards posed by vegetative clearing such as the increased risk of coming in contact with plants that may cause irritation, cuts and punctures. Hazards associated with the use of tools and equipment to remove vegetation.

3.4 Covid

AECOM adopts a screening process to prevent spread of Covid-19 to employees, sub-consultants, subcontractors, and visitors at AECOM project offices and field locations, as detailed in Attachment C. This process will be strictly followed by field staff and visitors within the scope of AECOM-managed activities.

4.0 Personal Protective Equipment

4.1 Basic PPE

PPE will be worn during field work activities to meet the facility's basic PPE requirements and to prevent on-site personnel from being injured by the safety hazards posed by the site and/or the activities being performed. The following tables describe the basic PPE requirements for general site activities and for certain specific tasks/areas.

Basic PPE Item	Requirements for Donning Item
Long sleeved work jacket or shirt; 100% cotton	Required at all times. No torn or sleeveless shirts allowed
Long pants; denim or cotton	Required at all times. No short pants allowed.
Closed shoes/knee-high rubber boots/gaiters	Required at all times.
Hard Hat (ANSI Z89.1, Type 1, Class E)	Required when working in areas or activities with overhead hazards (i.e. operation of rig)
Traffic vests (ANSI 107, Class II)	Required when working in areas with moving vehicles.
Safety Glasses with Sideshields (ANSI Z87.1)	Required during soil boring activities.
Work Gloves	Type required dependent on work performed. Brightly colored gloves are recommended.
Nitrile Gloves (EN 374)	Required when work involves contact with media that is potentially contaminated with petroleum products or other contaminants. Nitrile gloves must not exceed exposure time of 4 hours. Replace nitrile gloves every 3 hours when continuously in contact with contaminated media.

4.2 Other Safety Equipment

The following additional safety items should be available at the site:

- Portable, hand-held eyewash bottles
- Fully-stocked First Aid Kit
- Hard barricades or traffic cones to designate work area;
- Multipurpose Dry Chemical (Type A-B-C) Fire (when hot works are implemented). The fire extinguisher should be accessible and placed close to the area were the Hot Work activities are occurring.
- Trekking pole/stick

5.0 Personal & Travel Related Safety & Security

5.1 General Information

This project involves travel to an area of Singapore that may or may not pose security threats to the AECOM field team members that will perform the project work. All field personnel will use the buddy system when working within any controlled work area. Under no circumstances will any employee be present alone in a controlled area. To ensure the personal safety of AECOM staff, the following general precautions need to be considered and implemented:

- Obtain travel, health and security advisories applicable prior to mobilization. This includes notice to proceed from NParks, HDB, SLA, ISD and SPF.
- Schedule onsite works during daylight hours or until nearby establishments are still open.
- Keep a mobile phone with you onsite. Maintain regular contact with someone in the office.
- To avoid being a target, dress conservatively. Do not wear expensive looking jewellery.
- Always try to travel light. You can move more quickly and with ease and will be more likely to have a free hand.
- If you wear glasses, pack an extra pair and pack medicines you need in your carry-on luggage.
- Notify a representative of the site/facility and your supervisor immediately if you become concerned at any time about your personal safety and security while conducting this work.

5.2 Communications

Throughout field surveys, a minimum of two personnel will work together at all times and carry hand phones to keep in contact with non-field personnel. Local telephone facilities or services may be limited at the site. Field teams must have a portable mobile phone to contact other AECOM Project Managers, and if necessary, local emergency responders.

6.0 SITE CONTROL

6.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

6.2 Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any AECOM site.

6.3 Personal Hygiene

The following personal hygiene requirements will be observed:

- Water Supply: A water supply meeting the following requirements will be utilized:
  - ❖ Potable Water - An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.
  - ❖ Non-Potable Water - Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

    Non-Potable Water

    Not Intended for Drinking Water Consumption
- Toilet Facilities: The FS shall identify the nearest toilet facilities onsite.

7.0 HEALTH AND SAFETY REQUIREMENTS

7.1 Training Requirements

7.1.1 Site Safety Officer Accreditation

All AECOM personnel performing activities covered by this HASP must have completed the appropriate prescribed internal training requirements.

7.2 SH&E Briefings and Meetings

7.2.1 Field Kick-off Meetings

Prior to the commencement of on-site activities, a field kick-off meeting will be conducted by the FS to review the specific requirements of this HASP. Attendance of the pre-entry meeting is mandatory for all personnel covered by this HASP and must be documented on the HASP Acceptance Form provided in Attachment A. All documentation should be maintained in the project file. The pre-entry briefing must be completed for each new employee before they begin work at the site.

7.3 Medical Surveillance Program

AECOM has a medical surveillance program in place specifically designed to provide pre-placement baseline medical examinations to determine the medical suitability of, and to establish a "medical baseline" for, newly hired employees. The program provides annual examinations to detect medical conditions or changes, which may affect medical suitability for unrestricted work; and also provides interim and post exposure examinations, as necessary, based on types of projects and materials handled.

7.4 Substance Abuse

AECOM understands that the unlawful or improper presence or use of controlled substances or alcohol in the workplace presents a danger to everyone. Employees who refuse to meet the requirements of the AECOM Substance Abuse Policy shall be removed from the project and may be subjected to disciplinary action, up to and including termination.

8.0 Emergency Response

AECOM response actions will be limited to evacuation and medical/first aid as described within this section. As such, this section of the HASP has been written to comply with 29CFR 1910.38 (a). AECOM employees and their subcontractors should be prepared to evacuate the work site in the event of an emergency. When work involves working at a remote location where medical facilities may not exist, it is imperative that the field team understand how to contact transportation companies to assist with transport to the closest medical facility. This information must be determined in advance of mobilizing to a remote location with no medical facilities, reviewed with the field team and verified with the identified transport companies on the day of field mobilization to ensure services are available. AECOM will bring a portable phone to the site to ensure that communications with local emergency responders is maintained, when necessary.

8.1 Emergency Information and References

Prior to working, the field personnel will review with the PM the scope of work and any site-specific information that may be available, including emergency information specific to the site location, emergency contact information and the designated emergency evacuation area. Emergency references of MEDICAL (ambulance), FIRE and POLICE services that can be summoned to the facility during an emergency should be determined as part of the Site Specific Data Form and should be discussed during the daily safety meetings. The field personnel and/or PM must ensure completion of the **Emergency Response Information** form (Attachment B) prior to mobilization.

8.2 Accident Reporting and Investigation

8.2.1 AECOM Reporting Requirements

All work-related H&S incidents, including injuries and illnesses, first aid cases, accidents, property damage incidents, and near-miss incidents must be reported to the PM as soon as possible. The PM should then notify the HSSE Focal to discuss the incident and to determine whether the incident must be reported to LTA (see below) and whether an accident investigation should be conducted and documented. If any person is injured, his/her supervisor, the PM and HSSE Focal must be notified immediately.

If an investigation will be required, it should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An AECOM Accident Investigation Form in the *AECOM Field SH&E Manual* must be completed as soon as possible and submitted to the PM.

8.3 Emergency Contacts

Name	Title	Mobile Phone	E-Mail Address
AECOM Contacts			
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URA Representatives			
Grace Ng (Ms)	Planner (Physical Planning, Central West)		grace_ng@ura.gov.sg

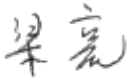
Attachment A

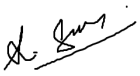
HASP Receipt and Acceptance Form

Health and Safety Plan Receipt and Acceptance Form

for Biodiversity and Hydrology Baseline Studies and Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site

I have received a copy of the Health and Safety Plan (HASP) prepared for the above referenced project. I have read and understood its contents and I agree that I will abide by its requirements.

Name	Signature	Company	Date
Jagriti Dawra		AECOM Singapore Pte Ltd	01-Dec-20
Jaypee Perez Bautista		AECOM Singapore Pte Ltd	01-Dec-20
Dr Hoai Thanh Nguyen		AECOM Singapore Pte Ltd	01-Dec-20
Dr. Liang Liang		AECOM Singapore Pte Ltd	01-Dec-20
Jacquelynn Chia		AECOM Singapore Pte Ltd	01-Dec-20
Grujica Sarenac		AECOM Singapore Pte Ltd	01-Dec-20
Mandy Yeo		AECOM Singapore Pte Ltd	02-Dec-20
Hanzel Lalitan		AECOM Singapore Pte Ltd	01-Dec-20
Phyo Naing Zay		AECOM Singapore Pte Ltd	01-Dec-20
Mavis Lee		AECOM Singapore Pte Ltd	01-Dec-20

Sim Yi Ting		AECOM Singapore Pte Ltd	02-Dec-20
Jafon Ng		AECOM Singapore Pte Ltd	01-Dec-20
Mark Shi		AECOM Singapore Pte Ltd	02-Dec-20
Guo Liang Oh		AECOM Singapore Pte Ltd	02-DEC-20
Sam Michael Arockianathan		AECOM Singapore Pte Ltd	02-DEC-20

Attachment B

Emergency Response Information

Local Police: Radin Mas Neighbourhood Police Post, 15 Telok Blangah Crescent Mount, Faber View, #01-250, Singapore 090015

Tel: 1800 271 9999

Local Fire: Telok Blangah Fire Post, 73A Telok Blangah Street 32, Singapore 101073

Tel: +65 6377 7220

Closest Hospital/Clinic to Site:

Hospitals and Clinics Near Project Site

Name of Hospital and Clinic	Distance from Project Site (km)	Address	Contact Number/Hotline	Opening Hours	Coordinates
Shenton Wellness Centre – PSA Building	~200 m	460 Alexandra Road, #02-15 PSA Building (Alexandra Retail Centre), 119963	+65 6376 1630	Mon – Fri: 8.30am – 1pm; 2pm – 5.30pm; Sat: 8.30am – 12.30pm; Sun- closed	1°16'25.16"N, 103°48'4.95"E
Fullerton Health @ Alexandra Retail Centre	~270 m	460 Alexandra Rd, #02-18 Retail Centre building, Singapore 119963	+65 6333 3636	Mon – Fri: 8.30am – 1pm; 2pm – 5.30pm; Sat: 8.30am – 12.30pm; Sun- closed	1°16'27.04"N, 103°48'5.08"E
Healthplus Family Clinic & Surgery	~1km	78A Telok Blangah Street 32, Healthplus Family Clinic & Surgery, Singapore 101078	+65 6273 3327	Mon – Fri: 8.30am – 12.30pm; 2pm – 4.30pm; 7.30pm – 11pm Sat – Sun: 8.30am – 12.30pm; 7.30 – 11pm	1°16'24.59"N, 103°48'32.50"E
Alexandra Hospital	~1.82 km	378 Alexandra Rd, Singapore 159964	+65 6472 2000	24 hours	1°17'11.44"N, 103°48'4.58"E

Emergency Alarms, Evacuation Route/s and Procedures:

In the case of an emergency, AECOM will contact appropriate local emergency response agencies.

In the event of an emergency, all personnel should proceed to the designated emergency muster point (unless directed to an alternate muster point by the AECOM emergency coordinator).

Depending upon the type of emergency, AECOM will determine whether the muster point is a safe distance from the emergency location. Employees will be moved further from the site of the emergency if it is determined that the muster point is not at a safe distance.

Location of Nearest Hospital/Clinic:



Singapore

Appendix C - COVID-19 Screening Process

To help prevent the spread of Covid-19 to employees, sub-consultants, subcontractors, and visitors at AECOM project offices and field locations, it is recommended that all employees, sub-consultants, subcontractors and visitors undergo a screening process as part of the toolbox meeting prior to start of the project.

The AECOM field staff presiding over the toolbox meeting shall:

1. Check if each employee, sub-consultant, subcontractor and visitor at the project site is wearing a surgical or N95 mask. Note that face shields cannot replace masks but can be worn together with a mask;
2. Measure the temperature of each employee, sub-consultant, subcontractor and visitor at the project site using a thermal scanner. The measurement shall be done twice – one in the morning before the toolbox meeting and one in the afternoon prior to start of work; and
3. Ask each employee, sub-consultant, subcontractor and visitor at the project site to answer the questions listed in the Covid-19 Screening Questionnaire below.

Use the Toolbox Meeting Record (**S3[APAC]-006-FM2, Singapore Office version**) to record the temperature and assess whether each employee, sub-consultant, subcontractor and visitor at the project site is fit for duty.

Covid-19 Screening Questionnaire:

1. Do you have any of the following symptoms: fever, cough, muscle aches, fatigue, difficulty breathing, sore throat or vomiting? **Yes or No.**

If the person answers Yes, ask him not to proceed with work. Contact the person's manager to inform that the person is showing at least one of the signs mentioned above and therefore will not be allowed to work. Recommend the person to seek medical assistance if necessary.

2. Have you been diagnosed with COVID-19? **Yes or No.**

If the person answers Yes, ask whether he has been cleared by the Government of Singapore. Ask for certification of negative result, if applicable.

3. a) Have you been in close contact with a confirmed or probable case of COVID-19? **Yes or No.**

   b) If Yes to 3a) have you followed the required isolation period as required by the Singapore Government? **Yes or No.**

If the person answers No to 3b), contact the person's manager to inform that the person will not be allowed to work at the site. If Yes, ask for certification or clearance, if applicable.

4. a) Have you travelled outside Singapore within the past 14 days? **Yes or No.**

   b) If Yes to 2a) did you follow the quarantine instructions by the Singapore Government? **Yes or No or Not applicable**

The person shall be considered fit-for-duty if:

1. The body temperature is below 37 °C; and

2. The person clears the screening questionnaire.

APAC - Singapore

Toolbox Meeting Record – Covid-19

S3[APAC]-006-FM2

Project Name:			
Meeting Location:			
Meeting Date:		**Time:**	

Presenter(s) / Supervisor Leading Toolbox Talk:			
Name:		**Signature:**	
Name:		**Signature:**	

Upcoming Activity Review (activities due to commence on-site in the following week and expected dates of completion & ideas or suggestions for SHEQ improvement)	**Date**
1.	
2.	
3.	
4.	
5.	

Alert / Fact Sheet / Lessons Learnt / Topic Reviewed
1.
2.
3.
4.

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Comments / Issues raised by attendees and review of outstanding issues	Action By	Due Date
1.		
2.		
3.		
4.		
5.		

ATTENDEES

The information listed above has been adequately explained to me and I understand how and where to get additional support on the topics covered if I require it.

Name	Company	Fit for Duty Check			
		Morning		Afternoon	
		Temperature	Fit-for-duty?	Temperature	Fit-for-duty?
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

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ATTENDEES **The information listed above has been adequately explained to me and I understand how and where to get additional support on the topics covered if I require it.**					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

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Appendix B
AECOM Job Safety Risk Assessment

Delivering a better world

APPENDIX B:

JOB SAFETY RISK ASSESSMENT

Biodiversity and Hydrology Baseline Studies and Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site

Prepared by:

AECOM Singapore Pte Ltd

300 Beach Road, #23-00 The Concourse,

Singapore 199555

Project Number: 60645518

AECOM

JOB SAFETY RISK ASSESSMENT

Project:	Biodiversity and Hydrology Baseline Studies and Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site	**Location:**	Northwest coast of Keppel Bay / Labrador Park
Work Activity:	Onsite Survey, water quality sampling, biodiversity surveys, air/noise monitoring		
Personnel Protective Equipment (PPE):	Long-sleeved shirt, long trousers, raincoat/poncho (as applicable), mosquito head net, trekking pole, knee-high rubber boots and insect repellent.		
Development Team:	**Name/Designation:** Jacquelynn Chia / Consultant **Date:** 9 November 2020	**Reviewed by:**	**Name/Designation:** Jaypee Bautista / Health & Safety Manager **Date:** 1 December 2020
JSRA Type:	☒ New ☐ Revised	**Next Review Date:**	30 November 2021

No	Job Steps	Potential Hazard(s)	Existing Risk Control	Initial Risk Evaluation			Additional Risk Control	Residual Risk Evaluation			Responsible Person	Completed by:
				L	S	R		L	S	R		
1.1	Site walkabout / locating of point counts/transects • Inspecting the area / vicinity walk within the site • Conduct flora and fauna survey	Slips, trips and fall due to uneven surface, slippery ground, soft soil, obstructions (fence/railing) or wayward objects (FB, FC)	- Use alternative routes, if available, for areas blocked by fences/railings - Assess for slippery, uneven surface or obstructions; remove wayward objects; identify safe routes and pathways; follow designated paths as shown in maps (access maps)	3	2	6	- If climbing over a low fence or railing cannot be avoided, always maintain three-point contact - Use trekking poles or stick to assess the ground and to aid balance when walking around uneven/grassy ground - Remove obstructions - Maintain a slow and steady walking pace while working onsite - Ensure anti-slip threads on safety boots are clean and not worn out	1	3	3	AECOM Personnel	
1.2		Exposure to extreme heat	- Take periodic breaks and keep hydrated – drink water or ionic drinks - Stay under the shade whenever possible	3	2	6	- Apply sunscreen as necessary - Use umbrella as necessary	1	2	3	AECOM Personnel	
1.3		Biological hazard - Mosquito bites (and other insect bites –	- Read AECOM Safety for Life Safety Alert regarding mosquitoes and malaria - Be on an active lookout for	3	2	6	- Use insect repellent (spray or patch) - Wear light coloured clothing with long sleeves and long	1	2	2	AECOM Personnel	

No	Job Steps	Potential Hazard(s)	Existing Risk Control	Initial Risk Evaluation			Additional Risk Control	Residual Risk Evaluation			Responsible Person	Completed by:
				L	S	R		L	S	R		
		bees, hornets, ants)	beehives and hornet nests				pants - Be aware of peak mosquito hours – avoid works during dusk and dawn - Wear mosquito head nets - Use a poncho/raincoat, if necessary, to cover body parts					
1.4		Biological hazard - Snake bites (CB) / animal bites (wild animals, stray dogs)	- Do not approach or provoke wild animals - Leave the area cautiously and slowly	2	3	6	- Always carry a stick or trekking pole which you can use as protection - Use knee-high rubber boots or gaiters -	1	3	3	AECOM Personnel	
1.5		Intermittent weather	- Stop work during heavy rain or thunderstorm	2	4	8	- Seek shelter; do not hide under trees in case of thunderstorms - Resume work only 30 minutes after a thunderstorm	1	3	3	AECOM Personnel	
2.1	Water Quality Sampling • Grab sampling of water sample using sample container • Use of water quality kit to measure water parameters	Contact with preservatives in sampling bottles (CW)	Wear appropriate PPE, such as nitrile gloves, long sleeve shirts and safety glasses	2	1	2	-				AECOM Personnel	
2.2		Ergonomic hazards – repetitive movements, overreaching, bending, twisting, slouching (O)	- Observe good ergonomic practices such as minimizing twisting, bending and slouching, avoiding overreaching and awkward positions - Sit on a stool, if possible	3	2	6	- Sit on a stool, if possible - Use a trolley to carry buckets to designated waste disposal/storage location or - Avoid overfilling the buckets (at most, half-filled) if a trolley is not available or usable	1	2	2	AECOM Personnel	
2.3		Slip, trip, fall due soft grounds or slippery surface/uneven grounds while climbing the fence; Getting stuck/trapped in subsiding/very soft ground (FS, FB)	- Observe good housekeeping practices – clean up spills - Maintain slow and steady walking pace while walking on site - Conduct surface water sampling with a buddy as a watchman	2	3	6	- Remove obstructions if observed - Use a trekking pole for additional support - Wear rubber boots / high boots with high traction - Ensure three-point contact while climbing the fence	1	3	3	AECOM Personnel	

No	Job Steps	Potential Hazard(s)	Existing Risk Control	Initial Risk Evaluation			Additional Risk Control	Residual Risk Evaluation			Responsible Person	Completed by:
				L	S	R		L	S	R		
		Slip, trip and fall into waterbody (FB)										
3.1	Installation / placement of noise monitoring equipment • Attach microphone to the pole and drive the pole to the ground	Ergonomic – repetitive movement and awkward posture (slouching, twisting, overreaching, kneeling, lifting) when shifting / setting up the equipment	- Keep tools and equipment within arm's reach - Use proper lifting techniques - Use pallet jack/trolley or a two-man lift when lifting heavy equipment - Use proper equipment to extend hand reach instead of overreaching	3	2	6	- Do not sustain awkward positions (e.g. shoulders too high/low, prolonged extension of elbow) - Take frequent breaks to rest muscles and hydrate - Use a stool or knee pad, if possible, to avoid awkward legs	1	2	2	AECOM Personnel	
3.2	• Store battery-powered measurement equipment in the protective box • Secure cable and equipment box • Noise monitoring will run for 1 week before removal • Demobilization – retrieval of equipment from the site	Hand injury (cuts, lacerations, puncture, an abrasions) due to pinch points and sharp edges	- Identify and be aware of possible pinch points and sharp edges during installation of equipment	2	2	4	- Use cut and puncture resistant working gloves	1	1	1	AECOM Personnel	
4.1	Installation / placement of air monitoring equipment (subcon ALS) • Attach equipment and solar power panel to the ground	Ergonomic – repetitive movement and awkward posture (slouching, twisting, overreaching, kneeling, lifting) when shifting / setting up the equipment	- Keep tools and equipment within arm's reach - Use proper lifting techniques - Use pallet jack/trolley or a two-man lift when lifting heavy equipment - Use proper equipment to extend hand reach instead of overreaching	3	2	6	- Do not sustain awkward positions (e.g. shoulders too high/low, prolonged extension of elbow) - Take frequent breaks to rest muscles and hydrate - Use a stool or knee pad, if possible, to avoid awkward legs	1	2	2	ALS Personnel	
4.2	• Secure cable and equipment box • Barricade the	Hand injury (cuts, lacerations, puncture, an abrasions) due to pinch points and	- Identify and be aware of possible pinch points and sharp edges during installation of equipment	2	2	4	- Use cut and puncture resistant working gloves	1	1	1	ALS Personnel	

No	Job Steps	Potential Hazard(s)	Existing Risk Control	Initial Risk Evaluation			Additional Risk Control	Residual Risk Evaluation			Responsible Person	Completed by:
				L	S	R		L	S	R		
	equipment with proper signs indicating the work, contact person details etc • Air monitoring will run for 1 week before removal • Demobilization – retrieval of equipment from the site	sharp edges										
5.1	Biodiversity survey	Refer to the General Safety Plan provided in Appendix C and developed by Camphora for this project									Camphora Personnel	

My signature below indicates that all requirements and conditions listed above have been verified, met, and reviewed will all affected personnel prior to start of work.	
Supervisor's Signature: Jagriti Dawra	Date/Time: 01-Dec-2020 at 11.53am

I have read this JSRA, and I understand the hazards and safe work practices associated with the task.					
Signature: Dr Hoai Thanh Nguyen	Date/Time: 1/12/2020	Signature: Jacquelynn Chia	Date/Time: 1/12/2020		
Signature: Dr Liang Liang	Date/Time: 1/12/2020	Signature: Grujica Sarenac	Date/Time: 1/12/2020		
Signature: Mandy Yeo	Date/Time: 2/12/2020	Signature: Hanzel Lalitan	Date/Time: 2/12/2020		
Signature: Phyo Naing Zay	Date/Time: 1/12/2020	Signature: Jafon Ng	Date/Time: 1/12/2020		
Signature: Mavis Lee	Date/Time: 1/12/2020	Signature: Guo Liang Oh	Date/Time: 2/12/2020		
Signature: Yi Ting Sim	Date/Time: 2/12/2020	Signature: Mark Shi	Date/Time: 2/12/2020		
Signature: Sam Michael Arockianathan	Date/Time: 2/12/2020	Signature:	Date/Time:		

Risk Assessment Matrix:

Likelihood / Severity	*Rare (1)*	*Remote (2)*	*Occasional (3)*	*Frequent (4)*	*Almost Certain (5)*
Catastrophic (5)	5	10	15	20	25
Major (4)	4	8	12	16	20
Moderate (3)	3	6	9	12	15
Minor (2)	2	4	6	8	10
Negligible (1)	1	2	3	4	5

Code for Potential Hazards:

Caught Between (CBT)	Contacted By (CB)	Fall to Below (FB)	Overexertion (O)	Struck Against (SA)
Caught In (CI)	Contact With (CW)	Fall – Same Level (FS)	Release To (R)	Struck By (SB)

Appendix C
Camphora Safety Plan

Delivering a better world

CAMPHORA PTE LTD

RISK ASSESSMENT FORM

Company :	Camphora Pte Ltd	**Conducted by:**	Derek Yap		Reference
Process :	Conducting Flora and Fauna surveys	**Names, designations**	Lead Arborist		Cam-EIAArbor
Location :	Berlayer Creek, Keppel Club, Bukit Chermin	**Date :**	Nov-20		Rev 2.0
First Assessment Dat	N/A	**Project Name :**	EIS Berlayer Creek		
Last Review Date	N/A				

1. Hazard Identification				2. Risk Evaluation				3. Risk Control	
1a.	1b.	1c.	1d.	2a.	2b.	2c.	2d.	3a.	3b.
No.	Work Activity	Hazard	Possible Accident / Ill Health & Persons-at-Risk	Existing Risk Control (if any)	S	L	Risk Level	Additional Risk Control	Action Officer, Designation (Follow-up date)
1	Mobilisation of project team	Unaware of site conditions, site-specific safety rules and regulations	Entering into prohibited area, injury to persons	Ensure pre-approval has been granted by clients/authority. Carry approval letter if available. Seek advice from clients regarding site access/conditions.	2	1	L	Study topography plans prior to entry.	Designated team leader for the project
2	Working within natural/forested area	Falling/dead branches, dangerous fauna, thorns, trips/slips/falls, getting lost.	Insect stings, snake bites, injury by falling branches, injury due to trips/slips/falls	Visual assessment of surroundings for hornets/bees/snakes/dead branches/roots/protruding vegetation while walking. Wear appropriate footwear. Enter through visible opening where possible. Experienced field personnel. Bring first aid kit.	3	1	L	Exit forested site during inclement weather. Use of GPS to keep track.	Designated team leader for the project

3	Working at the water edge	Falling into water	Injury due to slips/falls, drowning if water deep	Buddy system. Appropriate footwear. Non-swimmers will avoid water edge work if water is deep. At deep water edges life vest will be worn.	4	1	L	Conduct works during low tide	Designated team leader for the project
4	Working near steep slopes	Fall from slope	Injury from slips/falls	Avoid steep slopes.	2	1	L	No works during inclement weather	Designated team leader for the project
5	Working in tall grass area	Tall grass and skin-irritating plants	Skin allergy and rashes	Wear long sleeves and trousers	2	1	L	Use clear paths where available	Designated team leader for the project
6	Inclement Weather	Struck by lightning	Serious injury/fatality	Stop all work activity, seek shelther	5	1	H		Designated team leader for the project
7	Night works	Dangerous fauna, getting lost	Insect stings, snake bites, falling on uneven terrain	Ensure sufficient light while working. Buddy system. Avoid vegetation that appears to be impenetratable. Move slowly. Experienced field personnel. Avoid areas where crocodiles have been sighted. Bring first aid kit.	2	1	L	Carry GPS, ensure phone signal. Extra torches and batteries.	Designated team leader for the project
8	Working outdoors	Exposure to weather	Sunstroke, dehydration, getting wet in rain	Bring plenty of water, take regular breaks, carry wet	2	1	L		Designated team leader for the project
9	Plant collection	Cuts by secateurs	Cuts and injuries by improper use of secateur	To be aware of cutting points, do not deviate attention when making cuts.	2	1	L	Wear gloves	Designated team leader for the project

10	Working within waterways	Soft substrate, large boulders, loose fishing lines, dangerous animals	Stuck in mud, cut by crustaceans	Booties, gloves and appropriate attire should be worn at all times when in the water. Staff should be trained to move through muddy areas and identify points to avoid and transvere. Buddy should be no more than 5 meters apart when in the water.	3	1	L	3rd individual should be present on site (that is not in the water), with access to a phone in case of any emergency. This also allows the team to be contactable at all times. Be aware of tide times and weather updates. Access to hot water in case of any animal sting injury.	Designated team leader for the project
11	General field work during Phase 2 of post-circuit breaker period	Physical contact with other personnel that can lead to the spread of the coronavirus	COVID-19 infection	Work in small teams of no more than 4 people; ensure proper record-keeping of personnel present for each work session; keep at least 1m safe distance from other personnel where possible.	5	1	5 (M)	Support contact tracing by activating the TraceTogether app; check body temperature before starting work and see a doctor and do not go to work if temperature is 37.8^{o}C or above.	Designated team leader for the project

CAMPHORA PTE LTD RISK ASSESSMENT

Severity	(1)	(2)	(3)	(4)	(5)
Catastrophic (5)	5 (M)	10 (M)	15 (H)	20 (H)	25 (H)
Major (4)	4 (M)	8 (M)	12 (M)	16 (H)	20 (H)
Moderate (3)	3 (L)	6 (M)	9 (M)	12 (M	15 (H)
Minor (2)	2 (L)	4 (M)	6 (M)	8 (M)	10 (M)
Negligible (1)	1 (L)	2 (L)	3 (L)	4 (M)	5 (M)

H= High Risk, M = Medium risk, L = Low Risk

Likelihood		Description
Almost Certain	5	Continual or repeating experience.
Frequent	4	4 Common occurrences.
Occasional	3	Possible or known to occur.
Remote	2	Not likely to occur under normal circumstances.
Rare	1	Not expected to occur but still possible.

Severity		Description
Catastrophic	5	Fatality, fatal diseases or multiple major injuries.
Major	4	Serious injuries or life-threatening occupational disease (includes amputations, major fractures, multiple injuries, occupational cancer, acute poisoning).
Moderate	3	Injury requiring medical treatment or ill-health leading to disability (includes lacerations, burns, sprains, minor fractures, dermatitis, deafness, work-related upper limb disorders).
Minor	2	Injury or ill-health requiring first-aid only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort).
Negligible	1	Not likely to cause injury or ill-health

Risk level	Risk Acceptability	Recommended actions
High Risk	Not acceptable	• High Risk level must be reduced to at least Medium Risk before work commences. • There should not be any interim risk control measures. Risk control measures should not be overly dependent on PPE or appliances. • If practicable, the hazard should be eliminated before work commences. • Management review is required before work commences.
Medium Risk	Tolerable	• A careful evaluation of the hazards should be carried out to ensure that the risk level is reduced to as low as reasonably practicable (ALARP) within a defined time period. • Interim risk control measures, such as administrative controls or PPE, may be implemented while longer term measures are being established. • Management attention is required.
Low Risk	Acceptable	• No additional risk control measures may be needed. • Frequent review and monitoring of hazards are required to ensure that the risk level assigned is accurate and does not increase overtime.

Contact Information		Remarks	Equipment Checklist	
Contact List			Equipment	Numbers
Emergency Contacts			GPS (Garmin 64s)	
Ambulance	995		Binoculars (Leica)	
Fire	995		Binoculars (Zeiss)	
Police	999		Long Pruner	
			Camera Traps	
			Trimble differential GPS	

Appendix D
Flora Species List

Delivering a better world

Species	Family	Origin	Status	Habit
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree
Acalypha indica	Euphorbiaceae	Cryptogenic	-	Herb
Acalypha siamensis	Euphorbiaceae	Exotic	Casual	Shrub
Acrostichum aureum	Pteridaceae	Native	Common	Herb
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree
Adiantum latifolium	Adiantaceae	Exotic	Naturalised	Herb
Adinandra dumosa	Pentaphylacaceae	Native	Common	Tree
Adonidia merrillii	Arecaceae	Exotic	Cultivated Only	Tree
Aglaia odorata	Meliaceae	Exotic	Cultivated Only	Shrub
Allamanda cathartica	Apocynaceae	Exotic	Casual	Climber
Alocasia longiloba	Araceae	Native	Common	Herb
Alocasia macrorrhizos	Araceae	Exotic	Naturalised	Herb
Alpinia aquatica	Zingiberaceae	Native	Critically Endangered	Herb
Alstonia angustiloba	Apocynaceae	Native	Common	Tree
Alstonia scholaris	Apocynaceae	Exotic	Cultivated Only	Tree
Alyxia reinwardtii	Apocynaceae	Native	Common	Climber
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree
Andira inermis	Fabaceae	Exotic	Casual	Tree
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree
Arthrophyllum diversifolium	Araliaceae	Native	Common	Tree
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree
Arundina graminifolia	Orchidaceae	Native	Common	Herb
Asplenium nidus	Aspleniaceae	Native	Common	Epiphyte
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree
Asystasia gangetica ssp. *micrantha*	Acanthaceae	Exotic	Naturalised	Herb
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree
Avicennia alba	Acanthaceae	Native	Common	Tree
Avicennia officinalis	Acanthaceae	Native	Common	Tree
Avicennia rumphiana	Acanthaceae	Native	Common	Tree
Axonopus compressus	Poaceae	Exotic	Naturalised	Herb
Bambusa multiplex	Poaceae	Exotic	Cultivated Only	Shrub
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub
Baphia nitida	Fabaceae	Exotic	Casual	Shrub
Barringtonia asiatica	Lecythidaceae	Native	Critically Endangered	Tree
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree
Bidens alba	Asteraceae	Exotic	Cultivated Only	Herb
Blechnopsis orientalis	Blechnaceae	Native	Common	Herb
Bougainvillea glabra	Nyctaginaceae	Exotic	Cultivated Only	Shrub
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree
Buchanania arborescens	Anacardiaceae	Native	Common	Tree
Calathea lutea	Marantaceae	Exotic	Cultivated Only	Herb
Callicarpa longifolia	Lamiaceae	Native	Endangered	Shrub
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree
Carallia suffruticosa	Rhizophoraceae	Exotic	Cultivated Only	Tree
Caryota mitis	Arecaceae	Native	Common	Tree
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree
Centella asiatica	Apiaceae	Native	Common	Herb
Centotheca lappacea	Poaceae	Native	Critically Endangered	Herb
Centrosema molle	Fabaceae	Exotic	Naturalised	Climber
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree
Champereia manillana	Opiliaceae	Native	Common	Tree
Christella dentata	Thelypteridaceae	Cryptogenic	-	Herb
Chrysopogon aciculatus	Poaceae	Native	Common	Herb
Cinnamomum iners	Lauraceae	Native	Common	Tree
Cissus hastata	Vitaceae	Cryptogenic	-	Climber
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree
Clausena excavata	Rutaceae	Native	Common	Shrub
Cleome rutidosperma	Cleomaceae	Exotic	Naturalised	Herb
Clerodendrum laevifolium	Lamiaceae	Native	Common	Tree

Species	Family	Origin	Status	Habit
Clidemia hirta	Melastomataceae	Exotic	Naturalised	Shrub
Coccinia grandis	Cucurbitaceae	Exotic	Naturalised	Climber
Coccoloba uvifera	Polygonaceae	Exotic	Cultivated Only	Tree
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree
Congea tomentosa	Lamiaceae	Exotic	Casual	Climber
Cordia cylindristachya	Boraginaceae	Exotic	Naturalised	Shrub
Cordia dichotoma	Boraginaceae	Native	Critically Endangered	Tree
Cordia sebestena	Boraginaceae	Exotic	Cultivated Only	Tree
Cordyline fruticosa	Asparagaceae	Exotic	Casual	Shrub
Costus woodsonii	Costaceae	Exotic	Cultivated Only	Herb
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree
Cratoxylum cochinchinense	Hypericaceae	Native	Endangered	Tree
Crinum asiaticum	Amaryllidaceae	Native	Critically Endangered	Herb
Cyanthillium cinereum	Asteraceae	Exotic	Not assessed	Herb
Cycas sp.	Cycadaceae	Exotic	Cultivated Only	Tree
Cyperus prolifer	Cyperaceae	Exotic	Not assessed	Shrub
Cyperus rotundus	Cyperaceae	Cryptogenic	-	Herb
Cyperus sphacelatus	Cyperaceae	Exotic	Naturalised	Herb
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree
Cyrtostachys renda	Arecaceae	Native	Presumed Extinct	Shrub
Dactyloctenium aegyptium	Poaceae	Native	Common	Herb
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber
Dalbergia rostrata	Fabaceae	Native	Common	Climber
Davallia denticulata	Davalliaceae	Native	Common	Epiphyte
Dendrobium crumenatum	Orchidaceae	Native	Common	Epiphyte
Dendrolobium umbellatum	Fabaceae	Native	Common	Tree
Dendrophthoe pentandra	Loranthaceae	Native	Common	Epiphyte
Derris trifoliata	Fabaceae	Native	Common	Climber
Desmodium heterophyllum	Fabaceae	Cryptogenic	-	Herb
Desmodium triflorum	Fabaceae	Cryptogenic	-	Herb
Dibridsonia conferta	Rubiaceae	Native	Endangered	Tree
Dicranopteris linearis	Gleicheniaceae	Native	Common	Climber
Dieffenbachia seguine var. *seguine*	Araceae	Exotic	Casual	Herb
Digitaria bicornis	Poaceae	Native	Common	Herb
Digitaria didactyla	Poaceae	Exotic	Naturalised	Herb
Digitaria longiflora	Poaceae	Native	Common	Herb
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree
Dillenia suffruticosa	Dilleniaceae	Native	Common	Shrub
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree
Dracaena cochinchinensis	Ruscaceae	Exotic	Cultivated Only	Shrub
Dracaena fragrans	Ruscaceae	Exotic	Casual	Shrub
Dracaena reflexa	Ruscaceae	Exotic	Cultivated Only	Shrub
Dracaena surculosa	Ruscaceae	Exotic	Cultivated Only	Shrub
Drymophloeus oliviformis	Arecaceae	Exotic	Cultivated Only	Tree
Drynaria quercifolia	Polypodiaceae	Native	Common	Epiphyte
Durio zibethinus	Malvaceae	Exotic	Casual	Tree
Dypsis leptocheilos	Arecaceae	Exotic	Cultivated Only	Tree
Dypsis lutescens	Arecaceae	Exotic	Cultivated Only	Shrub
Eclipta prostrata	Asteraceae	Exotic	Naturalised	Herb
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree
Elaeocarpus grandiflorus	Elaeocarpaceae	Exotic	Cultivated Only	Tree
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree
Eleocharis dulcis	Cyperaceae	Native	Common	Herb
Elephantopus scaber	Asteraceae	Cryptogenic	-	Herb
Eleusine indica	Poaceae	Exotic	Naturalised	Herb
Eleutheranthera ruderalis	Asteraceae	Exotic	Naturalised	Herb
Emilia sonchifolia	Asteraceae	Cryptogenic	-	Herb
Entada spiralis	Fabaceae	Native	Common	Climber
Epipremnum aureum	Araceae	Exotic	Casual	Climber
Erigeron bellioides	Asteraceae	Exotic	Naturalised	Herb
Erythrina fusca	Fabaceae	Exotic	Cultivated Only	Tree
Erythroxylum cuneatum	Erythroxylaceae	Native	Common	Tree
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree
Euterpe edulis	Arecaceae	Exotic	Cultivated Only	Tree
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree
Fibraurea tinctoria	Menispermaceae	Native	Common	Climber
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler

Species	Family	Origin	Status	Habit
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler
Ficus caulocarpa	Moraceae	Native	Common	Strangler
Ficus elastica	Moraceae	Exotic	Casual	Strangler
Ficus fistulosa	Moraceae	Native	Common	Tree
Ficus globosa	Moraceae	Native	Endangered	Shrub
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree
Ficus microcarpa	Moraceae	Native	Common	Strangler
Ficus punctata	Moraceae	Native	Common	Climber
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler
Ficus vasculosa	Moraceae	Native	Endangered	Tree
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree
Fimbristylis acuminata	Cyperaceae	Cryptogenic	-	Herb
Fimbristylis dichotoma	Cyperaceae	Cryptogenic	-	Herb
Flacourtia rukam	Salicaceae	Native	Vulnerable	Tree
Flemingia strobilifera	Fabaceae	Cryptogenic	-	Shrub
Galphimia glauca	Malpighiaceae	Exotic	Cultivated Only	Shrub
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree
Gardenia tubifera	Rubiaceae	Native	Presumed Extinct	Tree
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte
Guettarda speciosa	Rubiaceae	Native	Endangered	Tree
Guioa pleuropteris	Sapindaceae	Native	Vulnerable	Shrub
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree
Gustavia superba	Lecythidaceae	Exotic	Cultivated Only	Tree
Gynochthodes umbellata	Rubiaceae	Native	Common	Climber
Heliconia psittacorum	Heliconiaceae	Exotic	Casual	Herb
Heliconia rostrata	Heliconiaceae	Exotic	Cultivated Only	Shrub
Hemigraphis repanda	Acanthaceae	Exotic	Cultivated Only	Shrub
Heritiera littoralis	Malvaceae	Native	Endangered	Tree
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree
Hoya verticillata var. *verticillata*	Apocynaceae	Native	Common	Climber
Hydrocotyle sibthorpioides	Araliaceae	Native	Common	Herb
Hyophorbe lagenicaulis	Arecaceae	Exotic	Cultivated Only	Tree
Imperata cylindrica	Poaceae	Cryptogenic	-	Herb
Indorouchera griffithiana	Linaceae	Native	Common	Climber
Ipomoea cairica	Convolvulaceae	Exotic	Naturalised	Climber
Ipomoea grandifolia	Convolvulaceae	Exotic	Naturalised	Climber
Ipomoea pes-caprae	Convolvulaceae	Native	Common	Climber
Ischaemum muticum	Poaceae	Native	Common	Herb
Ixonanthes reticulata	Ixonanthaceae	Native	Common	Tree
Ixora chinensis	Rubiaceae	Exotic	Cultivated Only	Shrub
Ixora siamensis	Rubiaceae	Exotic	Not assessed	Shrub
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree
Knema globularia	Myristicaceae	Native	Critically Endangered	Tree
Kyllinga brevifolia	Cyperaceae	Cryptogenic	-	Herb
Kyllinga nemoralis	Cyperaceae	Cryptogenic	-	Herb
Kyllinga polyphylla	Cyperaceae	Exotic	Naturalised	Herb
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree
Lantana camara	Verbenaceae	Exotic	Naturalised	Shrub
Laportea interrupta	Urticaceae	Cryptogenic	-	Herb
Lasianthus hirsutus	Rubiaceae	Native	Critically Endangered	Shrub
Leea angulata	Vitaceae	Native	Critically Endangered	Tree
Legazpia polygonoides	Linderniaceae	Exotic	Not assessed	Herb
Lepironia articulata	Cyperaceae	Native	Presumed Extinct	Herb
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree
Leucaena leucocephala	Fabaceae	Exotic	Naturalised	Tree
Leucophyllum frutescens	Scrophulariaceae	Exotic	Cultivated Only	Shrub
Licania splendens	Chrysobalanaceae	Native	Common	Tree
Licuala spinosa	Arecaceae	Native	Vulnerable	Shrub
Lindernia antipoda	Linderniaceae	Cryptogenic	-	Herb
Lindernia crustacea	Linderniaceae	Cryptogenic	-	Herb
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber
Linostoma pauciflorum	Thymelaeaceae	Native	Endangered	Climber
Litsea elliptica	Lauraceae	Native	Common	Tree
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree
Livistona rotundifolia	Arecaceae	Exotic	Cultivated Only	Tree

Species	Family	Origin	Status	Habit
Lophanthera lactescens	Malpighiaceae	Exotic	Cultivated Only	Tree
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree
Lygodium flexuosum	Schizaeaceae	Native	Common	Climber
Lygodium japonicum	Schizaeaceae	Exotic	Naturalised	Climber
Lygodium longifolium	Schizaeaceae	Native	Vulnerable	Climber
Macaranga heynei	Euphorbiaceae	Native	Common	Tree
Mallotus paniculatus	Euphorbiaceae	Native	Common	Tree
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree
Manihot esculenta	Euphorbiaceae	Exotic	Naturalised	Shrub
Melaleuca cajuputi	Myrtaceae	Native	Presumed Extinct	Shrub
Melastoma malabathricum	Melastomataceae	Native	Common	Shrub
Melothria pendula	Cucurbitaceae	Exotic	Not assessed	Climber
Memecylon edule	Melastomataceae	Native	Endangered	Tree
Memecylon ovatum	Melastomataceae	Native	Endangered	Shrub
Mesua ferrea	Clusiaceae	Exotic	Cultivated Only	Tree
Microsorum punctatum	Polypodiaceae	Native	Common	Epiphyte
Microsorum scolopendria	Polypodiaceae	Native	Common	Epiphyte
Mikania micrantha	Asteraceae	Exotic	Naturalised	Climber
Mimosa pudica	Fabaceae	Exotic	Naturalised	Shrub
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree
Molineria capitulata	Poaceae	Native	Critically Endangered	Herb
Morinda citrifolia	Rubiaceae	Cryptogenic	-	Tree
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree
Murraya paniculata	Rutaceae	Exotic	Cultivated Only	Shrub
Musa cultivar	Musaceae	Exotic	Not assessed	Herb
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree
Nephrolepis biserrata	Oleandraceae	Cryptogenic	-	Herb
Neptunia plena	Fabaceae	Exotic	Naturalised	Shrub
Nymphoides indica	Menyanthaceae	Native	Endangered	Herb
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub
Ochna kirkii	Ochnaceae	Exotic	Cultivated Only	Shrub
Oldenlandia biflora	Rubiaceae	Cryptogenic	-	Herb
Oldenlandia corymbosa	Rubiaceae	Exotic	Naturalised	Herb
Olea brachiata	Oleaceae	Native	Vulnerable	Tree
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub
Ormocarpum cochinchinense	Fabaceae	Native	Presumed Extinct	Tree
Otacanthus caeruleus	Scrophulariaceae	Exotic	Cultivated Only	Herb
Ottochloa nodosa	Poaceae	Native	Common	Herb
Oxalis barrelieri	Oxalidaceae	Exotic	Naturalised	Herb
Oxalis corniculata	Oxalidaceae	Exotic	Naturalised	Herb
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber
Paederia foetida	Rubiaceae	Native	Common	Climber
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree
Pandanus amaryllifolius	Pandanaceae	Exotic	Casual	Shrub
Pandanus cultivar	Pandanaceae	Exotic	Not assessed	Shrub
Pandanus tectorius	Pandanaceae	Exotic	Cultivated Only	Shrub
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree
Passiflora foetida	Passifloraceae	Exotic	Naturalised	Climber
Passiflora laurifolia	Passifloraceae	Exotic	Naturalised	Climber
Passiflora suberosa	Passifloraceae	Exotic	Naturalised	Climber
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree
Pennisetum × advena 'Rubrum'	Poaceae	Exotic	Not assessed	Herb
Peperomia pellucida	Piperaceae	Exotic	Naturalised	Herb
Phanera kochiana	Fabaceae	Exotic	Cultivated Only	Climber
Philodendron erubescens	Araceae	Exotic	Cultivated Only	Climber
Phyllanthus urinaria	Phyllanthaceae	Exotic	Naturalised	Herb
Pilea microphylla	Urticaceae	Exotic	Naturalised	Climber
Piper sarmentosum	Piperaceae	Native	Common	Climber
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree
Pittosporum tobira	Pittosporaceae	Exotic	Cultivated Only	Tree
Pityrogramma calomelanos	Adiantaceae	Exotic	Naturalised	Herb
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree
Plectranthus monostachyus	Lamiaceae	Exotic	Not assessed	Herb
Pluchea indica	Asteraceae	Native	Common	Shrub
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree

Species	Family	Origin	Status	Habit
Podocarpus polystachyus	Podocarpaceae	Native	Critically Endangered	Tree
Podocarpus rumphii	Podocarpaceae	Exotic	Cultivated Only	Tree
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree
Pometia pinnata	Sapindaceae	Native	Endangered	Tree
Pongamia pinnata	Fabaceae	Native	Endangered	Tree
Premna serratifolia	Lamiaceae	Native	Vulnerable	Climber
Psilotum nudum	Psilotaceae	Native	Common	Epiphyte
Pteris ensiformis	Pteridaceae	Cryptogenic	-	Herb
Pteris multifida	Pteridaceae	Native	Common	Herb
Pteris vittata	Pteridaceae	Cryptogenic	-	Herb
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree
Pterospermum javanicum	Malvaceae	Native	Critically Endangered	Tree
Pterygota alata	Malvaceae	Exotic	Cultivated Only	Tree
Ptychosperma macarthurii	Arecaceae	Exotic	Naturalised	Tree
Pyrrosia longifolia	Polypodiaceae	Native	Common	Epiphyte
Pyrrosia piloselloides	Polypodiaceae	Native	Common	Epiphyte
Quisqualis indica	Combretaceae	Exotic	Casual	Climber
Rapanea porteriana	Myrsinaceae	Native	Vulnerable	Shrub
Ravenala madagascariensis	Strelitziaceae	Exotic	Cultivated Only	Tree
Rhapis excelsa	Arecaceae	Exotic	Cultivated Only	Shrub
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree
Rhodomyrtus tomentosa	Myrtaceae	Native	Common	Shrub
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree
Ruellia repens	Acanthaceae	Cryptogenic	-	Herb
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree
Saccharum sp.	Poaceae	Exotic	Not assessed	Herb
Salvinia molesta	Salviniaceae	Exotic	Naturalised	Herb
Samanea saman	Fabaceae	Exotic	Casual	Tree
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree
Sansevieria cylindrica	Asparagaceae	Exotic	Cultivated Only	Herb
Sauropus androgynus	Phyllanthaceae	Native	Common	Shrub
Scaevola taccada	Goodeniaceae	Native	Common	Shrub
Schefflera actinophylla	Araliaceae	Exotic	Casual	Tree
Schefflera arboricola	Araliaceae	Exotic	Cultivated Only	Shrub
Schefflera elliptica	Araliaceae	Native	Vulnerable	Epiphyte
Schumannianthus dichotomus	Marantaceae	Native	Critically Endangered	Shrub
Scleria ciliaris	Cyperaceae	Native	Common	Herb
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree
Sonneratia alba	Lythraceae	Native	Common	Tree
Sophora tomentosa	Fabaceae	Native	Critically Endangered	Tree
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree
Spermacoce exilis	Rubiaceae	Cryptogenic	-	Herb
Spermacoce latifolia	Rubiaceae	Exotic	Naturalised	Herb
Sphagneticola trilobata	Asteraceae	Exotic	Naturalised	Herb
Stenotaphrum secundatum	Poaceae	Exotic	Naturalised	Herb
Sterculia cordata	Malvaceae	Native	Critically Endangered	Tree
Sterculia foetida	Malvaceae	Exotic	Cultivated Only	Tree
Sterculia lanceolata var. *coccinea*	Malvaceae	Exotic	Cultivated Only	Tree
Sterculia parviflora	Malvaceae	Native	Critically Endangered	Tree
Streblus elongatus	Moraceae	Native	Vulnerable	Tree
Strobilanthes reptans	Acanthaceae	Exotic	Naturalised	Shrub
Suregada multiflora	Euphorbiaceae	Native	Critically Endangered	Shrub
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub
Synedrella nodiflora	Asteraceae	Exotic	Naturalised	Herb
Syngonium podophyllum	Araceae	Exotic	Naturalised	Climber
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree
Syzygium grande	Myrtaceae	Native	Common	Tree
Syzygium lineatum	Myrtaceae	Native	Common	Tree
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree
Taenitis blechnoides	Pteridaceae	Native	Common	Climber

Species	Family	Origin	Status	Habit
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree
Tamarindus indica	Fabaceae	Exotic	Casual	Tree
Tecoma stans	Bignoniaceae	Exotic	Cultivated Only	Tree
Terminalia brassii	Combretaceae	Exotic	Cultivated Only	Tree
Terminalia calamansanai	Combretaceae	Exotic	Cultivated Only	Tree
Terminalia catappa	Combretaceae	Native	Common	Tree
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree
Tetracera indica	Dilleniaceae	Native	Common	Climber
Thalia geniculata	Marantaceae	Exotic	Cultivated Only	Herb
Thunbergia fragrans	Acanthaceae	Exotic	Naturalised	Climber
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub
Trema tomentosa	Cannabaceae	Native	Common	Shrub
Triadica cochinchinensis	Euphorbiaceae	Native	Common	Tree
Tridax procumbens	Asteraceae	Exotic	Naturalised	Herb
Tristaniopsis whiteana	Myrtaceae	Native	Endangered	Tree
Typha angustifolia	Typhaceae	Exotic	Naturalised	Herb
Vernonia elaeagnifolia	Asteraceae	Exotic	Casual	Climber
Vitex pinnata	Lamiaceae	Native	Common	Tree
Vitex trifolia	Lamiaceae	Exotic	Casual	Shrub
Xylocarpus granatum	Meliaceae	Native	Common	Tree
Youngia japonica	Asteraceae	Exotic	Naturalised	Herb
Zoysia japonica	Poaceae	Exotic	Cultivated Only	Herb
Unknown tree x 3	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb
Unknown algae	-	-	-	Herb
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb
Halimeda sp.	Halimedaceae	Not assessed	-	Herb
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb
Padina sp.	Dictyotaceae	Not assessed	-	Herb
Sargassum sp.	Sargassaceae	Not assessed	-	Herb
Udotea sp.	Udoteaceae	Not assessed	-	Herb
Ulva sp.	Ulvaceae	Not assessed	-	Herb

Appendix E
List and Location of Flora Species of Conservation Significance

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Site	Species	Family	Origin	Status	Habit	Northing	Easting
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27779.02735	24865.82912
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27606.30987	25025.75459
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27761.77746	24886.30674
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27805.45496	24845.57418
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27857.64678	24800.50133
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27873.79098	24775.23813
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27901.21085	24749.08472
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	27944.0029	24707.57314
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	28068.73658	24606.855
Berlayer Creek	*Dalbergia junghunii*	Fabaceae	Native	Critically Endangered	Climber	28100.69363	24603.40532
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	27831.21914	24823.0934
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	27835.08933	24817.19494
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28023.07144	24629.6694
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28117.71948	24595.72635
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28133.64246	24597.17334
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28078.80185	24608.74709
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28179.30719	24599.39973
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28196.77792	24598.17572
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	28244.54652	24603.62961
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	27991.55417	24688.09752
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	27646.45097	25004.38684
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	27650.20464	25005.27722
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28225.59	24609.531
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28252.59	24611.059
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28215.826	24599.677
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28215.508	24600.483
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.5	24599.745
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.912	24600.537
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.605	24603.277
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28232.433	24603.388
Berlayer Creek	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28258.55	24608.974
Bukit Chermin	*Amphineuron opulentum*	Thelypteridaceae	Native	Endangered	Climber	27670.7692	25408.82399
Bukit Chermin	*Amphineuron opulentum*	Thelypteridaceae	Native	Endangered	Climber	27632.06822	25385.56351
Bukit Chermin	*Amphineuron opulentum*	Thelypteridaceae	Native	Endangered	Climber	27558.31467	25401.1438
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27634.7242	25246.00274
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27622.00583	25394.8007
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27668.44709	25413.60955
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27597.45811	25406.48619
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27703.38935	25345.38758
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27597.01676	25303.09544
Bukit Chermin	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27584.85334	25323.79574
Bukit Chermin	*Calophyllum tetrapterum*	Calophyllaceae	Native	Vulnerable	Tree	27567.93498	25368.53518
Bukit Chermin	*Calophyllum tetrapterum*	Calophyllaceae	Native	Vulnerable	Tree	27547.14718	25339.37634
Bukit Chermin	*Calophyllum tetrapterum*	Calophyllaceae	Native	Vulnerable	Tree	27569.655	25370.848
Bukit Chermin	*Centotheca lappacea*	Poaceae	Native	Critically Endangered	Herb	27593.92493	25284.95473
Bukit Chermin	*Centotheca lappacea*	Poaceae	Native	Critically Endangered	Herb	27549.02642	25397.35977
Bukit Chermin	*Centotheca lappacea*	Poaceae	Native	Critically Endangered	Herb	27614.70858	25319.23302
Bukit Chermin	*Centotheca lappacea*	Poaceae	Native	Critically Endangered	Herb	27598.23323	25287.62579
Bukit Chermin	*Dibridsonia conferta*	Rubiaceae	Native	Endangered	Tree	27534.65212	25350.50548
Bukit Chermin	*Dibridsonia conferta*	Rubiaceae	Native	Endangered	Tree	27560.52649	25366.08667
Bukit Chermin	*Dibridsonia conferta*	Rubiaceae	Native	Endangered	Tree	27546.37335	25317.67429
Bukit Chermin	*Dibridsonia conferta*	Rubiaceae	Native	Endangered	Tree	27546.5943	25339.04246
Bukit Chermin	*Dibridsonia conferta*	Rubiaceae	Native	Endangered	Tree	27543.38761	25341.82474
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27532.77221	25365.30737
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27532.55107	25363.97186
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27532.99347	25353.51036
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27527.02244	25352.50868
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27537.52707	25349.83775
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27544.60382	25353.84435
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27556.32511	25315.22595
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27567.49286	25348.39122
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27527.68589	25352.06351
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27529.095	25352.378
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27560.559	25305.065
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27588.713	25364.734
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27554.51	25350.733
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27557.741	25345.758
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27559.512	25346.301
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27546.251	25338.401
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27553.522	25311.568
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27536.009	25276.3
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27533.332	25292.819
Bukit Chermin	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27535	25297.096
Bukit Chermin	*Garcinia nigrolineata*	Clusiaceae	Native	Critically Endangered	Tree	27554.33428	25368.08988
Bukit Chermin	*Goniophlebium percussum*	Polypodiaceae	Native	Vulnerable	Epiphyte	27539.18613	25302.87232
Bukit Chermin	*Goniophlebium percussum*	Polypodiaceae	Native	Vulnerable	Epiphyte	27547.59008	25274.27021
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27599.00454	25223.85519
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27670.7692	25408.82399
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27547.25714	25406.59703
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27539.84873	25394.46608
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27530.11829	25379.21891

Site	Species	Family	Origin	Status	Habit	Northing	Easting
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27564.50715	25369.2029
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27579.87695	25380.10971
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27556.32511	25315.22595
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27548.14259	25313.89036
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27552.89774	25267.8153
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27565.72369	25346.05407
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27555.77226	25312.44363
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27545.82022	25345.60871
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27679.50534	25328.69348
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27650.75514	25410.71579
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27618.46743	25395.46842
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27538.19019	25385.78525
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27600.68	25366.648
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27585.212	25364.622
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27579.165	25361.768
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27570.121	25371.153
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27566.492	25371.543
Bukit Chermin	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27569.418	25374.286
Bukit Chermin	*Lasianthus hirsutus*	Rubiaceae	Native	Critically Endangered	Shrub	27538.41164	25352.50878
Bukit Chermin	*Lasianthus hirsutus*	Rubiaceae	Native	Critically Endangered	Shrub	27569.48303	25368.3126
Bukit Chermin	*Lasianthus hirsutus*	Rubiaceae	Native	Critically Endangered	Shrub	27560.41592	25364.86245
Bukit Chermin	*Lasianthus hirsutus*	Rubiaceae	Native	Critically Endangered	Shrub	27559.08916	25349.50407
Bukit Chermin	*Lasianthus hirsutus*	Rubiaceae	Native	Critically Endangered	Shrub	27547.03659	25340.93444
Bukit Chermin	*Lindsaea orbiculata*	Dennstaedtiaceae	Native	Presumed Extinct	Climber	27522.59989	25303.87379
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27541.06541	25356.07017
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27552.23375	25324.90836
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27547.58944	25343.71676
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27544.93569	25337.81823
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27534.54165	25338.48589
Bukit Chermin	*Linostoma pauciflorum*	Thymelaeaceae	Native	Endangered	Climber	27532.55107	25363.97186
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27524.3687	25345.60851
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27537.52707	25349.83775
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27541.06541	25356.07017
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27539.07544	25315.44837
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27552.23375	25324.90836
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27556.43558	25326.02132
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27561.41128	25344.60722
Bukit Chermin	*Lygodium longifolium*	Schizaeaceae	Native	Vulnerable	Climber	27544.93569	25337.81823
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27529.78688	25344.27305
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27541.83945	25353.51045
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27574.23772	25370.87238
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27538.30142	25315.00319
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27549.57997	25323.46153
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27551.23867	25314.78073
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27572.24754	25352.17521
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27545.7096	25351.06205
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27645.33638	25247.67223
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27599.00454	25223.85519
Bukit Chermin	*Memecylon edule*	Melastomataceae	Native	Endangered	Tree	27590.27369	25232.20204
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27579.87471	25229.41963
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27636.82287	25393.02015
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27542.83425	25395.24516
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27526.02709	25371.76228
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27532.55107	25363.97186
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27537.52707	25349.83775
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27541.50771	25356.18146
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27546.48352	25361.85743
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27555.77185	25357.5171
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27564.17543	25368.86902
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27612.93912	25347.39001
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27644.23194	25332.14323
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27699.51984	25280.28144
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27552.23375	25324.90836
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27556.32511	25315.22595
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27538.74403	25281.28156
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27552.89774	25267.8153
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27578.55043	25338.59758
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27603.20842	25360.85631
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27568.59868	25341.04593
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27559.97375	25350.61701
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27540.18051	25389.34663
Bukit Chermin	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	27527.02283	25310.21751
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27658.94206	25259.58066
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27648.20945	25259.13538
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27552.23341	25361.96877
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27555.77185	25357.5171
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27557.54136	25323.35031
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27544.05134	25311.10801
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27543.71993	25277.94283
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27555.55093	25332.36499
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27561.07986	25312.22109

Site	Species	Family	Origin	Status	Habit	Northing	Easting
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27559.08916	25349.50407
Bukit Chermin	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27557.6517	25348.8363
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27689.67524	25305.54474
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27635.60471	25246.00275
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27596.6874	25229.08592
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27536.86356	25356.18142
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27582.86273	25351.84143
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27619.35254	25339.71089
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27552.23375	25324.90836
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27551.23867	25314.78073
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27578.88203	25352.39786
Bukit Chermin	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27522.59989	25303.87379
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27687.1358	25302.65111
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27665.90188	25328.35948
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27637.93041	25306.87977
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27633.28714	25295.4166
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27622.45244	25309.99582
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27586.06579	25241.66187
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27666.34741	25266.81474
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27648.20945	25259.13538
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27645.33638	25247.67223
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27638.15347	25244.66726
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27622.45316	25234.76208
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27622.45316	25234.76208
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27599.00454	25223.85519
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27591.8215	25234.31662
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27590.27369	25232.20204
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27558.31467	25401.1438
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27558.31467	25401.1438
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27529.78688	25344.27305
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27534.65212	25350.50548
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27546.48352	25361.85743
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27554.33428	25368.08988
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27561.74272	25375.32396
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27579.87695	25380.10971
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27595.13641	25365.41923
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27625.32359	25338.04155
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27669.55352	25338.59842
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27540.73407	25314.55805
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27546.59447	25320.67919
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27548.58473	25330.58425
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27560.30577	25319.00993
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27538.96508	25292.29952
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27603.20842	25360.85631
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27570.25722	25349.39288
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27675.08229	25334.92582
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27672.98142	25329.80635
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27686.25013	25358.9651
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27617.25113	25392.46351
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27597.45811	25406.48619
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27703.38935	25345.38758
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27584.85334	25323.79574
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27722.359	25316.197
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27625.008	25386.561
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27530.994	25359.429
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27556.883	25281.73
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27625.645	25348.025
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27563.591	25375.019
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27564.208	25376.505
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27559.724	25374.556
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27555.694	25372.065
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27549.375	25351.66
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27533.999	25336.312
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27542.106	25343.201
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27545.095	25343.375
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.959	25339.237
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27559.943	25337.268
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.492	25307.667
Bukit Chermin	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.156	25275.453
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27558.31467	25401.1438
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27539.84873	25394.46608
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27530.11829	25379.21891
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27582.86273	25351.84143
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27699.51984	25280.28144
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27594.03117	25310.21814
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27666.962	25329.5
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27638.726	25307.462
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27593.148	25231.667
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27669.119	25352.49
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27657.471	25351.269
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.854	25372.444

Site	Species	Family	Origin	Status	Habit	Northing	Easting
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.342	25359.254
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27523.205	25315.206
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27609.604	25341.515
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27632.334	25355.008
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27601.834	25363.569
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27595.454	25364.129
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27560.477	25364.298
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.348	25342.472
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.605	25338.941
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.399	25339.384
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.665	25351.873
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27541.284	25351.099
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27544.793	25362.502
Bukit Chermin	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27561.848	25319.343
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27527.02244	25352.50868
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27526.69077	25346.165
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27582.86273	25351.84143
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27542.61383	25315.89358
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27595.91044	25364.5289
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27547.03659	25340.93444
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27600.3336	25347.16731
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27606.926	25361.06
Bukit Chermin	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27545.786	25362.688
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27596.6874	25229.08592
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27570.80999	25361.41248
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27530.8927	25337.15034
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27546.37335	25317.67429
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27559.64203	25350.50571
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27544.93569	25337.81823
Bukit Chermin	*Rourea fulgens*	Connaraceae	Native	Vulnerable	Climber	27534.54165	25338.48589
Bukit Chermin	*Sandoricum koetjape*	Meliaceae	Native	Endangered	Tree	27515.092	25288.161
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27532.99347	25353.51036
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27537.52707	25349.83775
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27511.65272	25332.03071
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27522.48902	25336.03734
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27526.35927	25321.56934
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27544.93569	25337.81823
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27617.25113	25392.46351
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27516.62857	25334.59048
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27691.669	25328.282
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27690.331	25331.229
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27682.451	25339.224
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27683.792	25364.799
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27675.576	25344.814
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27671.825	25342.306
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27627.9	25379.28
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27520.366	25315.655
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27522.392	25314.457
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27520.509	25311.939
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27521.805	25303.577
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27527.349	25345.401
Bukit Chermin	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27556.963	25288.642
Bukit Chermin	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27596.6874	25229.08592
Bukit Chermin	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27541.72903	25337.03915
Bukit Chermin	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27531.153	25344.526
Bukit Chermin	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27563.76	25343.936
Bukit Chermin	*Syzygium claviflorum* var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	27538.97	25352.557
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27632.06822	25385.56351
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27547.81006	25401.1437
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27530.11829	25379.21891
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27552.23341	25361.96877
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27526.35927	25321.56934
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27563.62281	25340.712
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27668.864	25349.745
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27670.694	25346.766
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27532.643	25359.224
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.897	25314.506
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.725	25310.972
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.324	25309.754
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27557.87	25273.428
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27560.286	25359.241
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27554.388	25352.491
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27545.487	25343.959
Bukit Chermin	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27562.016	25335.839
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27808.44048	25141.72339
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27814.18688	25137.16046
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27825.02152	25129.70397
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27823.69614	25132.37498
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27844.04025	25111.11833
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	28188.70959	24646.47648

Site	Species	Family	Origin	Status	Habit	Northing	Easting
Keppel Club	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	28200.76199	24707.13091
Keppel Club	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	28265.25	24851.67
Keppel Club	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	28279.4	24815.06
Keppel Club	*Ficus globosa*	Moraceae	Native	Endangered	Shrub	28050.48037	25257.24724
Keppel Club	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	28298.31	24760.86
Keppel Club	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	28091.172	25291.739
Keppel Club	*Neolitsea cassia*	Lauraceae	Native	Vulnerable	Tree	27848.68338	25134.15591
Keppel Club	*Neolitsea cassia*	Lauraceae	Native	Vulnerable	Tree	27852.66746	25127.92357
Keppel Club	*Olea brachiata*	Oleaceae	Native	Vulnerable	Tree	28193.02292	24711.35993
Keppel Club	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27975.41197	24809.51732
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27804.1194	25354.73707
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27800.47696	25365.30982
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27791.19013	25363.64035
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	28292.20624	24768.56529
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	28274.84572	24792.8268
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	28201.31796	24716.25689
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27953.84242	25020.63872
Keppel Club	*Oxyceros longiflorus*	Rubiaceae	Native	Vulnerable	Climber	27970.21014	25032.43589
Keppel Club	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27848.68338	25134.15591
Keppel Club	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27979.513	24890.215
Keppel Club	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27913.07	25009.43
Keppel Club	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27910.53	25015.69
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28282.28	24807.71
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28065.555	25559.862
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28059.889	25552.055
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28053.383	25551.862
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28047.626	25541.55
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27949.23	24837.1
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27877.59	25010.43
Keppel Club	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27728.86	25047.83
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27556.051	25011.312
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27559.851	25026.461
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27563.219	25023.552
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27561.592	25019.147
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27557.28	25022.046
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27548.89	25013.374
PSA Club	*Bridelia stipularis*	Phyllanthaceae	Native	Vulnerable	Shrub	27973.18902	25615.05147
Star Living	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	28244.00044	24543.42048
Three peacocks restaurant	*Ardisia elliptica*	Myrsinaceae	Native	Endangered	Tree	27465.32255	24868.60803
Marine	*Enhalus acoroides*	Hydrocharitaceae	Native	Vulnerable	Herb	27463.11252	25280.16792
Marine	*Halophila ovalis*	Hydrocharitaceae	Native	Vulnerable	Herb	-	-
Marine	Unknown seagrass	Cymodoceaceae	Native	Critically Endangered	Herb	-	-

Appendix F
List and Location of Large Specimens

Delivering a better world

Site	Species	Family	Origin	Status	Habit	Girth/ spread (m)	Height (m)	Northing	Easting
Berlayer Creek	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	4	10	28143.606	24598.389
Berlayer Creek	*Nypa fruticans*	Arecaceae	Native	Vulnerable	Shrub	3	7	27831.21914	24823.0934
Berlayer Creek	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4	10	28173.914	24629.643
Bukit Chermin	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	3	18	27637.22	25245.967
Bukit Chermin	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	3.9	25	27557.49	25320.098
Bukit Chermin	*Bambusa vulgaris*	Poaceae	Exotic	Casual	Shrub	12	15	27514.9701	25318.00788
Bukit Chermin	*Bambusa vulgaris*	Poaceae	Exotic	Casual	Shrub	12	15	27514.9701	25318.00788
Bukit Chermin	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	4.7	20	27614.646	25311.65
Bukit Chermin	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3	20	27599.523	25356.896
Bukit Chermin	cf. *Syzygium grande*	Myrtaceae	Native	Common	Tree	3	20	27579.738	25216.777
Bukit Chermin	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	6	20	27567.547	25292.395
Bukit Chermin	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	4	16	27641.823	25318.609
Bukit Chermin	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.5	25	27589.826	25316.985
Bukit Chermin	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	4	18	27707.113	25306.33
Bukit Chermin	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	10	20	27625.805	25243.064
Bukit Chermin	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	3	20	27678.853	25261.044
Bukit Chermin	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	4.2	18	27715.52	25319.757
Bukit Chermin	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4	22	27607.174	25228.625
Bukit Chermin	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.6	16	27575.984	25354.069
Bukit Chermin	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.2	13	27536.978	25304.769
Bukit Chermin	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	3	15	27697.785	25279.349
Bukit Chermin	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	3	15	27688.777	25270.485
Bukit Chermin	*Terminalia catappa*	Combretaceae	Native	Common	Tree	4.5	12	27507.149	25277.798
Former BP oil refinery site	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.1	8	27994.863	24498.675
Former BP oil refinery site	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.65	12	27782.209	24679.316
Former BP oil refinery site	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.4	12	27755.558	24700.008
Keppel Club	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	4	14	28182.793	24909.538
Keppel Club	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	3.1	13	28265.25	24851.67
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3	18	28121.98	25231.78
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.6	18	28121.13	25215.15
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.4	18	28187.5	24643.48
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.8	12	27844.963	25067.763
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3	15	27937.67	25082.85
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.4	15	27928.098	25077.799
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.2	15	27944.867	25079.254
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.3	15	27951.452	25082.504
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	4	17	27958.675	25084.076
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3	15	27972.411	25083.769
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	4	12	27991.593	25089.857
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	4.7	18	27881.864	25386.203
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.2	12	28018.33	25232.969
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.65	14	28024.784	25220.62
Keppel Club	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	3.2	16	28083.439	25302.501
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	7.5	12	28034.573	25205.693
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	3.2	11	28203.352	24735.171
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	3.9	14	28192.016	24863.345
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	3.1	12	28201.626	24856.97
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	3	8	28214.788	24828.777
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	4.9	6	28223.476	24774.014
Keppel Club	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	4.5	11	28122.216	24783.294
Keppel Club	*Dimocarpus longan*	Sapindaceae	Exotic	Casual	Tree	4.5	15	27945.382	25545.645
Keppel Club	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	3	9	27826.138	25133.846
Keppel Club	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	3	12	27858.945	25118.727
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.8	18	28168.62	24641.35
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.2	18	28168.62	24641.35
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.1	20	28135.93	24641.87
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3	18	27789.959	25320.88
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.6	20	28111.379	25526.856
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.1	16	28069.045	25487.876
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3	22	27967.639	24892.468
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	4	22	27969.577	24895.11
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.5	6	27996.93	24803.06
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3.2	18	27938.54	24865.83
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	4.4	18	27952.88	24821.32
Keppel Club	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	3.8	12	28289.24	24778.55
Keppel Club	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	4.2	12	28095.729	25111.996
Keppel Club	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	4	14	27936.046	25455.91
Keppel Club	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	3	12	28178.795	24927.025
Keppel Club	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	4	8	28001.078	24964.159
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	7	20	27791.126	25273.052
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	5	12	27801.19	25300.057
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	10	18	27923.575	25546.289
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	4	8	28087.655	25617.654
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	6	14	28106.665	25557.701
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	6	12	28105.897	25542.774
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	3	12	28050.023	25418.087
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	6	8	28062.7	24659.05
Keppel Club	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	7.2	13	28000.515	25577.783
Keppel Club	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	5.5	14	28106.249	25567.202
Keppel Club	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	4.7	14	28103.51	25028.111
Keppel Club	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	3.7	11	28096.172	25119.851
Keppel Club	*Parkia timoriana*	Fabaceae	Exotic	Cultivated Only	Tree	3.7	19	28205.158	24843.9
Keppel Club	*Parkia timoriana*	Fabaceae	Exotic	Cultivated Only	Tree	3	15	28185.64	24720.163
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3.2	15	27856.53378	25538.37003
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3	12	28036.369	25525.264
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3.3	10	28049.542	25264.252
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3	15	28186.322	24727.503
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3.5	15	27850.207	25539.464
Keppel Club	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	3.8	8	28246.56	24898.75
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4	20	27881.141	25761.2
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3	18	28091.53	25271.43
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.6	18	28096.85	25257.06
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.6	16	28230.61	24637.92
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.4	16	28199.14	24641.17
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.5	14	28144.77	24643.36
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.5	14	28143.13	24638.44
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	5.1	16	28115.14	24649.71

Site	Species	Family	Origin	Status	Habit	Girth/ spread (m)	Height (m)	Northing	Easting
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.3	15	28022.928	25165.144
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.2	17	28007.686	25175.134
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.6	18	27919.732	25250.773
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3	15	27903.831	25266.365
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.7	16	27904.725	25278.902
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.4	13	28105.054	24987.292
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.1	13	28143.927	24886.913
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.1	13	28151.843	24875.255
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3	14	28053.967	25362.65
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.2	14	28058.481	25350.166
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3	9	28001.913	25513.857
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.1	17	28168.525	24916.257
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3	12	28117.766	24833.292
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	5	18	27852.866	24993.97
Keppel Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	5.5	12	28063.07	24702.36
Keppel Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	4.6	11	28030.813	25521.018
Keppel Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.4	10	28020.369	25512.085
Keppel Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.3	9	28019.501	25506.285
Keppel Club	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	3.1	12	28059.889	25552.055
Keppel Club	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	3.6	13	28277.74	24834.42
Keppel Club	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	4.2	13	28298.73	24739.22
Keppel Club	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	3.5	9	28267.798	24671.328
Keppel Club	*Syzygium grande*	Myrtaceae	Native	Common	Tree	3.5	17	27856.726	25125.319
Keppel Club	*Syzygium grande*	Myrtaceae	Native	Common	Tree	3	18	27929.999	25238.217
Keppel Club	*Syzygium grande*	Myrtaceae	Native	Common	Tree	3	9	28082.279	25574.885
Keppel Club	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	3	10	27827.261	25559.337
Keppel Club	*Tamarindus indica*	Fabaceae	Exotic	Casual	Tree	5.3	9	28107.133	25044.334
Keppel Club	*Thyrsostachys siamensis*	Poaceae	Exotic	Casual	Shrub	5	10	27924.97628	25525.12683
Keppel Club	*Thyrsostachys siamensis*	Poaceae	Exotic	Casual	Shrub	2-3	6	27687.57794	25261.58419
Keppel Club	*Thyrsostachys siamensis*	Poaceae	Exotic	Casual	Shrub	15	6	27925.42125	25510.77011
Park	*Ficus benghalensis*	Moraceae	Exotic	Cultivated Only	Strangler	3	7	27413.124	24817.135
Park	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	3	12	27556.051	25011.312
Park	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3	15	27468.534	24963.734
PSA Club	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	3	12	27745.502	25327.183
PSA Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3	12	27745.738	25333.662
PSA Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	3.05	18	27876.377	25704.477
PSA Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	4	17	27759.469	25355.851
PSA Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.65	18	27881.957	25674.896
PSA Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.2	18	27868.238	25734.097
PSA Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.8	18	27870.92	25723.582
PSA Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	4.3	18	27871.187	25714.506
PSA Club	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	3.3	18	27875.808	25694.456
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.05	15	27975.688	25759.219
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.2	15	27963.672	25761.807
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.5	15	27901.47	25752.824
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3	14	27883.024	25609.787
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3.1	16	27932.365	25554.045
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3	15	27937.258	25555.963
PSA Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	3	15	27977.18	25589.155
PSA Club	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	3.1	12	27758.964	25376.145
PSA Club	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	3	12	27753.145	25346.283
PSA Club	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	3.1	13	27773.054	25399.453
Three peacocks restarant	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	4.4	18	27437.469	24895.971

Appendix G
List and Location of Other Specimens of Value

Delivering a better world

Site	Species	Family	Origin	Status	Habit	Girth/ spread (m)	Height (m)	Northing	Easting
Berlayer Creek	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	2.5	10	28261.2477	24625.99955
Former BP oil refinery site	*Licuala spinosa*	Arecaceae	Native	Vulnerable	Shrub	-	-	27675.30731	24945.17954
Keppel Club	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	2.5	13	27891.47766	25288.74148
Keppel Club	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	3	22	27967.639	24892.468
Keppel Club	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	2.2	9	28033.89707	25519.00668
Keppel Club	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	3.2	15	27856.53378	25538.37003
Keppel Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	1.7	8	27669.827	25129.478
Keppel Club	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	2.7	6	27651.562	25141.646
Keppel Club	*Thyrsostachys siamensis*	Poaceae	Exotic	Casual	Shrub	2	8	27811.42302	25130.14901
Keppel Club	*Thyrsostachys siamensis*	Poaceae	Exotic	Casual	Shrub	5	10	27924.97628	25525.12683

Appendix H
List and Location of All Tree Specimens

Delivering a better world

Site	Date	Tag ID	Species	Family	Origin	Status	Habit	Northing (DGPS)	Easting (DGPS)	Girth/ spread (m)	Height (m)
Bukit Chermin	2021-02-08	BC0001	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27707.113	25306.33	4	18
Bukit Chermin	2021-02-08	BC0002	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27693.055	25300.283	1.1	16
Bukit Chermin	2021-02-08	BC0003	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27670.987	25317.984	2.1	16
Bukit Chermin	2021-02-08	BC0004	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27672.013	25302.351	1.8	16
Bukit Chermin	2021-02-08	BC0005	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27666.962	25329.5	2	15
Bukit Chermin	2021-02-08	BC0006	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27653.025	25331.678	2.1	20
Bukit Chermin	2021-02-08	BC0007	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27657.168	25327.684	1.7	10
Bukit Chermin	2021-02-08	BC0008	*Litsea elliptica*	Lauraceae	Native	Common	Tree	27640.458	25318.011	1.4	20
Bukit Chermin	2021-02-08	BC0009	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27641.823	25318.609	4	16
Bukit Chermin	2021-02-08	BC0010	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27638.726	25307.462	1.4	16
Bukit Chermin	2021-02-08	BC0011	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27636.141	25297.207	1.6	18
Bukit Chermin	2021-02-08	BC0012	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27635.361	25301.621	1.5	15
Bukit Chermin	2021-02-08	BC0013	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27625.132	25306.642	1	14
Bukit Chermin	2021-02-08	BC0014	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27619.598	25300.288	1	14
Bukit Chermin	2021-02-08	BC0015	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27617.172	25300.341	1.1	16
Bukit Chermin	2021-02-08	BC0016	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27612.937	25300.709	1.4	16
Bukit Chermin	2021-02-08	BC0017	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27619.224	25309.336	1.7	7
Bukit Chermin	2021-02-08	BC0018	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27614.646	25311.65	4.7	20
Bukit Chermin	2021-02-08	BC0019	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27616.306	25313.52	1.8	18
Bukit Chermin	2021-02-08	BC0020	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27614.954	25321.747	1.8	15
Bukit Chermin	2021-02-08	BC0021	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27607.527	25312.47	1.5	14
Bukit Chermin	2021-02-08	BC0022	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27609.925	25310.319	1	14
Bukit Chermin	2021-02-08	BC0023	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27608.355	25305.168	1.1	12
Bukit Chermin	2021-02-08	BC0024	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27606.745	25299.04	1.1	12
Bukit Chermin	2021-02-08	BC0025	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27606.469	25302.908	2	6
Bukit Chermin	2021-02-08	BC0026	*Plumeria rubra*	Apocynaceae	Exotic	Cultivated Only	Tree	27605.366	25294.022	1.8	8
Bukit Chermin	2021-02-08	BC0027	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27607.99	25285.036	1.5	15
Bukit Chermin	2021-02-08	BC0028	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27605.338	25284.685	1.5	15
Bukit Chermin	2021-02-08	BC0029	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27601.079	25286.946	1	15
Bukit Chermin	2021-02-08	BC0030	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27597.372	25288.237	1.2	17
Bukit Chermin	2021-02-08	BC0031	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27594.697	25283.306	1.6	15
Bukit Chermin	2021-02-08	BC0032	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27592.677	25285.026	1.6	15
Bukit Chermin	2021-02-08	BC0033	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27588.503	25287.072	1.2	15
Bukit Chermin	2021-02-08	BC0034	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27591.911	25287.694	1.7	10
Bukit Chermin	2021-02-08	BC0035	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27601.036	25281.096	1.8	10
Bukit Chermin	2021-02-08	BC0036	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27598.622	25275.371	1.1	15
Bukit Chermin	2021-02-08	BC0037	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27589.456	25295.81	2	10
Bukit Chermin	2021-02-08	BC0038	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27580.538	25296.921	2	10
Bukit Chermin	2021-02-08	BC0039	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27587.603	25297.032	2	10
Bukit Chermin	2021-02-08	BC0040	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27584.425	25301.145	1	4
Bukit Chermin	2021-02-08	BC0041	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27577.562	25295.81	2	10
Bukit Chermin	2021-02-08	BC0042	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27567.547	25292.395	6	20
Bukit Chermin	2021-02-08	BC0043	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	27567.791	25245.517	1.3	10
Bukit Chermin	2021-02-08	BC0044	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27559.081	25257.109	1.8	10
Bukit Chermin	2021-02-08	BC0045	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27583.381	25245.377	1	12
Bukit Chermin	2021-02-08	BC0046	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27605.226	25246.682	2.2	10

Bukit Chermin	2021-02-08	BC0047	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27601.697	25246.756	2.2	10
Bukit Chermin	2021-02-08	BC0048	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27637.15	25260.138	1.3	18
Bukit Chermin	2021-02-08	BC0049	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27645.677	25270.378	1.5	10
Bukit Chermin	2021-02-09	BC0050	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27704.065	25279.635	1.5	15
Bukit Chermin	2021-02-09	BC0051	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27697.785	25279.349	3	15
Bukit Chermin	2021-02-09	BC0052	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27688.777	25270.485	3	15
Bukit Chermin	2021-02-09	BC0053	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	27686.002	25266.92	1.8	20
Bukit Chermin	2021-02-09	BC0054	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27678.853	25261.044	3	20
Bukit Chermin	2021-02-09	BC0055	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27675.897	25266.711	2	18
Bukit Chermin	2021-02-09	BC0056	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27672.917	25264.883	1	17
Bukit Chermin	2021-02-09	BC0057	Unknown	-	-	-	-	27669.376	25261.976	1.4	12
Bukit Chermin	2021-02-09	BC0058	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	27660.159	25259.91	1.2	14
Bukit Chermin	2021-02-09	BC0059	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27662.989	25259.356	2	20
Bukit Chermin	2021-02-09	BC0060	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27660.078	25255.813	1	17
Bukit Chermin	2021-02-09	BC0061	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27661.192	25255.525	1.5	14
Bukit Chermin	2021-02-09	BC0062	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27660.456	25254.022	1.4	16
Bukit Chermin	2021-02-09	BC0063	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27654.177	25250.214	1	14
Bukit Chermin	2021-02-09	BC0064	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27651.347	25250.009	1.3	17
Bukit Chermin	2021-02-09	BC0065	*Rhodamnia cinerea*	Myrtaceae	Native	Common	Tree	27648.944	25246.145	1.3	6
Bukit Chermin	2021-02-09	BC0066	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27647.329	25246.381	1.1	14
Bukit Chermin	2021-02-09	BC0067	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27645.812	25246.06	1	14
Bukit Chermin	2021-02-09	BC0068	*Nephelium lappaceum*	Sapindaceae	Native	Critically Endangered	Tree	27641.062	25246.95	1.1	12
Bukit Chermin	2021-02-09	BC0069	*Hevea brasiliensis*	Euphorbiaceae	Exotic	Naturalised	Tree	27639.995	25245.541	1.7	18
Bukit Chermin	2021-02-09	BC0070	*Hevea brasiliensis*	Euphorbiaceae	Exotic	Naturalised	Tree	27637.774	25251.896	1	18
Bukit Chermin	2021-02-09	BC0071	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27637.22	25245.967	3	18
Bukit Chermin	2021-02-09	BC0072	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27625.805	25243.064	10	20
Bukit Chermin	2021-02-09	BC0073	*Hevea brasiliensis*	Euphorbiaceae	Exotic	Naturalised	Tree	27626.111	25232.119	1.8	20
Bukit Chermin	2021-02-09	BC0074	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27614.098	25234.332	1.7	20
Bukit Chermin	2021-02-09	BC0075	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	27614.858	25235.712	1	14
Bukit Chermin	2021-02-09	BC0076	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27611.76	25235.747	1.7	16
Bukit Chermin	2021-02-09	BC0077	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27607.174	25228.625	4	22
Bukit Chermin	2021-02-09	BC0078	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27598.123	25236.253	1	15
Bukit Chermin	2021-02-09	BC0079	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27590.058	25234.339	1.7	16
Bukit Chermin	2021-02-09	BC0080	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27590.841	25231.966	1.5	14
Bukit Chermin	2021-02-09	BC0081	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27593.148	25231.667	1.4	16
Bukit Chermin	2021-02-09	BC0081A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27594.791	25231.871	1	12
Bukit Chermin	2021-02-09	BC0082	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27581.575	25232.341	1.7	20
Bukit Chermin	2021-02-09	BC0083	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27584.997	25230.522	1.2	20
Bukit Chermin	2021-02-09	BC0083A	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27581.155	25215.924	2.8	20
Bukit Chermin	2021-02-09	BC0083B	cf. *Syzygium grande*	Myrtaceae	Native	Common	Tree	27579.738	25216.777	3	20
Bukit Chermin	2021-02-09	BC0083C	Unknown	-	-	-	-	27583.501	25217.014	2.8	20
Bukit Chermin	2021-02-10	BC0084	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27719.162	25316.071	1.1	15
Bukit Chermin	2021-02-10	BC0085	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27722.359	25316.197	1	11
Bukit Chermin	2021-02-10	BC0086	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27715.52	25319.757	4.2	18
Bukit Chermin	2021-02-10	BC0087	*Elaeocarpus pedunculatus*	Elaeocarpaceae	Native	Common	Tree	27705.118	25324.095	1.8	13
Bukit Chermin	2021-02-10	BC0088	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27703.601	25324.701	1.4	16
Bukit Chermin	2021-02-10	BC0089	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27692.99	25327.167	1	5
Bukit Chermin	2021-02-10	BC0090	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27688.899	25327.12	1.6	16
Bukit Chermin	2021-02-10	BC0091	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27691.669	25328.282	0.45	8

Bukit Chermin	2021-02-10	BC0092	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27690.331	25331.229	1.3	16
Bukit Chermin	2021-02-10	BC0093	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27681.934	25334.019	1.1	8
Bukit Chermin	2021-02-10	BC0094	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27682.451	25339.224	0.7	6
Bukit Chermin	2021-02-10	BC0095	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27681.344	25343.53	1.4	6
Bukit Chermin	2021-02-10	BC0096	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27683.792	25364.799	0.5	11
Bukit Chermin	2021-02-10	BC0097	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27701.166	25404.134	1	13
Bukit Chermin	2021-02-10	BC0098	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27675.576	25344.814	0.4	8
Bukit Chermin	2021-02-10	BC0099	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27668.864	25349.745	1	11
Bukit Chermin	2021-02-10	BC0100	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27670.694	25346.766	0.6	14
Bukit Chermin	2021-02-10	BC0101	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27667.578	25341.645	1	15
Bukit Chermin	2021-02-10	BC0102	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27671.825	25342.306	0.5	10
Bukit Chermin	2021-02-10	BC0103	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27673.24	25351.541	2.9	22
Bukit Chermin	2021-02-10	BC0104	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27669.119	25352.49	0.3	8
Bukit Chermin	2021-02-10	BC0105	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27661.452	25353.489	1	12
Bukit Chermin	2021-02-10	BC0106	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27657.471	25351.269	0.3	7
Bukit Chermin	2021-02-10	BC0107	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27658.193	25359.071	1.7	10
Bukit Chermin	2021-02-10	BC0108	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27625.008	25386.561	0.8	14
Bukit Chermin	2021-02-10	BC0109	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27627.9	25379.28	0.4	10
Bukit Chermin	2021-02-10	BC0110	*Ixonanthes reticulata*	Ixonanthaceae	Native	Common	Tree	27622.439	25377.416	1.35	15
Berlayer Creek	2021-03-04	BC01101	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28108.023	24629.91	0.55	7
Berlayer Creek	2021-03-04	BC01102	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28107.782	24625.8	0.55	8
Berlayer Creek	2021-03-04	BC01103	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28097.102	24629.33	0.6	12
Berlayer Creek	2021-03-04	BC01104	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28093.146	24630.063	1	14
Berlayer Creek	2021-03-04	BC01105	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28070.012	24628.615	0.4	8
Berlayer Creek	2021-03-04	BC01106	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28074.48	24627.138	0.9	12
Berlayer Creek	2021-03-04	BC01107	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28069.309	24626.501	0.9	12
Berlayer Creek	2021-03-04	BC01108	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28067.506	24628.333	0.7	10
Berlayer Creek	2021-03-04	BC01109	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28065.563	24629.597	0.6	10
Bukit Chermin	2021-02-10	BC0111	*Ixonanthes reticulata*	Ixonanthaceae	Native	Common	Tree	27623.046	25374.244	1	15
Berlayer Creek	2021-03-04	BC01110	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28063.519	24629.536	0.6	10
Berlayer Creek	2021-03-04	BC01111	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28066.391	24633.936	0.4	7
Berlayer Creek	2021-03-04	BC01112	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28063.443	24632.817	0.8	10
Berlayer Creek	2021-03-04	BC01113	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28061.741	24632.169	0.8	12
Berlayer Creek	2021-03-04	BC01114	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28060.992	24632.752	0.5	10
Berlayer Creek	2021-03-04	BC01115	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28065.406	24634.76	0.75	12
Berlayer Creek	2021-03-04	BC01116	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28060.494	24637.946	0.6	10
Berlayer Creek	2021-03-04	BC01117	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28062.403	24637.376	0.8	12
Berlayer Creek	2021-03-04	BC01118	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28061.491	24637.745	0.4	7
Berlayer Creek	2021-03-04	BC01119	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28057.86	24636.297	0.7	12
Bukit Chermin	2021-02-10	BC0112	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27615.879	25383.035	2	20
Berlayer Creek	2021-03-04	BC01120	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28056.499	24635.949	0.3	5
Berlayer Creek	2021-03-04	BC01121	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28056.443	24634.748	0.8	12
Berlayer Creek	2021-03-04	BC01122	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28056.548	24632.266	0.8	10
Bukit Chermin	2021-02-10	BC0113	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27615.928	25389.771	2.4	18
Bukit Chermin	2021-02-10	BC0114	*Elaeocarpus pedunculatus*	Elaeocarpaceae	Native	Common	Tree	27613.736	25392.132	1.2	12
Bukit Chermin	2021-02-10	BC0115	*Elaeocarpus pedunculatus*	Elaeocarpaceae	Native	Common	Tree	27564.071	25382.62	1.5	8
Bukit Chermin	2021-02-10	BC0116	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27557.352	25389.064	2	10
Bukit Chermin	2021-02-10	BC0117	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.854	25372.444	0.3	5
Bukit Chermin	2021-02-10	BC0118	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27532.643	25359.224	0.5	4

Bukit Chermin	2021-02-10	BC0118A	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.342	25359.254	0.5	4
Bukit Chermin	2021-02-10	BC0119	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27530.994	25359.429	1	15
Bukit Chermin	2021-02-10	BC0120	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27529.095	25352.378	0.5	6
Bukit Chermin	2021-02-10	BC0121	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27524.855	25342.957	1.5	13
Bukit Chermin	2021-02-10	BC0122	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27522.834	25337.118	1.6	15
Bukit Chermin	2021-02-10	BC0123	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27707.321	25326.685	1	8
Bukit Chermin	2021-02-10	BC0124	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27706.681	25329.919	1.6	12
Bukit Chermin	2021-02-18	BC0125	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27520.366	25315.655	0.7	5
Bukit Chermin	2021-02-18	BC0126	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27523.205	25315.206	0.5	4
Bukit Chermin	2021-02-18	BC0127	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.897	25314.506	0.4	2
Bukit Chermin	2021-02-18	BC0127A	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27522.392	25314.457	0.4	6
Bukit Chermin	2021-02-18	BC0128	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27520.509	25311.939	1.4	3
Bukit Chermin	2021-02-18	BC0128A	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.725	25310.972	0.5	5
Bukit Chermin	2021-02-18	BC0128B	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27521.324	25309.754	0.4	4
Bukit Chermin	2021-02-18	BC0129	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27521.805	25303.577	0.5	7
Bukit Chermin	2021-02-18	BC0130	*Sandoricum koetjape*	Meliaceae	Native	Endangered	Tree	27515.092	25288.161	1.2	8
Bukit Chermin	2021-02-18	BC0131	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27507.149	25277.798	4.5	12
Bukit Chermin	2021-02-18	BC0131A	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27514.968	25274.815	1.8	14
Bukit Chermin	2021-02-18	BC0131B	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27512.568	25274.395	1.7	15
Bukit Chermin	2021-02-18	BC0131C	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27518.901	25275.963	1.5	12
Bukit Chermin	2021-02-18	BC0132	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27527.349	25345.401	0.4	10
Bukit Chermin	2021-02-18	BC0133	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27594.464	25302.85	1.4	9
Bukit Chermin	2021-02-18	BC0134	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27594.776	25312.888	1	6
Bukit Chermin	2021-02-18	BC0135	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27589.826	25316.985	3.5	25
Bukit Chermin	2021-02-18	BC0136	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27586.536	25327.583	1.7	19
Bukit Chermin	2021-02-18	BC0137	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	27584.315	25337.439	1.5	16
Bukit Chermin	2021-02-18	BC0138	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27578.074	25319.414	1.4	7
Bukit Chermin	2021-02-18	BC0139	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27562.494	25280.933	2.2	20
Bukit Chermin	2021-02-18	BC0140	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27557.87	25273.428	0.4	8
Bukit Chermin	2021-02-18	BC0141	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27554.234	25278.02	1.3	14
Bukit Chermin	2021-02-18	BC0142	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27553.192	25279.975	1.3	11
Bukit Chermin	2021-02-18	BC0143	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27556.883	25281.73	0.6	12
Bukit Chermin	2021-02-18	BC0144	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27558.09	25289.11	1.2	10
Bukit Chermin	2021-02-18	BC0145	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27556.584	25293.28	1	10
Bukit Chermin	2021-02-18	BC0146	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27557.634	25290.445	1.2	8
Bukit Chermin	2021-02-18	BC0147	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27561.065	25301.071	1.1	16
Bukit Chermin	2021-02-18	BC0148	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27560.559	25305.065	0.5	12
Bukit Chermin	2021-02-18	BC0149	Unknown	-	-	-	-	27570.281	25327.514	2.7	10
Bukit Chermin	2021-02-18	BC0150	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27575.984	25354.069	4.6	16
Bukit Chermin	2021-02-18	BC0151	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27607.091	25342.93	1	15
Bukit Chermin	2021-02-18	BC0152	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27609.604	25341.515	1.1	11
Bukit Chermin	2021-02-18	BC0153	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27637.345	25335.36	1.8	15
Bukit Chermin	2021-02-18	BC0154	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27638.918	25335.3	2.1	15
Bukit Chermin	2021-02-18	BC0155	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27632.547	25344.004	1.5	12
Bukit Chermin	2021-02-18	BC0155A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27635.149	25343.999	1	9
Bukit Chermin	2021-02-18	BC0156	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27643.932	25349.628	1	8
Bukit Chermin	2021-02-18	BC0156A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27642.069	25341.834	1	9
Bukit Chermin	2021-02-18	BC0156B	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27644.897	25334.793	1.4	12
Bukit Chermin	2021-02-18	BC0157	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27632.334	25355.008	0.6	6

Bukit Chermin	2021-02-18	BC0158	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27624.672	25343.314	2	18
Bukit Chermin	2021-02-18	BC0159	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27625.645	25348.025	0.5	7
Bukit Chermin	2021-02-18	BC0160	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27618.513	25341.349	2.1	18
Bukit Chermin	2021-02-18	BC0161	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27613.806	25346.038	2.4	17
Bukit Chermin	2021-02-18	BC0162	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27610.277	25348.931	2.7	18
Bukit Chermin	2021-02-18	BC0163	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27608.477	25351.465	2.7	20
Bukit Chermin	2021-02-18	BC0164	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27606.821	25352.984	2.7	20
Bukit Chermin	2021-02-18	BC0165	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27603.3	25353.437	1.3	18
Bukit Chermin	2021-02-18	BC0166	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27599.523	25356.896	3	20
Bukit Chermin	2021-02-18	BC0167	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27595.764	25358.63	1.8	15
Bukit Chermin	2021-02-18	BC0168	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27601.834	25363.569	0.65	8
Bukit Chermin	2021-02-18	BC0169	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27595.454	25364.129	0.5	8
Bukit Chermin	2021-02-18	BC0170	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27604.305	25358.781	1	10
Bukit Chermin	2021-02-18	BC0171	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27606.926	25361.06	0.4	6
Bukit Chermin	2021-02-18	BC0172	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27600.68	25366.648	0.3	6
Bukit Chermin	2021-02-18	BC0173	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27588.713	25364.734	0.7	8
Bukit Chermin	2021-02-18	BC0174	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27585.41	25363.302	2.1	12
Bukit Chermin	2021-02-18	BC0175	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27585.212	25364.622	0.35	8
Bukit Chermin	2021-02-18	BC0176	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27579.165	25361.768	0.4	5
Bukit Chermin	2021-02-18	BC0177	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27570.121	25371.153	0.45	7
Bukit Chermin	2021-02-18	BC0178	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27566.492	25371.543	0.35	7
Bukit Chermin	2021-02-18	BC0179	*Calophyllum tetrapterum*	Calophyllaceae	Native	Vulnerable	Tree	27569.655	25370.848	0.35	6
Bukit Chermin	2021-02-18	BC0180	*Guioa pubescens*	Sapindaceae	Native	Vulnerable	Tree	27569.418	25374.286	0.2	7
Bukit Chermin	2021-02-18	BC0181	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27563.591	25375.019	1.5	18
Bukit Chermin	2021-02-18	BC0182	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27564.208	25376.505	1.8	18
Bukit Chermin	2021-02-18	BC0183	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27559.724	25374.556	2.6	18
Bukit Chermin	2021-02-18	BC0183	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27559.724	25374.556	2.6	18
Bukit Chermin	2021-02-18	BC0183A	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27558.077	25376.07	1.2	13
Bukit Chermin	2021-02-18	BC0184	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27555.694	25372.065	1.6	16
Bukit Chermin	2021-02-18	BC0185	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27560.477	25364.298	0.8	11
Bukit Chermin	2021-02-18	BC0186	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27560.207	25358.329	2.7	17
Bukit Chermin	2021-02-18	BC0187	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27560.286	25359.241	1.3	16
Bukit Chermin	2021-02-18	BC0188	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27554.388	25352.491	0.5	5
Bukit Chermin	2021-02-18	BC0189	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27554.51	25350.733	0.6	8
Bukit Chermin	2021-02-18	BC0190	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27557.741	25345.758	0.3	9
Bukit Chermin	2021-02-18	BC0191	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27559.512	25346.301	0.8	16
Bukit Chermin	2021-02-18	BC0192	*Elaeocarpus pedunculatus*	Elaeocarpaceae	Native	Common	Tree	27551.315	25348.547	1	13
Bukit Chermin	2021-02-18	BC0193	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27549.375	25351.66	0.4	6
Bukit Chermin	2021-02-22	BC0194	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27531.153	25344.526	0.6	9
Bukit Chermin	2021-02-22	BC0195	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27535.348	25342.472	1.35	9
Bukit Chermin	2021-02-22	BC0196	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27533.392	25336.777	1.2	13
Bukit Chermin	2021-02-22	BC0197	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27533.999	25336.312	0.7	12
Bukit Chermin	2021-02-22	BC0198	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.605	25338.941	0.8	15
Bukit Chermin	2021-02-22	BC0199	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.399	25339.384	0.6	10
Bukit Chermin	2021-02-22	BC0200	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27542.106	25343.201	0.8	12
Bukit Chermin	2021-02-22	BC0201	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27545.095	25343.375	0.6	12
Bukit Chermin	2021-02-22	BC0202	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27542.187	25340.626	1.1	12
Bukit Chermin	2021-02-22	BC0203	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.959	25339.237	0.5	10
Bukit Chermin	2021-02-22	BC0204	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27546.251	25338.401	1	7

Bukit Chermin	2021-02-22	BC0205	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27545.487	25343.959	0.8	15
Bukit Chermin	2021-02-22	BC0206	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27537.665	25351.873	0.5	5
Bukit Chermin	2021-02-22	BC0207	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27541.977	25351.787	1	11
Bukit Chermin	2021-02-22	BC0208	*Syzygium claviflorum* var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	27538.97	25352.557	0.8	10
Bukit Chermin	2021-02-22	BC0209	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27543.961	25354.151	1	15
Bukit Chermin	2021-02-22	BC0210	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27541.284	25351.099	1	13
Bukit Chermin	2021-02-22	BC0211	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27543.346	25357.43	1.2	16
Bukit Chermin	2021-02-22	BC0212	*Rapanea porteriana*	Myrsinaceae	Native	Vulnerable	Shrub	27545.786	25362.688	1.2	8
Bukit Chermin	2021-02-22	BC0213	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27544.793	25362.502	1.2	8
Bukit Chermin	2021-02-22	BC0213A	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27537.433	25366.839	1	8
Bukit Chermin	2021-02-22	BC0214	*Symplocos adenophylla*	Symplocaceae	Native	Endangered	Shrub	27563.76	25343.936	0.45	7
Bukit Chermin	2021-02-22	BC0215	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27572.043	25347.324	1.5	10
Bukit Chermin	2021-02-22	BC0216	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27562.14	25335.236	1.5	10
Bukit Chermin	2021-02-22	BC0217	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27562.016	25335.839	0.5	8
Bukit Chermin	2021-02-22	BC0218	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27559.943	25337.268	0.5	12
Bukit Chermin	2021-02-22	BC0219	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27561.848	25319.343	0.6	10
Bukit Chermin	2021-02-22	BC0220	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27557.49	25320.098	3.9	25
Bukit Chermin	2021-02-22	BC0221	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27553.522	25311.568	0.3	8
Bukit Chermin	2021-02-22	BC0222	*Litsea elliptica*	Lauraceae	Native	Common	Tree	27551.418	25315.164	1	16
Bukit Chermin	2021-02-22	BC0222A	*Litsea elliptica*	Lauraceae	Native	Common	Tree	27541.956	25313.327	1.5	12
Bukit Chermin	2021-02-22	BC0223	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27550.673	25307.093	1.1	8
Bukit Chermin	2021-02-22	BC0224	*Arthrophyllum diversifolium*	Araliaceae	Native	Common	Tree	27545.789	25306.948	1.3	9
Bukit Chermin	2021-02-22	BC0225	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27536.978	25304.769	4.2	13
Bukit Chermin	2021-02-22	BC0226	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.492	25307.667	0.3	5
Bukit Chermin	2021-02-22	BC0227	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27556.963	25288.642	0.3	10
Bukit Chermin	2021-02-22	BC0228	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27553.177	25285.717	1.5	5
Bukit Chermin	2021-02-22	BC0229	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27552.436	25279.522	1.1	10
Bukit Chermin	2021-02-22	BC0230	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27544.359	25273.208	1	11
Bukit Chermin	2021-02-22	BC0231	*Palaquium obovatum*	Sapotaceae	Native	Vulnerable	Tree	27539.156	25275.453	0.4	12
Bukit Chermin	2021-02-22	BC0232	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27536.009	25276.3	0.6	15
Bukit Chermin	2021-02-22	BC0233	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27532.873	25282.115	2.7	17
Bukit Chermin	2021-02-22	BC0234	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27531.387	25282.573	2.2	22
Bukit Chermin	2021-02-22	BC0235	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27534.634	25282.748	1.5	20
Bukit Chermin	2021-02-22	BC0236	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27540.254	25283.199	1.5	18
Bukit Chermin	2021-02-22	BC0237	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27533.332	25292.819	0.3	8
Bukit Chermin	2021-02-22	BC0238	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	27535	25297.096	0.7	10
Bukit Chermin	2021-02-22	BC0239	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27522.345	25293.717	1.1	13
Bukit Chermin	2021-02-22	BC0240	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27530.913	25294.789	1.05	14
Bukit Chermin	2021-02-22	BC0241	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27521.482	25297.244	1.3	9
Bukit Chermin	2021-02-22	BC0242	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27627.223	25324.124	1.1	11
Bukit Chermin	2021-02-22	BC0243	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27623.752	25324.919	1.4	12
Bukit Chermin	2021-02-22	BC0244	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27622.233	25325.612	1	10
Bukit Chermin	2021-02-22	BC0245	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27625.717	25327.568	1.3	13
Bukit Chermin	2021-02-22	BC0246	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27621.616	25334.051	1.1	9
Berlayer Creek	2021-02-24	BC0247	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27583.019	25044.683	0.8	6
Berlayer Creek	2021-02-24	BC0248	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27593.728	25038.994	0.8	9
Berlayer Creek	2021-02-24	BC0249	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27602.562	25024.396	0.8	8
Berlayer Creek	2021-02-24	BC0250	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27613.016	25020.935	0.6	6

Berlayer Creek	2021-02-24	BC0251	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27613.756	25017.438	0.8	7
Berlayer Creek	2021-02-24	BC0252	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27616.51	25014.855	0.9	7
Berlayer Creek	2021-02-24	BC0253	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.917	25015.963	1.15	12
Berlayer Creek	2021-02-24	BC0254	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27634.932	25017.9	1.2	12
Berlayer Creek	2021-02-24	BC0255	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.306	25020.751	0.9	13
Berlayer Creek	2021-02-24	BC0256	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.078	25020.945	0.35	5
Berlayer Creek	2021-02-24	BC0257	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27630.836	25021.736	0.55	13
Berlayer Creek	2021-02-24	BC0258	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27627.976	25026.156	0.5	6
Berlayer Creek	2021-02-24	BC0259	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27627.289	25026.623	1.05	13
Berlayer Creek	2021-02-24	BC0260	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27621.551	25029.8	0.8	5
Berlayer Creek	2021-02-24	BC0261	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27619.072	25030.035	0.65	12
Berlayer Creek	2021-02-24	BC0262	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27621.158	25031.456	1.2	12
Berlayer Creek	2021-02-24	BC0263	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27614.937	25034.538	0.8	7
Berlayer Creek	2021-02-24	BC0264	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27613.2	25038.6	1.1	12
Berlayer Creek	2021-02-24	BC0265	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.22	25040.426	0.8	13
Berlayer Creek	2021-02-24	BC0266	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27605.51	25043.356	1.1	14
Berlayer Creek	2021-02-24	BC0267	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27601.405	25044.207	1.1	13
Berlayer Creek	2021-02-24	BC0268	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27634.469	25010.516	1	12
Berlayer Creek	2021-02-24	BC0269	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27629.373	25002.379	1	10
Berlayer Creek	2021-02-24	BC0270	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27634.479	25001.546	1.5	9
Berlayer Creek	2021-02-24	BC0271	*Xylocarpus granatum*	Meliaceae	Native	Common	Tree	27634.633	25003.473	1.5	9
Berlayer Creek	2021-02-24	BC0272	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27635.747	24999.696	2.5	16
Berlayer Creek	2021-02-24	BC0273	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27639.499	24996.391	0.3	5
Berlayer Creek	2021-02-24	BC0274	*Xylocarpus granatum*	Meliaceae	Native	Common	Tree	27639.428	24996.833	0.3	5
Berlayer Creek	2021-02-24	BC0275	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27641.456	24990.286	0.5	11
Berlayer Creek	2021-02-24	BC0276	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27642.773	24991.692	0.5	7
Berlayer Creek	2021-02-24	BC0277	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27645.234	24996.593	0.4	5
Berlayer Creek	2021-02-24	BC0278	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27653.882	24989.875	0.3	4
Berlayer Creek	2021-02-24	BC0279	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27655.042	24986.745	0.7	9
Berlayer Creek	2021-02-24	BC0280	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27656.513	24983.83	1.5	7
Berlayer Creek	2021-02-24	BC0281	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27656.825	24986.012	0.8	9
Berlayer Creek	2021-02-24	BC0282	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27661.885	24969.548	1.2	6
Berlayer Creek	2021-02-24	BC0283	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27665.884	24982.277	0.7	6
Berlayer Creek	2021-02-24	BC0284	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27672.373	24972.959	0.8	12
Berlayer Creek	2021-02-24	BC0285	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	27669.45	24965.702	1.2	14
Berlayer Creek	2021-02-24	BC0286	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27676.543	24971.19	0.3	7
Berlayer Creek	2021-02-24	BC0287	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27680.531	24960.804	0.8	8
Berlayer Creek	2021-02-24	BC0288	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27683.876	24959.887	1	8
Berlayer Creek	2021-02-24	BC0289	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27688.664	24961.652	1.2	12
Berlayer Creek	2021-02-24	BC0290	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27688.032	24962.774	0.5	10
Berlayer Creek	2021-02-24	BC0291	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27689.084	24956.419	0.3	8
Berlayer Creek	2021-02-24	BC0292	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27691.923	24956.442	0.6	12
Berlayer Creek	2021-02-24	BC0293	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27693.321	24950.175	0.6	12
Berlayer Creek	2021-02-24	BC0294	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27694.997	24948.233	1	6
Berlayer Creek	2021-02-24	BC0295	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27697.555	24949.012	0.8	12
Berlayer Creek	2021-02-24	BC0296	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27700.383	24951.539	0.95	12
Berlayer Creek	2021-02-24	BC0297	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27702.549	24951.574	0.45	9
Berlayer Creek	2021-02-24	BC0298	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27701.972	24950.053	0.45	11
Berlayer Creek	2021-02-24	BC0299	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27701.934	24949.421	0.65	13

Berlayer Creek	2021-02-24	BC0300	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27699.834	24946.275	0.55	14
Berlayer Creek	2021-02-24	BC0301	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27696.195	24946.51	0.8	8
Berlayer Creek	2021-02-24	BC0302	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27697.527	24943.551	0.9	6
Berlayer Creek	2021-02-24	BC0303	*Bruguiera cylindrica*	Rhizophoraceae	Native	Common	Tree	27696.366	24942.559	0.8	8
Berlayer Creek	2021-02-24	BC0304	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27699.887	24943.416	0.8	9
Berlayer Creek	2021-02-24	BC0305	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27707.017	24941.846	0.8	12
Berlayer Creek	2021-02-24	BC0306	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27704.895	24939.83	0.5	8
Berlayer Creek	2021-02-24	BC0307	*Xylocarpus granatum*	Meliaceae	Native	Common	Tree	27711.42	24932.858	1.2	13
Berlayer Creek	2021-02-24	BC0308	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27709.948	24930.853	1.4	8
Berlayer Creek	2021-02-24	BC0309	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27711.262	24930.111	0.8	8
Berlayer Creek	2021-02-24	BC0310	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27714.647	24930.173	1.5	6
Berlayer Creek	2021-02-24	BC0311	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27716.159	24924.137	0.8	12
Berlayer Creek	2021-02-24	BC0312	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27716.122	24921.039	0.6	10
Berlayer Creek	2021-02-24	BC0313	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27729.375	24913.51	0.9	10
Berlayer Creek	2021-02-24	BC0314	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27734.098	24919.05	0.3	5
Berlayer Creek	2021-02-24	BC0315	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27738.408	24915.414	0.55	9
Berlayer Creek	2021-02-24	BC0316	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27739.987	24914.954	0.85	12
Berlayer Creek	2021-02-24	BC0317	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27739.708	24913.723	0.3	3
Berlayer Creek	2021-02-24	BC0318	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27740.759	24911.089	0.9	13
Berlayer Creek	2021-02-24	BC0319	*Acacia mangium*	Fabaceae	Exotic	Naturalised	Tree	27733.094	24909.257	1.6	12
Berlayer Creek	2021-02-24	BC0320	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27733.78	24910.646	0.9	12
Berlayer Creek	2021-02-24	BC0321	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27737.584	24910.888	1.1	6
Berlayer Creek	2021-02-25	BC0322	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27781.347	24872.744	1.1	13
Berlayer Creek	2021-02-25	BC0323	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27782.275	24872.877	0.6	13
Berlayer Creek	2021-02-25	BC0324	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27785.549	24869.537	0.9	13
Berlayer Creek	2021-02-25	BC0325	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27784.291	24868.477	0.9	14
Berlayer Creek	2021-02-25	BC0326	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27783.93	24867.027	0.7	13
Berlayer Creek	2021-02-25	BC0327	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27785.119	24867.816	0.6	12
Berlayer Creek	2021-02-25	BC0328	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27785.891	24864.994	0.6	9
Berlayer Creek	2021-02-25	BC0329	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27781.431	24864.009	0.7	9
Berlayer Creek	2021-02-25	BC0330	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27786.76	24861.6	0.5	10
Berlayer Creek	2021-02-25	BC0331	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27788.998	24861.176	0.7	15
Berlayer Creek	2021-02-25	BC0332	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27788.464	24854.948	0.9	15
Berlayer Creek	2021-02-25	BC0333	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27792.056	24859.765	0.5	6
Berlayer Creek	2021-02-25	BC0334	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27794	24859.644	0.9	15
Berlayer Creek	2021-02-25	BC0335	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27794.486	24860.696	0.3	13
Berlayer Creek	2021-02-25	BC0336	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27796.653	24858.857	0.3	5
Berlayer Creek	2021-02-25	BC0337	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27798.682	24859.497	0.7	15
Berlayer Creek	2021-02-25	BC0338	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27798.781	24856.438	0.5	13
Berlayer Creek	2021-02-25	BC0339	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27795.382	24857.839	1.1	9
Berlayer Creek	2021-02-25	BC0340	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27799.127	24851.36	0.6	12
Berlayer Creek	2021-02-25	BC0341	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27798.415	24847.857	0.6	8
Berlayer Creek	2021-02-25	BC0342	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27801.94	24846.366	0.4	10
Berlayer Creek	2021-02-25	BC0343	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27802.263	24846.792	0.5	8
Berlayer Creek	2021-02-25	BC0344	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27807.402	24846.337	0.7	10
Berlayer Creek	2021-02-25	BC0345	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27806.197	24837.66	1.4	12
Berlayer Creek	2021-02-25	BC0346	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27808.152	24840.133	0.3	6
Berlayer Creek	2021-02-25	BC0347	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27806.773	24841.63	1.6	10
Berlayer Creek	2021-02-25	BC0348	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27814.051	24832.127	0.8	10

Berlayer Creek	2021-02-25	BC0349	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27817.064	24834.14	0.8	11
Berlayer Creek	2021-02-25	BC0350	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27817.248	24833.839	0.5	11
Berlayer Creek	2021-02-25	BC0351	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27819.486	24834.064	0.4	6
Berlayer Creek	2021-02-25	BC0352	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27819.673	24835.016	0.4	10
Berlayer Creek	2021-02-25	BC0353	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27822.357	24831.649	0.4	4
Berlayer Creek	2021-02-25	BC0354	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27823.012	24831.494	1	10
Berlayer Creek	2021-02-25	BC0355	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27822.69	24829.23	0.3	8
Berlayer Creek	2021-02-25	BC0356	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27822.213	24827.754	0.6	10
Berlayer Creek	2021-02-25	BC0357	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27816.622	24829.285	1	10
Berlayer Creek	2021-02-25	BC0358	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27822.653	24822.633	2.1	9
Berlayer Creek	2021-02-25	BC0359	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27822.366	24822.806	0.3	7
Berlayer Creek	2021-02-25	BC0360	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27826.134	24827.457	0.7	12
Berlayer Creek	2021-02-25	BC0361	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27827.209	24827.012	0.3	8
Berlayer Creek	2021-02-25	BC0362	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27827.407	24827.953	0.4	10
Berlayer Creek	2021-02-25	BC0363	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27828.777	24827.432	0.7	10
Berlayer Creek	2021-02-25	BC0364	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27824.472	24818.482	2	12
Berlayer Creek	2021-02-25	BC0365	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27830.58	24818.959	0.5	10
Berlayer Creek	2021-02-25	BC0366	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27834.881	24818.367	0.3	7
Berlayer Creek	2021-02-25	BC0367	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27834.752	24819.338	0.7	13
Berlayer Creek	2021-02-25	BC0368	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27836.118	24818.438	0.6	13
Berlayer Creek	2021-02-25	BC0369	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27836.477	24818.536	0.7	13
Berlayer Creek	2021-02-25	BC0370	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27836.633	24816.407	0.7	13
Berlayer Creek	2021-02-25	BC0371	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27838.243	24815.107	0.5	13
Berlayer Creek	2021-02-25	BC0372	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27837.777	24814.362	0.8	13
Berlayer Creek	2021-02-25	BC0373	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27838.409	24813.962	0.5	12
Berlayer Creek	2021-02-25	BC0374	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27832.861	24813.512	0.4	7
Berlayer Creek	2021-02-25	BC0375	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27832.426	24813.097	1.2	15
Berlayer Creek	2021-02-25	BC0376	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27838.295	24809.066	0.5	13
Berlayer Creek	2021-02-25	BC0377	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27840.841	24810.525	0.6	10
Berlayer Creek	2021-02-25	BC0378	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27840.993	24810.867	0.3	8
Berlayer Creek	2021-02-25	BC0379	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27843.717	24807.678	0.3	6
Berlayer Creek	2021-02-25	BC0380	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27843.388	24806.63	1.6	13
Berlayer Creek	2021-02-25	BC0381	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27847.469	24801.752	1.2	14
Berlayer Creek	2021-02-25	BC0382	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27849.203	24798.024	0.6	10
Berlayer Creek	2021-02-25	BC0383	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27852.426	24798.691	1.8	15
Berlayer Creek	2021-02-25	BC0384	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27850.144	24794.685	2.8	16
Berlayer Creek	2021-02-25	BC0385	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27858.984	24792.981	0.3	4
Berlayer Creek	2021-02-25	BC0386	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27874.855	24777.439	1.2	8
Berlayer Creek	2021-02-25	BC0387	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27873.977	24776.18	0.3	6
Berlayer Creek	2021-02-25	BC0388	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27877.934	24774.626	0.5	9
Berlayer Creek	2021-02-25	BC0389	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27877.237	24778.149	0.3	6
Berlayer Creek	2021-02-25	BC0390	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27878.131	24772.471	0.5	6
Berlayer Creek	2021-02-25	BC0391	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27880.179	24776.086	0.3	8
Berlayer Creek	2021-02-25	BC0392	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27879.616	24769.349	1.2	10
Berlayer Creek	2021-02-25	BC0393	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27881.243	24766.387	1	7
Berlayer Creek	2021-02-25	BC0394	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27889.772	24763.788	0.6	9
Berlayer Creek	2021-02-25	BC0395	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27891.085	24765.539	0.5	10
Berlayer Creek	2021-02-25	BC0396	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27891.85	24767.502	0.4	10
Berlayer Creek	2021-02-25	BC0397	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27891.547	24767.121	0.6	10

Berlayer Creek	2021-03-02	BC0400	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27894.476	24762.065	0.3	6
Berlayer Creek	2021-02-24	BC0401	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27586.992	25042.374	1.5	11
Berlayer Creek	2021-02-24	BC0402	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27597.044	25033.411	1.6	11
Berlayer Creek	2021-02-24	BC0403	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27624.476	25007.652	1.4	11
Berlayer Creek	2021-02-24	BC0404	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.661	25011.18	0.7	11
Berlayer Creek	2021-02-24	BC0405	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27632.188	25012.745	0.8	14
Berlayer Creek	2021-02-24	BC0406	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27633.869	25017.072	0.5	11
Berlayer Creek	2021-02-24	BC0407	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27636.275	25017.377	0.7	10
Berlayer Creek	2021-02-24	BC0408	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27624.025	25023.856	1.1	10
Berlayer Creek	2021-02-24	BC0409	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27625.585	25025.656	0.4	8
Berlayer Creek	2021-02-24	BC0410	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27624.435	25026.029	0.4	5
Berlayer Creek	2021-02-24	BC0411	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27623.815	25026.539	0.5	9
Berlayer Creek	2021-02-24	BC0412	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27617.89	25026.494	0.8	11
Berlayer Creek	2021-02-24	BC0413	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27614.856	25030.771	0.7	11
Berlayer Creek	2021-02-24	BC0414	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27613.744	25032.552	0.4	5
Berlayer Creek	2021-02-24	BC0415	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27613.235	25034.141	0.7	12
Berlayer Creek	2021-02-24	BC0416	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.818	25037.502	0.9	12
Berlayer Creek	2021-02-24	BC0417	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27635.327	25010.692	0.8	12
Berlayer Creek	2021-02-24	BC0418	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27638.367	25014.258	0.7	12
Berlayer Creek	2021-02-24	BC0419	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27637.341	25010.905	0.7	12
Berlayer Creek	2021-02-24	BC0420	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27639.377	25009.065	1.2	12
Berlayer Creek	2021-02-24	BC0421	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27643.626	25007.587	0.8	12
Berlayer Creek	2021-02-24	BC0422	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27641.638	25004.2	0.6	10
Berlayer Creek	2021-02-24	BC0423	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27643.666	25001.172	0.6	11
Berlayer Creek	2021-02-24	BC0424	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27644.481	25001.727	0.6	11
Berlayer Creek	2021-02-24	BC0425	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27644.63	25003.276	0.4	10
Berlayer Creek	2021-02-24	BC0426	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27647.474	24999.223	0.4	9
Berlayer Creek	2021-02-24	BC0427	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27651.902	24997.088	1.8	12
Berlayer Creek	2021-02-24	BC0428	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27652.87	24997.077	1.5	11
Berlayer Creek	2021-02-24	BC0429	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27656.97	24991.298	0.6	9
Berlayer Creek	2021-02-24	BC0430	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27659.125	24989.092	0.4	9
Berlayer Creek	2021-02-24	BC0431	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27660.456	24988.734	0.7	10
Berlayer Creek	2021-02-24	BC0432	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27665.171	24989.486	0.5	9
Berlayer Creek	2021-02-24	BC0433	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27668.849	24985.323	0.5	9
Berlayer Creek	2021-02-24	BC0434	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27668.66	24985.104	0.6	9
Berlayer Creek	2021-02-24	BC0435	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27676.469	24982.441	0.5	9
Berlayer Creek	2021-02-24	BC0436	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27677.427	24981.257	0.5	9
Berlayer Creek	2021-02-24	BC0437	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27676.302	24978.793	0.5	9
Berlayer Creek	2021-02-24	BC0438	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27674.753	24977.469	0.3	6
Berlayer Creek	2021-02-24	BC0439	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27677.16	24976.981	1.1	12
Berlayer Creek	2021-02-24	BC0440	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27677.839	24976.455	0.4	8
Berlayer Creek	2021-02-24	BC0441	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27682.1	24974.595	0.3	5
Berlayer Creek	2021-02-24	BC0442	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27683.064	24975.497	0.4	9
Berlayer Creek	2021-02-24	BC0443	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27687.94	24969.271	0.3	9
Berlayer Creek	2021-02-24	BC0444	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27694.583	24967.082	0.7	9
Berlayer Creek	2021-02-24	BC0445	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27695.592	24966.382	0.7	9
Berlayer Creek	2021-02-24	BC0446	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27693.966	24965.459	0.4	8
Berlayer Creek	2021-02-24	BC0447	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27697.999	24962.438	0.3	7
Berlayer Creek	2021-02-24	BC0448	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27700.766	24960.279	0.3	8

Berlayer Creek	2021-02-24	BC0449	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27698.561	24958.158	0.4	8
Berlayer Creek	2021-02-24	BC0450	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27698.281	24957.515	1.5	9
Berlayer Creek	2021-02-24	BC0451	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27695.631	24955.679	0.7	12
Berlayer Creek	2021-02-24	BC0452	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27696.474	24954.649	0.3	8
Berlayer Creek	2021-02-24	BC0453	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27699.278	24954.022	0.3	8
Berlayer Creek	2021-02-24	BC0454	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27705.144	24954.915	0.3	8
Berlayer Creek	2021-02-24	BC0455	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27705.704	24954.137	0.9	9
Berlayer Creek	2021-02-24	BC0456	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27707.301	24946.302	0.6	12
Berlayer Creek	2021-02-24	BC0457	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27706.071	24944.263	0.8	12
Berlayer Creek	2021-02-24	BC0458	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27709.086	24941.936	0.8	12
Berlayer Creek	2021-02-24	BC0459	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27708.923	24943.802	0.4	7
Berlayer Creek	2021-02-24	BC0460	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27709.035	24942.646	0.8	12
Berlayer Creek	2021-02-24	BC0461	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27709.263	24940.867	0.3	6
Berlayer Creek	2021-02-24	BC0462	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27716.689	24933.472	0.4	2
Berlayer Creek	2021-02-24	BC0463	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27716.892	24932.263	1.1	12
Berlayer Creek	2021-02-24	BC0464	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27729.097	24925.777	0.4	8
Berlayer Creek	2021-02-24	BC0465	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27730.232	24926.674	0.5	8
Berlayer Creek	2021-02-24	BC0466	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27730.452	24922.829	0.5	10
Berlayer Creek	2021-02-24	BC0467	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27732.905	24922.404	0.4	6
Berlayer Creek	2021-02-24	BC0468	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27731.266	24921.423	0.9	12
Berlayer Creek	2021-02-24	BC0469	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27731.48	24921.28	0.5	10
Berlayer Creek	2021-02-24	BC0470	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27731.475	24921.126	0.5	12
Berlayer Creek	2021-02-24	BC0471	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27731.728	24922.765	0.4	9
Berlayer Creek	2021-02-24	BC0472	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27731.934	24923.269	0.9	12
Berlayer Creek	2021-02-24	BC0473	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27740.072	24913.182	0.8	12
Berlayer Creek	2021-02-24	BC0474	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27742.568	24913.573	0.3	5
Berlayer Creek	2021-02-24	BC0475	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27742.661	24909.981	0.7	12
Berlayer Creek	2021-02-24	BC0476	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27744.255	24910.526	0.9	12
Berlayer Creek	2021-02-24	BC0477	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27744.325	24910.05	0.6	12
Berlayer Creek	2021-02-24	BC0478	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27744.564	24910.493	0.3	10
Berlayer Creek	2021-02-24	BC0479	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27745.217	24907.863	0.4	6
Berlayer Creek	2021-02-24	BC0480	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.497	24907.886	0.7	12
Berlayer Creek	2021-02-25	BC0481	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27751.019	24887.733	0.6	10
Berlayer Creek	2021-02-25	BC0482	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27752.159	24890.538	0.9	8
Berlayer Creek	2021-02-25	BC0483	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27755.934	24900.161	0.6	8
Berlayer Creek	2021-02-25	BC0484	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27755.221	24892.328	1.2	7
Berlayer Creek	2021-02-25	BC0485	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27758.048	24888.028	0.6	6
Berlayer Creek	2021-02-25	BC0486	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27757.943	24887.887	0.3	6
Berlayer Creek	2021-02-25	BC0487	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27759.136	24886.222	0.9	8
Berlayer Creek	2021-02-25	BC0488	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27757.127	24884.409	1.3	8
Berlayer Creek	2021-02-25	BC0489	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27758.673	24884.731	0.9	10
Berlayer Creek	2021-02-25	BC0490	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27762.342	24883.23	0.8	9
Berlayer Creek	2021-02-25	BC0491	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27771.007	24872.388	0.9	10
Berlayer Creek	2021-02-25	BC0492	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27775.434	24876.266	0.9	13
Berlayer Creek	2021-02-25	BC0493	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27779.347	24876.76	1.1	10
Berlayer Creek	2021-02-25	BC0494	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27784.767	24876.249	0.5	9
Berlayer Creek	2021-02-25	BC0495	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27786.019	24869.745	0.45	11
Berlayer Creek	2021-02-25	BC0496	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27785.48	24870.112	0.45	11
Berlayer Creek	2021-02-25	BC0497	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27789.349	24871.932	0.3	8

Berlayer Creek	2021-02-25	BC0498	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27788.089	24869.566	0.6	5
Berlayer Creek	2021-02-25	BC0499	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27787.418	24868.868	0.75	10
Berlayer Creek	2021-02-25	BC0500	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27790.056	24865.386	0.4	9
Berlayer Creek	2021-03-02	BC0501	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27897.115	24759.067	0.5	10
Berlayer Creek	2021-03-02	BC0502	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27896.384	24757.474	0.7	8
Berlayer Creek	2021-03-02	BC0503	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27895.938	24757.227	0.45	6
Berlayer Creek	2021-03-02	BC0504	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27898.672	24751.888	0.5	5
Berlayer Creek	2021-03-02	BC0505	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27898.941	24747.799	0.6	9
Berlayer Creek	2021-03-02	BC0506	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27903.36	24752.664	0.7	11
Berlayer Creek	2021-03-02	BC0507	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27902.231	24749.318	0.8	10
Berlayer Creek	2021-03-02	BC0508	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27904.832	24743.035	1.8	15
Berlayer Creek	2021-03-02	BC0509	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27906.115	24746.195	0.4	11
Berlayer Creek	2021-03-02	BC0510	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27906.272	24746.622	0.3	9
Berlayer Creek	2021-03-02	BC0511	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27906.527	24749.797	0.5	11
Berlayer Creek	2021-03-02	BC0512	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27910.545	24746.339	0.4	6
Berlayer Creek	2021-03-02	BC0513	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27913.553	24738.509	0.3	8
Berlayer Creek	2021-03-02	BC0514	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27912.75	24738.781	0.35	6
Berlayer Creek	2021-03-02	BC0515	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27913.245	24737.787	0.4	6
Berlayer Creek	2021-03-02	BC0516	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27917.023	24737.778	0.3	11
Berlayer Creek	2021-03-02	BC0517	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27919.45	24735.082	0.55	15
Berlayer Creek	2021-03-02	BC0518	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27920.64	24732.193	1	9
Berlayer Creek	2021-03-02	BC0519	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27924.104	24730.39	0.5	15
Berlayer Creek	2021-03-02	BC0520	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27922.67	24730.887	0.5	15
Berlayer Creek	2021-03-02	BC0521	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27918.581	24726.903	1.1	15
Berlayer Creek	2021-03-02	BC0522	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27929.93	24726.218	0.65	14
Berlayer Creek	2021-03-02	BC0523	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27928.528	24727.876	0.5	6
Berlayer Creek	2021-03-02	BC0524	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27930.643	24727.087	0.6	15
Berlayer Creek	2021-03-02	BC0525	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27928.555	24726.193	0.3	8
Berlayer Creek	2021-03-02	BC0526	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27927.971	24727.048	0.6	14
Berlayer Creek	2021-03-02	BC0527	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27929.974	24724.567	0.7	8
Berlayer Creek	2021-03-02	BC0528	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27930.576	24721.919	0.4	14
Berlayer Creek	2021-03-02	BC0529	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27931.167	24724.493	0.5	14
Berlayer Creek	2021-03-02	BC0530	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27932.25	24722.733	0.5	9
Berlayer Creek	2021-03-02	BC0531	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27933.181	24720.457	0.7	9
Berlayer Creek	2021-03-02	BC0532	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27933.062	24717.9	0.6	10
Berlayer Creek	2021-03-02	BC0533	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27937.989	24716.445	0.55	13
Berlayer Creek	2021-03-02	BC0534	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27939.261	24718.19	0.45	9
Berlayer Creek	2021-03-02	BC0535	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27941.146	24715.013	0.4	9
Berlayer Creek	2021-03-02	BC0536	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27938.912	24716.381	0.5	8
Berlayer Creek	2021-03-02	BC0537	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27939.649	24712.437	0.3	7
Berlayer Creek	2021-03-02	BC0538	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27939.376	24713.775	0.4	7
Berlayer Creek	2021-03-02	BC0539	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27940.014	24712.911	0.4	10
Berlayer Creek	2021-03-02	BC0540	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27936.805	24710.507	1.6	10
Berlayer Creek	2021-03-02	BC0541	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27944.228	24712.996	0.5	8
Berlayer Creek	2021-03-02	BC0542	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27946.664	24713.468	0.7	14
Berlayer Creek	2021-03-02	BC0543	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27944.757	24711.73	0.5	12
Berlayer Creek	2021-03-02	BC0544	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27942.981	24707.671	0.5	9
Berlayer Creek	2021-03-02	BC0545	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27943.223	24705.297	1.2	13
Berlayer Creek	2021-03-02	BC0546	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27947.365	24708.782	0.4	11

Berlayer Creek	2021-03-02	BC0547	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27947.201	24707.932	0.3	6
Berlayer Creek	2021-03-02	BC0548	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27948.534	24704.002	0.3	6
Berlayer Creek	2021-03-02	BC0549	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27953.707	24697.389	0.7	8
Berlayer Creek	2021-03-02	BC0550	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27951.895	24697.08	0.3	9
Berlayer Creek	2021-03-02	BC0551	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27958.265	24693.725	1.5	9
Berlayer Creek	2021-03-02	BC0552	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27956.471	24699.944	0.5	10
Berlayer Creek	2021-03-02	BC0553	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27956.87	24701.443	0.4	10
Berlayer Creek	2021-03-02	BC0554	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27959.422	24695.413	0.3	3
Berlayer Creek	2021-03-02	BC0555	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27960.249	24695.318	0.5	7
Berlayer Creek	2021-03-02	BC0556	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27960.037	24694.501	0.6	8
Berlayer Creek	2021-03-02	BC0557	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27973.479	24683.248	0.7	15
Berlayer Creek	2021-03-02	BC0558	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27971.806	24684.271	0.4	8
Berlayer Creek	2021-03-02	BC0559	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27971.195	24680.908	1	10
Berlayer Creek	2021-03-02	BC0560	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27975.504	24684.767	0.65	15
Berlayer Creek	2021-03-02	BC0561	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27974.493	24687.427	0.8	15
Berlayer Creek	2021-03-02	BC0562	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27974.078	24685.697	0.3	5
Berlayer Creek	2021-03-02	BC0563	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27974.796	24683.803	0.5	15
Berlayer Creek	2021-03-02	BC0564	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27975.863	24683.636	0.5	6
Berlayer Creek	2021-03-02	BC0565	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27977.037	24680.869	0.5	15
Berlayer Creek	2021-03-02	BC0566	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27975.636	24679.528	0.6	12
Berlayer Creek	2021-03-02	BC0567	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27977.88	24679.356	0.4	10
Berlayer Creek	2021-03-02	BC0568	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27972.883	24672.907	0.4	7
Berlayer Creek	2021-03-02	BC0569	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27976.301	24676.941	0.3	6
Berlayer Creek	2021-03-02	BC0570	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27977.126	24675.017	0.3	5
Berlayer Creek	2021-03-02	BC0571	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27976.78	24675.294	0.3	8
Berlayer Creek	2021-03-02	BC0572	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27981.447	24672.833	0.7	10
Berlayer Creek	2021-03-02	BC0573	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27981.771	24672.874	0.3	7
Berlayer Creek	2021-03-02	BC0574	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27981.618	24673.517	0.95	15
Berlayer Creek	2021-03-02	BC0575	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27981.66	24674.244	0.5	9
Berlayer Creek	2021-03-02	BC0576	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27986.794	24668.619	0.5	9
Berlayer Creek	2021-03-02	BC0577	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27986.169	24674.39	0.7	12
Berlayer Creek	2021-03-02	BC0578	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27985.668	24669.721	0.3	2
Berlayer Creek	2021-03-02	BC0579	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27986.662	24664.252	1.8	8
Berlayer Creek	2021-03-02	BC0580	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27989.093	24665.851	0.3	5
Berlayer Creek	2021-03-02	BC0581	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27988.61	24662.765	0.3	8
Berlayer Creek	2021-03-02	BC0582	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.622	24662.381	0.7	13
Berlayer Creek	2021-03-02	BC0583	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.353	24661.07	0.9	15
Berlayer Creek	2021-03-02	BC0584	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.885	24661.258	0.3	11
Berlayer Creek	2021-03-02	BC0585	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27992.649	24662.367	0.4	10
Berlayer Creek	2021-03-02	BC0586	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27994.193	24660.582	0.6	13
Berlayer Creek	2021-03-02	BC0587	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.68	24661.793	0.7	12
Berlayer Creek	2021-03-02	BC0588	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27994.547	24661.355	0.3	7
Berlayer Creek	2021-03-03	BC0589	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28001.102	24663.203	0.6	14
Berlayer Creek	2021-03-03	BC0590	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28002.724	24660.004	0.6	5
Berlayer Creek	2021-03-03	BC0591	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28004.511	24653.402	0.4	5
Berlayer Creek	2021-03-03	BC0592	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28011.733	24654.096	0.6	14
Berlayer Creek	2021-03-03	BC0593	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28009.967	24653.325	0.35	12
Berlayer Creek	2021-03-03	BC0594	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28009.862	24653.309	0.3	12
Berlayer Creek	2021-03-03	BC0595	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28009.109	24649.498	0.8	15

Berlayer Creek	2021-03-03	BC0596	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28010.203	24647.679	0.4	12
Berlayer Creek	2021-03-03	BC0597	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28012.541	24648.22	0.9	15
Berlayer Creek	2021-03-03	BC0598	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28018.006	24641.288	0.5	14
Berlayer Creek	2021-03-03	BC0599	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28021.948	24638.971	0.8	15
Berlayer Creek	2021-03-03	BC0600	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28018.137	24642.388	0.4	14
Berlayer Creek	2021-02-25	BC0601	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27789.128	24860.977	0.4	12
Berlayer Creek	2021-02-25	BC0602	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27787.872	24865.33	0.4	13
Berlayer Creek	2021-02-25	BC0603	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27792.585	24864.275	0.8	14
Berlayer Creek	2021-02-25	BC0604	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27797.377	24865.515	0.4	12
Berlayer Creek	2021-02-25	BC0605	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27799.158	24860.724	0.6	13
Berlayer Creek	2021-02-25	BC0606	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27803.696	24855.994	0.6	12
Berlayer Creek	2021-02-25	BC0607	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27802.72	24855.441	0.55	12
Berlayer Creek	2021-02-25	BC0608	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27802.682	24853.444	0.35	10
Berlayer Creek	2021-02-25	BC0609	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27802.324	24854.377	0.45	10
Berlayer Creek	2021-02-25	BC0610	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27803.97	24848.534	0.6	10
Berlayer Creek	2021-02-25	BC0611	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27807.402	24849.343	0.6	14
Berlayer Creek	2021-02-25	BC0612	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27805.272	24852.464	0.4	6
Berlayer Creek	2021-02-25	BC0613	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27806.272	24852.537	0.8	12
Berlayer Creek	2021-02-25	BC0614	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27807.918	24846.923	0.3	8
Berlayer Creek	2021-02-25	BC0615	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27809.088	24848.992	0.8	13
Berlayer Creek	2021-02-25	BC0616	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27814.707	24842.289	0.6	9
Berlayer Creek	2021-02-25	BC0617	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27815.935	24840.583	0.6	13
Berlayer Creek	2021-02-25	BC0618	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27816.144	24840.347	0.5	11
Berlayer Creek	2021-02-25	BC0619	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27816.253	24839.174	0.4	11
Berlayer Creek	2021-02-25	BC0620	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27815.208	24836.937	0.7	12
Berlayer Creek	2021-02-25	BC0621	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27825.96	24833.011	0.45	10
Berlayer Creek	2021-02-25	BC0622	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27825.098	24830.868	0.6	13
Berlayer Creek	2021-02-25	BC0623	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27825.181	24829.901	0.3	7
Berlayer Creek	2021-02-25	BC0624	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27826.337	24832.936	0.3	3
Berlayer Creek	2021-02-25	BC0625	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27826.518	24830.635	0.65	13
Berlayer Creek	2021-02-25	BC0626	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27829.056	24832.004	0.6	13
Berlayer Creek	2021-02-25	BC0627	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27828.971	24831.211	0.5	6
Berlayer Creek	2021-02-25	BC0628	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27830.664	24830.847	0.45	12
Berlayer Creek	2021-02-25	BC0629	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27830.834	24829.214	0.6	12
Berlayer Creek	2021-02-25	BC0630	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27830.139	24826.867	0.4	9
Berlayer Creek	2021-02-25	BC0631	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27832.264	24828.281	0.4	8
Berlayer Creek	2021-02-25	BC0632	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27833.088	24828.76	0.4	7
Berlayer Creek	2021-02-25	BC0633	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27833.202	24824.301	0.7	14
Berlayer Creek	2021-02-25	BC0634	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27835.408	24823.46	0.55	13
Berlayer Creek	2021-02-25	BC0635	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27836.544	24823.489	0.6	12
Berlayer Creek	2021-02-25	BC0636	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27837.051	24822.028	0.6	12
Berlayer Creek	2021-02-25	BC0637	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27842.859	24818.934	0.7	8
Berlayer Creek	2021-02-25	BC0638	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27844.613	24816.581	0.4	8
Berlayer Creek	2021-02-25	BC0639	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27842.466	24814.469	0.7	12
Berlayer Creek	2021-02-25	BC0640	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27842.402	24815.66	0.5	12
Berlayer Creek	2021-02-25	BC0641	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27842.752	24818.287	0.65	12
Berlayer Creek	2021-02-25	BC0642	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27843.482	24813.954	0.5	10
Berlayer Creek	2021-02-25	BC0643	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27845.938	24810.511	0.5	9
Berlayer Creek	2021-02-25	BC0644	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27847.995	24809.221	0.6	12

Berlayer Creek	2021-02-25	BC0645	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27848.137	24808.681	0.55	12
Berlayer Creek	2021-02-25	BC0646	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27848.036	24808.078	0.3	6
Berlayer Creek	2021-02-25	BC0647	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27847.708	24810.111	0.3	7
Berlayer Creek	2021-02-25	BC0648	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27850.202	24801.667	0.4	9
Berlayer Creek	2021-02-25	BC0649	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27854.882	24801.184	0.6	12
Berlayer Creek	2021-02-25	BC0650	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27855.107	24798.386	0.9	12
Berlayer Creek	2021-02-25	BC0651	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27857.366	24796.553	0.55	10
Berlayer Creek	2021-02-25	BC0652	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27859.51	24800.101	0.4	8
Berlayer Creek	2021-02-25	BC0653	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27864.594	24801.226	0.5	12
Berlayer Creek	2021-02-25	BC0654	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27863.679	24800.339	0.3	8
Berlayer Creek	2021-02-25	BC0655	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27865.982	24797.565	0.6	12
Berlayer Creek	2021-02-25	BC0656	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27864.083	24790.548	0.9	9
Berlayer Creek	2021-02-25	BC0657	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27864.259	24785.981	0.45	8
Berlayer Creek	2021-02-25	BC0658	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27869.81	24784.165	0.7	12
Berlayer Creek	2021-02-25	BC0659	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27876.198	24784.804	0.4	10
Berlayer Creek	2021-02-25	BC0660	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27875.927	24785.581	0.9	12
Berlayer Creek	2021-02-25	BC0661	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27878.756	24783.337	0.5	11
Berlayer Creek	2021-02-25	BC0662	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27878.989	24779.824	0.7	12
Berlayer Creek	2021-02-25	BC0663	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27877.228	24779.753	0.5	11
Berlayer Creek	2021-02-25	BC0664	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27878.357	24777.666	0.5	12
Berlayer Creek	2021-02-25	BC0665	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27879.878	24778.345	0.4	12
Berlayer Creek	2021-02-25	BC0666	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27880.966	24778.624	0.65	12
Berlayer Creek	2021-02-25	BC0667	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27881.421	24777.314	0.5	12
Berlayer Creek	2021-02-25	BC0668	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27882.512	24775.281	0.7	13
Berlayer Creek	2021-02-25	BC0669	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27884.746	24770.015	0.45	10
Berlayer Creek	2021-02-25	BC0670	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27882.63	24772.068	0.5	9
Berlayer Creek	2021-02-25	BC0671	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27886.09	24773.314	0.3	9
Berlayer Creek	2021-02-25	BC0672	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27885.982	24774.064	0.35	10
Berlayer Creek	2021-02-25	BC0673	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27884.709	24775.861	0.7	12
Berlayer Creek	2021-02-25	BC0674	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27886.169	24775.939	0.45	9
Berlayer Creek	2021-02-25	BC0675	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27887.228	24773.531	0.5	9
Berlayer Creek	2021-02-25	BC0676	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27887.307	24774.484	0.6	12
Berlayer Creek	2021-02-25	BC0677	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27887.784	24773.171	0.5	8
Berlayer Creek	2021-02-25	BC0678	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27884.772	24773.003	0.5	12
Berlayer Creek	2021-02-25	BC0679	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27886.997	24770.659	0.35	9
Berlayer Creek	2021-02-25	BC0680	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27889.662	24772.702	0.4	8
Berlayer Creek	2021-02-25	BC0681	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27889.333	24769.951	0.75	12
Berlayer Creek	2021-02-25	BC0682	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27892.898	24772.099	0.65	12
Berlayer Creek	2021-03-02	BC0683	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27895.9	24764.543	0.6	12
Berlayer Creek	2021-03-02	BC0684	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27895.714	24763.536	0.6	5
Berlayer Creek	2021-03-02	BC0685	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27897.542	24762.896	0.6	12
Berlayer Creek	2021-03-02	BC0686	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27897.481	24759.845	0.6	10
Berlayer Creek	2021-03-02	BC0687	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27898.716	24760.51	0.4	9
Berlayer Creek	2021-03-02	BC0688	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27899.853	24759.308	0.4	9
Berlayer Creek	2021-03-02	BC0689	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27900.833	24758.011	0.5	8
Berlayer Creek	2021-03-02	BC0690	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27900.781	24757.998	0.4	9
Berlayer Creek	2021-03-02	BC0691	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27901.357	24758.052	0.6	12
Berlayer Creek	2021-03-02	BC0692	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27903.351	24757.025	0.35	9
Berlayer Creek	2021-03-02	BC0693	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27908.172	24748.224	0.9	13

Berlayer Creek	2021-03-02	BC0694	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27909.306	24746.647	0.3	9
Berlayer Creek	2021-03-02	BC0695	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27910.683	24745.696	0.6	12
Berlayer Creek	2021-03-02	BC0696	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27914.812	24744.639	0.8	12
Berlayer Creek	2021-03-02	BC0697	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27912.686	24742.183	0.55	12
Berlayer Creek	2021-03-02	BC0698	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27914.735	24743.521	0.5	9
Berlayer Creek	2021-03-02	BC0699	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27914.803	24740.861	0.75	12
Berlayer Creek	2021-03-02	BC0700	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27915.438	24741.465	0.6	11
Berlayer Creek	2021-03-02	BC0701	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27916.704	24738.652	0.5	9
Berlayer Creek	2021-03-02	BC0702	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27916.661	24736.92	0.8	9
Berlayer Creek	2021-03-02	BC0703	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27917.919	24737.385	0.7	12
Berlayer Creek	2021-03-02	BC0704	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27918.236	24737.494	0.45	10
Berlayer Creek	2021-03-02	BC0705	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27918.72	24736.986	0.5	9
Berlayer Creek	2021-03-02	BC0706	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27921.42	24736.552	0.4	10
Berlayer Creek	2021-03-02	BC0707	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27923.474	24735.945	0.35	9
Berlayer Creek	2021-03-02	BC0708	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27923.611	24736.284	0.7	12
Berlayer Creek	2021-03-02	BC0709	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27926.297	24736.349	0.35	10
Berlayer Creek	2021-03-02	BC0710	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27924.114	24733.381	0.65	12
Berlayer Creek	2021-03-02	BC0711	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27926.422	24733.659	0.3	6
Berlayer Creek	2021-03-02	BC0712	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27925.887	24731.351	0.4	10
Berlayer Creek	2021-03-02	BC0713	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27924.481	24731.569	0.95	9
Berlayer Creek	2021-03-02	BC0714	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27924.315	24730.028	0.4	9
Berlayer Creek	2021-03-02	BC0715	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27920.979	24727.594	0.6	12
Berlayer Creek	2021-03-02	BC0716	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27933.286	24724.386	0.7	12
Berlayer Creek	2021-03-02	BC0717	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27934.195	24723.414	0.35	12
Berlayer Creek	2021-03-02	BC0718	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27935.826	24722.177	0.5	9
Berlayer Creek	2021-03-02	BC0719	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27934.162	24723.311	0.7	12
Berlayer Creek	2021-03-02	BC0720	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27935.59	24719.459	0.45	12
Berlayer Creek	2021-03-02	BC0721	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27937.471	24719.576	0.45	11
Berlayer Creek	2021-03-02	BC0722	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27938.395	24718.896	0.7	12
Berlayer Creek	2021-03-02	BC0723	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27938.349	24717.393	0.7	12
Berlayer Creek	2021-03-02	BC0724	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27938.088	24719.097	0.35	9
Berlayer Creek	2021-03-02	BC0725	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27940.118	24719.084	0.4	9
Berlayer Creek	2021-03-02	BC0726	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27938.943	24718.251	0.7	12
Berlayer Creek	2021-03-02	BC0727	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27939.557	24716.746	0.6	12
Berlayer Creek	2021-03-02	BC0728	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27942.754	24716.91	0.4	9
Berlayer Creek	2021-03-02	BC0729	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27942.353	24716.463	0.45	9
Berlayer Creek	2021-03-02	BC0730	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27943.222	24715.453	0.5	10
Berlayer Creek	2021-03-02	BC0731	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27943.82	24716.023	0.4	11
Berlayer Creek	2021-03-02	BC0732	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27945.401	24714.292	0.7	12
Berlayer Creek	2021-03-02	BC0733	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27943.533	24713.141	0.45	10
Berlayer Creek	2021-03-02	BC0734	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27949.819	24711.095	0.4	9
Berlayer Creek	2021-03-02	BC0735	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27946.415	24709.129	0.4/0.4	12
Berlayer Creek	2021-03-02	BC0736	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27948.29	24709.486	0.6	10
Berlayer Creek	2021-03-02	BC0737	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27948.221	24708.546	0.7	11
Berlayer Creek	2021-03-02	BC0738	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27948.475	24703.132	0.5	11
Berlayer Creek	2021-03-02	BC0739	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27951.831	24703.425	0.3	9
Berlayer Creek	2021-03-02	BC0740	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27950.424	24706.158	0.3	9
Berlayer Creek	2021-03-02	BC0741	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27955.366	24699.549	0.6	12
Berlayer Creek	2021-03-02	BC0742	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27959.572	24701.408	0.7	12

Berlayer Creek	2021-03-02	BC0743	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27962.127	24698.559	0.45	12
Berlayer Creek	2021-03-02	BC0744	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27961.462	24696.704	0.35	9
Berlayer Creek	2021-03-02	BC0745	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27957.912	24698.196	0.6	12
Berlayer Creek	2021-03-02	BC0746	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27958.878	24696.252	0.85	12
Berlayer Creek	2021-03-02	BC0747	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27959.651	24695.817	0.3	9
Berlayer Creek	2021-03-02	BC0748	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27970.196	24689.896	0.8	12
Berlayer Creek	2021-03-02	BC0749	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27967.545	24692.312	0.6	10
Berlayer Creek	2021-03-02	BC0750	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27970.952	24688.774	0.5	10
Berlayer Creek	2021-03-02	BC0751	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27972.508	24687.267	0.5	10
Berlayer Creek	2021-03-02	BC0752	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27976.111	24683.107	0.5	9
Berlayer Creek	2021-03-02	BC0753	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27977.47	24682.895	0.65	12
Berlayer Creek	2021-03-02	BC0754	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27977.023	24680.698	0.6	7
Berlayer Creek	2021-03-02	BC0755	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27979.854	24677.089	0.35	9
Berlayer Creek	2021-03-02	BC0756	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27982.582	24677.204	0.8	12
Berlayer Creek	2021-03-02	BC0757	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27984.851	24677.873	0.5	10
Berlayer Creek	2021-03-02	BC0758	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27984.625	24677.678	0.75	12
Berlayer Creek	2021-03-02	BC0759	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27984.511	24675.674	0.4	10
Berlayer Creek	2021-03-02	BC0760	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27983.409	24675.273	0.5	7
Berlayer Creek	2021-03-02	BC0761	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27983.941	24673.86	0.6	12
Berlayer Creek	2021-03-02	BC0762	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27988.575	24674.217	0.35	10
Berlayer Creek	2021-03-02	BC0763	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27988.468	24671.674	0.3	10
Berlayer Creek	2021-03-02	BC0764	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.78	24673.861	0.6	12
Berlayer Creek	2021-03-02	BC0765	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27985.622	24667.697	0.3	9
Berlayer Creek	2021-03-02	BC0766	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27988.514	24670.816	0.3	9
Berlayer Creek	2021-03-02	BC0767	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27987.634	24670.143	0.35	9
Berlayer Creek	2021-03-02	BC0768	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.491	24670.208	0.65	9
Berlayer Creek	2021-03-02	BC0769	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27991.422	24669.558	0.7	12
Berlayer Creek	2021-03-02	BC0770	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.69	24663.681	0.5	11
Berlayer Creek	2021-03-02	BC0771	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27989.412	24664.224	0.35	9
Berlayer Creek	2021-03-02	BC0772	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27991.981	24664.93	0.4	9
Berlayer Creek	2021-03-02	BC0773	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27992.45	24668.209	0.6	12
Berlayer Creek	2021-03-02	BC0774	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27994.453	24663.715	0.3	9
Berlayer Creek	2021-03-03	BC0775	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27999.032	24658.378	0.4	8
Berlayer Creek	2021-03-03	BC0776	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27996.784	24654.876	1.6	8
Berlayer Creek	2021-03-03	BC0777	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28003.25	24654.421	0.4	5
Berlayer Creek	2021-03-03	BC0778	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28003.77	24652.381	0.6	10
Berlayer Creek	2021-03-03	BC0779	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28004.951	24652.906	0.4	9
Berlayer Creek	2021-03-03	BC0780	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28006.529	24650.607	0.3	5
Berlayer Creek	2021-03-03	BC0781	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28012.836	24648.692	0.55	12
Berlayer Creek	2021-03-03	BC0782	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28008.629	24653.331	0.5	12
Berlayer Creek	2021-03-03	BC0783	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28009.829	24651.81	0.3	10
Berlayer Creek	2021-03-03	BC0784	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28011.793	24649.853	0.75	14
Berlayer Creek	2021-03-03	BC0785	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28015.41	24647.058	0.7	13
Berlayer Creek	2021-03-03	BC0786	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28015.161	24644.078	0.5	2
Berlayer Creek	2021-03-03	BC0787	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28016.368	24644.12	0.5	1.8
Berlayer Creek	2021-03-03	BC0788	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28016.357	24643.33	0.3	7
Berlayer Creek	2021-03-03	BC0789	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28017.089	24642.984	0.8	14
Berlayer Creek	2021-03-03	BC0790	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28019.994	24641.087	0.3	5
Berlayer Creek	2021-03-03	BC0791	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28021.123	24637.74	0.6	11

Berlayer Creek	2021-03-03	BC0792	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28020.069	24634.463	0.6	11
Berlayer Creek	2021-03-03	BC0793	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28021.241	24635.182	0.6	12
Berlayer Creek	2021-03-03	BC0794	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28020.428	24635.056	0.7	10
Berlayer Creek	2021-03-03	BC0795	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28022.305	24632.686	0.75	8
Berlayer Creek	2021-03-03	BC0796	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28023.012	24632.26	0.7	8
Berlayer Creek	2021-03-03	BC0797	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28021.395	24633.159	0.3	9
Berlayer Creek	2021-03-03	BC0798	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28020.834	24631.375	0.3	5
Berlayer Creek	2021-03-03	BC0799	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28024.443	24630.903	0.4	8
Berlayer Creek	2021-03-03	BC0800	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28026.61	24629.279	1.15	12
Berlayer Creek	2021-03-03	BC0801	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28035.524	24624.845	1.4	9
Berlayer Creek	2021-03-03	BC0802	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28040.048	24624.014	0.45	7
Berlayer Creek	2021-03-03	BC0803	*Tamarindus indica*	Fabaceae	Exotic	Casual	Tree	28044.189	24622.629	1	10
Berlayer Creek	2021-03-03	BC0804	*Tamarindus indica*	Fabaceae	Exotic	Casual	Tree	28051.421	24617.149	1	15
Berlayer Creek	2021-03-03	BC0805	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	28053.159	24618.098	1.5	6
Berlayer Creek	2021-03-03	BC0806	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	28063.504	24613.369	1.4	10
Berlayer Creek	2021-03-03	BC0807	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28082.664	24606.728	0.6	6
Berlayer Creek	2021-03-03	BC0808	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28089.285	24607.181	1.1	9
Berlayer Creek	2021-03-03	BC0809	*Xylocarpus granatum*	Meliaceae	Native	Common	Tree	28096.817	24601.903	0.65	12
Berlayer Creek	2021-03-03	BC0810	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28096.017	24606.462	1.3	7
Berlayer Creek	2021-03-03	BC0811	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28102.672	24606.644	1	9
Berlayer Creek	2021-03-03	BC0812	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28103.805	24602.753	1.1	6
Berlayer Creek	2021-03-03	BC0813	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28111.001	24606.503	0.6	12
Berlayer Creek	2021-03-03	BC0814	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28114.993	24599.85	1	10
Berlayer Creek	2021-03-03	BC0815	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28117.85	24604.756	1.15	12
Berlayer Creek	2021-03-03	BC0816	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28117.673	24608.862	0.8	8
Berlayer Creek	2021-03-03	BC0817	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28127.015	24595.537	1.35	12
Berlayer Creek	2021-03-03	BC0818	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28125.98	24599.066	1.1	13
Berlayer Creek	2021-03-03	BC0819	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28133.557	24598.333	0.65	7
Berlayer Creek	2021-03-03	BC0820	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28143.606	24598.389	4	10
Berlayer Creek	2021-03-03	BC0821	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28144.798	24599.418	0.6	7
Berlayer Creek	2021-03-03	BC0822	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28147.807	24599.996	0.9	7
Berlayer Creek	2021-03-03	BC0823	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28149.778	24603.505	0.9	8
Berlayer Creek	2021-03-03	BC0824	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28151.495	24600.501	0.3	6
Berlayer Creek	2021-03-03	BC0825	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28151.151	24600.893	0.6	8
Berlayer Creek	2021-03-03	BC0826	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28151.789	24600.314	0.3	6
Berlayer Creek	2021-03-03	BC0827	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28151.905	24601.735	0.6	6
Berlayer Creek	2021-03-03	BC0828	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28152.711	24600.818	0.6	6
Berlayer Creek	2021-03-03	BC0829	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28156.305	24602.024	0.5	8
Berlayer Creek	2021-03-03	BC0830	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28154.535	24597.796	0.6	8
Berlayer Creek	2021-03-03	BC0831	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28158.748	24599.658	0.7	7
Berlayer Creek	2021-03-03	BC0832	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28160.605	24597.876	0.7	6
Berlayer Creek	2021-03-03	BC0833	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28180.775	24597.851	1.2	4
Berlayer Creek	2021-03-04	BC0834	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28204.814	24610.298	0.65	12
Berlayer Creek	2021-03-04	BC0835	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28206.894	24610.127	0.4	12
Berlayer Creek	2021-03-04	BC0836	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28206.315	24607.637	0.4	10
Berlayer Creek	2021-03-04	BC0837	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28207.185	24610.763	0.7	12
Berlayer Creek	2021-03-04	BC0838	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.207	24611.111	0.7	12
Berlayer Creek	2021-03-04	BC0839	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28212.953	24605.13	0.9	13
Berlayer Creek	2021-03-04	BC0840	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.009	24606.806	0.3	8

Berlayer Creek	2021-03-04	BC0841	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.421	24607.577	0.55	10
Berlayer Creek	2021-03-04	BC0842	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28214.624	24607.497	0.5	10
Berlayer Creek	2021-03-04	BC0843	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28210.935	24605.362	0.5	12
Berlayer Creek	2021-03-04	BC0844	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28215.855	24605.638	0.65	13
Berlayer Creek	2021-03-04	BC0845	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28213.298	24603.168	0.45	12
Berlayer Creek	2021-03-04	BC0846	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28213.514	24609.955	0.3	7
Berlayer Creek	2021-03-04	BC0847	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.246	24611.145	0.05	13
Berlayer Creek	2021-03-04	BC0848	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.768	24610.452	0.35	8
Berlayer Creek	2021-03-04	BC0849	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28219.341	24609.725	0.5	10
Berlayer Creek	2021-03-04	BC0850	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28220.544	24609.542	0.3	7
Berlayer Creek	2021-03-04	BC0851	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28220.762	24612	0.95	12
Berlayer Creek	2021-03-04	BC0852	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28223.421	24613.373	1	12
Berlayer Creek	2021-03-04	BC0853	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28225.59	24609.531	0.3	8
Berlayer Creek	2021-03-04	BC0854	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28223.243	24609.865	0.4	10
Berlayer Creek	2021-03-04	BC0855	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28226.431	24607.989	0.65	12
Berlayer Creek	2021-03-04	BC0856	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28230.869	24607.043	0.4	9
Berlayer Creek	2021-03-04	BC0857	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28228.827	24609.078	0.6	10
Berlayer Creek	2021-03-04	BC0858	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28241.719	24614.648	0.8	14
Berlayer Creek	2021-03-04	BC0859	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28242.095	24613.163	0.4	12
Berlayer Creek	2021-03-04	BC0860	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28243.205	24614.167	0.8	12
Berlayer Creek	2021-03-04	BC0861	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28242.158	24608.53	1.2	14
Berlayer Creek	2021-03-04	BC0862	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28248.257	24607.99	1.6	12
Berlayer Creek	2021-03-04	BC0863	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28248.917	24608.884	0.9	12
Berlayer Creek	2021-03-04	BC0864	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28249.448	24608.88	0.55	12
Berlayer Creek	2021-03-04	BC0865	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28252.59	24611.059	0.3	9
Berlayer Creek	2021-03-04	BC0866	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28252.116	24610.877	1.5	14
Berlayer Creek	2021-03-04	BC0867	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28252.683	24609.534	0.4	10
Berlayer Creek	2021-03-04	BC0868	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28254.166	24610.002	0.45	10
Berlayer Creek	2021-03-04	BC0869	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28255.401	24610.429	0.4	10
Berlayer Creek	2021-03-04	BC0870	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28254.724	24610.497	1	14
Berlayer Creek	2021-03-04	BC0871	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28260.721	24612.024	0.8	14
Berlayer Creek	2021-03-04	BC0872	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28270.471	24613.711	0.75	15
Berlayer Creek	2021-03-04	BC0873	*Rhizophora* sp.	Rhizophoraceae	Native	-	Tree	28270.12	24623.936	0.4	8
Berlayer Creek	2021-03-04	BC0874	*Rhizophora* sp.	Rhizophoraceae	Native	-	Tree	28270.08	24628.048	0.4	8
Berlayer Creek	2021-03-04	BC0875	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	28268.935	24623.638	0.4	8
Berlayer Creek	2021-03-04	BC0876	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28258.829	24625.479	1	8
Berlayer Creek	2021-03-04	BC0877	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28251.456	24625.063	1.15	9
Berlayer Creek	2021-03-04	BC0878	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28266.409	24612.093	1.05	12
Berlayer Creek	2021-03-04	BC0879	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28239.138	24626.798	1.3	10
Berlayer Creek	2021-03-04	BC0880	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28228.441	24628.013	0.5	9
Berlayer Creek	2021-03-04	BC0881	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28226.999	24628.927	0.5	6
Berlayer Creek	2021-03-04	BC0882	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28225.441	24625.606	1.5	11
Berlayer Creek	2021-03-04	BC0883	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28224.34	24627.764	1.5	11
Berlayer Creek	2021-03-04	BC0884	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28214.471	24624.687	0.55	11
Berlayer Creek	2021-03-04	BC0885	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28214.035	24625.496	1	14
Berlayer Creek	2021-03-04	BC0886	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28214.346	24626.223	0.65	12
Berlayer Creek	2021-03-04	BC0887	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.022	24624.664	0.4	9
Berlayer Creek	2021-03-04	BC0888	*Bruguiera cylindrica*	Rhizophoraceae	Native	Common	Tree	28213.415	24630.929	0.5	8
Berlayer Creek	2021-03-04	BC0889	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28209.688	24628.562	0.65	10

Berlayer Creek	2021-03-04	BC0890	*Bruguiera cylindrica*	Rhizophoraceae	Native	Common	Tree	28209.266	24632.454	0.55	9
Berlayer Creek	2021-03-04	BC0891	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28207.931	24631.998	0.7	9
Berlayer Creek	2021-03-04	BC0892	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28197.481	24627.681	0.7	7
Berlayer Creek	2021-03-04	BC0893	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28196.145	24628.827	0.5	9
Berlayer Creek	2021-03-04	BC0894	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28194.271	24627.27	0.4	9
Berlayer Creek	2021-03-04	BC0895	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28181.98	24632.662	1.4	13
Berlayer Creek	2021-03-04	BC0896	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28175.182	24631.257	1.4	13
Berlayer Creek	2021-03-04	BC0897	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28173.914	24629.643	4	10
Berlayer Creek	2021-03-04	BC0898	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28157.993	24625.607	0.45	5
Berlayer Creek	2021-03-04	BC0899	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28118.877	24619.501	1	12
Berlayer Creek	2021-03-04	BC0900	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28104.427	24629.601	0.55	7
Berlayer Creek	2021-03-03	BC0901	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28019.799	24640.639	0.3	1.5
Berlayer Creek	2021-03-03	BC0902	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28019.305	24643.096	0.7	15
Berlayer Creek	2021-03-03	BC0903	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28021.326	24639.683	0.4	14
Berlayer Creek	2021-03-03	BC0904	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28022.254	24639.505	0.7	15
Berlayer Creek	2021-03-03	BC0905	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28024.662	24637.191	0.3	13
Berlayer Creek	2021-03-03	BC0906	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28024.609	24636.599	0.4	13
Berlayer Creek	2021-03-03	BC0907	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28024.99	24635.447	0.6	8
Berlayer Creek	2021-03-03	BC0908	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28025.123	24635.301	0.7	15
Berlayer Creek	2021-03-03	BC0909	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28026.547	24635.267	0.9	16
Berlayer Creek	2021-03-03	BC0910	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28026.575	24633.412	0.7	16
Berlayer Creek	2021-03-03	BC0911	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28025.826	24630.588	0.9	12
Berlayer Creek	2021-03-03	BC0912	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28028.867	24629.167	0.6	7
Berlayer Creek	2021-03-03	BC0913	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28036.343	24626.176	1.1	16
Berlayer Creek	2021-03-03	BC0914	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28038.379	24624.73	0.7	16
Berlayer Creek	2021-03-03	BC0915	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28036.335	24625.297	0.3	6
Berlayer Creek	2021-03-03	BC0916	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28037.38	24625.403	0.5	6
Berlayer Creek	2021-03-03	BC0917	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28042.229	24622.853	0.3	6
Berlayer Creek	2021-03-03	BC0918	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28053.581	24618.529	0.7	10
Berlayer Creek	2021-03-03	BC0919	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28054.86	24611.613	0.8	12
Berlayer Creek	2021-03-03	BC0920	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28066.929	24612.522	0.4	12
Berlayer Creek	2021-03-03	BC0921	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28072.201	24610.493	1.2	12
Berlayer Creek	2021-03-03	BC0922	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28074.326	24610.563	0.5	8
Berlayer Creek	2021-03-03	BC0923	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28089.671	24613.448	0.7	12
Berlayer Creek	2021-03-03	BC0924	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28092.468	24614.178	0.4	12
Berlayer Creek	2021-03-03	BC0925	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28093.113	24612.436	0.4	8
Berlayer Creek	2021-03-03	BC0926	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28101.765	24611.979	0.4	13
Berlayer Creek	2021-03-03	BC0927	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28102.977	24608.046	0.7	12
Berlayer Creek	2021-03-03	BC0928	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28104.992	24612.494	1	14
Berlayer Creek	2021-03-03	BC0928a	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28104.104	24611.867	0.4	14
Berlayer Creek	2021-03-03	BC0929	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28123.297	24605.883	0.7	14
Berlayer Creek	2021-03-03	BC0930	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28119.284	24603.718	0.9	14
Berlayer Creek	2021-03-03	BC0931	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28121.009	24604.921	0.8	18
Berlayer Creek	2021-03-03	BC0932	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28106.017	24601.186	0.6	10
Berlayer Creek	2021-03-03	BC0933	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28123.196	24606.102	0.6	13
Berlayer Creek	2021-03-03	BC0934	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28105.807	24599.107	0.9	15
Berlayer Creek	2021-03-03	BC0935	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28123.488	24604.674	0.5	14
Berlayer Creek	2021-03-03	BC0936	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28124.094	24604.011	0.4	10
Berlayer Creek	2021-03-03	BC0937	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28126.403	24602.367	0.4	10

Berlayer Creek	2021-03-03	BC0938	*Avicennia alba*	Acanthaceae	Native	Common	Tree	28130.11	24608.732	0.4	5
Berlayer Creek	2021-03-03	BC0939	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28129.72	24605.876	1	10
Berlayer Creek	2021-03-03	BC0940	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28135.789	24604.471	0.6	10
Berlayer Creek	2021-03-03	BC0941	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28141.492	24607.483	0.7	10
Berlayer Creek	2021-03-03	BC0942	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28143.626	24604.984	0.8	12
Berlayer Creek	2021-03-03	BC0943	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28143.295	24602.053	0.4	2
Berlayer Creek	2021-03-03	BC0944	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28147.812	24605.036	0.7	15
Berlayer Creek	2021-03-03	BC0945	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28145.966	24606.289	0.3	10
Berlayer Creek	2021-03-03	BC0946	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28146.263	24605.74	0.9	16
Berlayer Creek	2021-03-03	BC0947	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28147.829	24606.946	0.4	13
Berlayer Creek	2021-03-03	BC0948	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28147.535	24607.977	0.3	12
Berlayer Creek	2021-03-03	BC0949	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28149.915	24607.354	0.4	10
Berlayer Creek	2021-03-03	BC0950	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28148.175	24609.925	0.5	13
Berlayer Creek	2021-03-03	BC0951	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28150.335	24602.919	1.1	15
Berlayer Creek	2021-03-03	BC0952	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28161.844	24610.293	1.2	12
Berlayer Creek	2021-03-03	BC0953	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28161.705	24610.322	1.4	10
Berlayer Creek	2021-03-03	BC0954	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28164.557	24607.753	1	12
Berlayer Creek	2021-03-03	BC0955	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28172.502	24603.643	1	12
Berlayer Creek	2021-03-03	BC0956	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28176.877	24606.682	0.3	6
Berlayer Creek	2021-03-03	BC0957	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28179.893	24603.559	1.2	10
Berlayer Creek	2021-03-04	BC0958	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28195.882	24609.169	0.9	11
Berlayer Creek	2021-03-04	BC0959	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28194.006	24611.301	0.4	6
Berlayer Creek	2021-03-04	BC0960	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28198.181	24613.319	1	13
Berlayer Creek	2021-03-04	BC0961	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28197.752	24614.381	0.5	13
Berlayer Creek	2021-03-04	BC0962	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28201.578	24612.227	0.3	7
Berlayer Creek	2021-03-04	BC0963	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28204.634	24611.987	0.6	10
Berlayer Creek	2021-03-04	BC0964	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28200.452	24609.919	0.6	9
Berlayer Creek	2021-03-04	BC0965	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28206.327	24607.112	0.35	11
Berlayer Creek	2021-03-04	BC0966	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28200.708	24609.959	0.45	5
Berlayer Creek	2021-03-04	BC0967	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28202.135	24600.937	0.45	10
Berlayer Creek	2021-03-04	BC0968	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28203.948	24604.905	1.2	9
Berlayer Creek	2021-03-04	BC0969	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28207.422	24604.286	0.7	11
Berlayer Creek	2021-03-04	BC0970	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28206.836	24604.266	0.8	9
Berlayer Creek	2021-03-04	BC0971	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28205.413	24607.635	0.6	6
Berlayer Creek	2021-03-04	BC0972	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28206.302	24606.489	0.6	9
Berlayer Creek	2021-03-04	BC0973	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28210.764	24604.626	0.6	12
Berlayer Creek	2021-03-04	BC0974	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28209.81	24601.968	0.6	8
Berlayer Creek	2021-03-04	BC0975	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28214.049	24599.927	0.4	8
Berlayer Creek	2021-03-04	BC0976	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28215.826	24599.677	0.35	7
Berlayer Creek	2021-03-04	BC0977	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28213.405	24601.157	0.9	13
Berlayer Creek	2021-03-04	BC0978	*Sonneratia alba*	Lythraceae	Native	Common	Tree	33152.043	21675.723	0.4	10
Berlayer Creek	2021-03-04	BC0979	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28214.062	24602.619	0.5	9
Berlayer Creek	2021-03-02	BC098	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27890.637	24759.438	1.6	10
Berlayer Creek	2021-03-04	BC0980	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28215.508	24600.483	0.3	6
Berlayer Creek	2021-03-04	BC0981	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.5	24599.745	0.4	6
Berlayer Creek	2021-03-04	BC0982	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28219.178	24599.947	0.8	14
Berlayer Creek	2021-03-04	BC0983	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.912	24600.537	0.3	8
Berlayer Creek	2021-03-04	BC0984	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28222.312	24600.484	0.85	14
Berlayer Creek	2021-03-04	BC0985	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28218.605	24603.277	0.3	8

Berlayer Creek	2021-03-04	BC0986	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28217.885	24603.325	0.5	13
Berlayer Creek	2021-03-04	BC0987	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28216.545	24601.851	0.6	13
Berlayer Creek	2021-03-04	BC0988	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28221.636	24604.981	0.5	13
Berlayer Creek	2021-03-04	BC0989	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28221.975	24605.843	0.3	6
Berlayer Creek	2021-03-02	BC099	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27892.868	24763.16	0.6	10
Berlayer Creek	2021-03-04	BC0990	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28223.081	24605.909	0.9	14
Berlayer Creek	2021-03-04	BC0991	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28223.54	24603.853	0.6	12
Berlayer Creek	2021-03-04	BC0992	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28225.005	24605.053	0.7	9
Berlayer Creek	2021-03-04	BC0993	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28225.479	24604.781	0.6	10
Berlayer Creek	2021-03-04	BC0994	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28226.14	24605.095	0.6	12
Berlayer Creek	2021-03-04	BC0995	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28226.708	24605.305	0.5	11
Berlayer Creek	2021-03-04	BC0996	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28225.959	24606.137	0.7	14
Berlayer Creek	2021-03-04	BC0997	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28232.433	24603.388	0.9	10
Berlayer Creek	2021-03-04	BC0998	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28236.871	24604.927	0.6	12
Berlayer Creek	2021-03-04	BC0999	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28237.399	24608.027	0.5	10
Berlayer Creek	2021-03-04	BC1000	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28239.203	24607.12	0.7	9
Berlayer Creek	2021-03-04	BC1001	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28238.754	24608.077	0.5	11
Berlayer Creek	2021-03-04	BC1002	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28245.372	24605.508	1.2	10
Berlayer Creek	2021-03-04	BC1003	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28245.05	24605.472	0.9	10
Berlayer Creek	2021-03-04	BC1004	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28246.747	24607.761	0.7	14
Berlayer Creek	2021-03-04	BC1005	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28250.226	24607.194	0.8	13
Berlayer Creek	2021-03-04	BC1006	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28257.627	24607.832	0.5	12
Berlayer Creek	2021-03-04	BC1007	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28258.393	24604.501	0.5	13
Berlayer Creek	2021-03-04	BC1008	*Rhizophora stylosa*	Rhizophoraceae	Native	Vulnerable	Tree	28258.55	24608.974	0.4	10
Berlayer Creek	2021-03-04	BC1009	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28264.314	24608.936	0.8	10
Berlayer Creek	2021-03-04	BC1010	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28266.298	24603.213	1	14
Berlayer Creek	2021-03-04	BC1011	*Bruguiera sexangula*	Rhizophoraceae	Native	Critically Endangered	Tree	28274.521	24608.877	0.3	12
Berlayer Creek	2021-03-04	BC1012	*Bruguiera sexangula*	Rhizophoraceae	Native	Critically Endangered	Tree	28278.946	24620.029	0.6	9
Berlayer Creek	2021-03-04	BC1013	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28276.265	24611.504	0.4	4
Berlayer Creek	2021-03-04	BC1014	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28279.439	24613.088	0.4	3
Berlayer Creek	2021-03-04	BC1015	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28279.181	24611.599	0.4	3
Berlayer Creek	2021-03-04	BC1016	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28280.006	24613.67	0.3	3
Berlayer Creek	2021-03-04	BC1017	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28275.866	24624.214	1.2	8
Berlayer Creek	2021-03-04	BC1018	*Rhizophora* sp.	Rhizophoraceae	Native	-	Tree	28275.622	24622.621	0.4	6
Berlayer Creek	2021-03-04	BC1019	*Rhizophora* sp.	Rhizophoraceae	Native	-	Tree	28273.863	24624.534	0.4	6
Berlayer Creek	2021-03-04	BC1020	*Rhizophora* sp.	Rhizophoraceae	Native	-	Tree	28272.902	24625.041	0.4	8
Berlayer Creek	2021-03-04	BC1021	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28224.41	24625.834	0.5	3
Berlayer Creek	2021-03-04	BC1022	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28218.077	24623.973	0.3	8
Berlayer Creek	2021-03-04	BC1023	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28216.36	24623.005	0.7	9
Berlayer Creek	2021-03-04	BC1024	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28215.086	24625.185	0.5	8
Berlayer Creek	2021-03-04	BC1025	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28212.221	24624.587	0.5	8
Berlayer Creek	2021-03-04	BC1026	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28192.507	24628.624	1.2	9
Berlayer Creek	2021-03-04	BC1027	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28187.681	24633.936	0.7	8
Berlayer Creek	2021-03-04	BC1028	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28188.251	24627.415	1.6	10
Berlayer Creek	2021-03-04	BC1029	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28144.709	24626.328	1	6
Berlayer Creek	2021-03-04	BC1030	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28122.396	24627.953	1	6
Berlayer Creek	2021-03-04	BC1031	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28108.503	24630.195	0.4	9
Berlayer Creek	2021-03-04	BC1032	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28101.726	24623.816	1.1	14
Berlayer Creek	2021-03-04	BC1033	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28101.188	24627.283	0.5	6

Berlayer Creek	2021-03-04	BC1034	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28097.035	24628.561	0.6	6
Berlayer Creek	2021-03-04	BC1035	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28097.006	24631.212	0.3	8
Berlayer Creek	2021-03-04	BC1036	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28076.472	24624.112	0.6	10
Berlayer Creek	2021-03-04	BC1037	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28076.603	24627.057	0.9	14
Berlayer Creek	2021-03-04	BC1038	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28078.405	24624.68	0.4	9
Berlayer Creek	2021-03-04	BC1039	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28076.1	24628.464	0.5	11
Berlayer Creek	2021-03-04	BC1040	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28071.918	24629.028	0.9	12
Berlayer Creek	2021-03-04	BC1041	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28071.14	24632.926	0.5	10
Berlayer Creek	2021-03-04	BC1042	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28070.063	24637.061	0.8	12
Berlayer Creek	2021-03-04	BC1043	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28067.612	24634.982	0.8	10
Berlayer Creek	2021-03-04	BC1044	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28067.959	24635.845	0.7	9
Berlayer Creek	2021-03-04	BC1045	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28069.769	24637.858	1.2	14
Berlayer Creek	2021-03-04	BC1046	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	28068.686	24636.174	0.4	7
Berlayer Creek	2021-03-04	BC1047	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28064.332	24636.218	0.8	10
Berlayer Creek	2021-03-04	BC1048	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28065.175	24637.5	0.7	10
Berlayer Creek	2021-03-04	BC1049	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28064.541	24639.012	0.7	4
Berlayer Creek	2021-03-04	BC1050	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28064.594	24640.209	0.3	6
Berlayer Creek	2021-03-04	BC1051	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	28062.852	24638.835	0.3	7
Berlayer Creek	2021-03-04	BC1052	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28059.238	24639.181	0.9	12
Berlayer Creek	2021-03-04	BC1053	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28200.777	24590.183	1	10
Berlayer Creek	2021-03-04	BC1054	*Pongamia pinnata*	Fabaceae	Native	Endangered	Tree	28229.696	24592.813	1	11
Berlayer Creek	2021-03-04	BC1055	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28107.393	24591.482	1.1	12
Berlayer Creek	2021-03-04	BC1056	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	28010.832	24633.303	1	10
Berlayer Creek	2021-03-04	BC1057	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27907.352	24731.108	2	12
Berlayer Creek	2021-03-04	BC1058	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27861.609	24777.958	1	12
Berlayer Creek	2021-03-04	BC1059	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27860.511	24778.797	1.1	11
Berlayer Creek	2021-03-04	BC1060	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27820.827	24817.935	1.1	13
Berlayer Creek	2021-03-04	BC1061	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27770.487	24863.281	1.1	13
Berlayer Creek	2021-03-04	BC1062	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27768.87	24866.606	1	10
Berlayer Creek	2021-03-04	BC1063	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27718.404	24913.778	1	11
Berlayer Creek	2021-03-04	BC1064	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27614.843	25008.419	1	11
Berlayer Creek	2021-03-09	BC1065	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28007.516	24675.665	1.2	10
Berlayer Creek	2021-03-09	BC1066	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28007.998	24675.922	1	10
Berlayer Creek	2021-03-09	BC1067	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28020	24748.947	0.8	6
Berlayer Creek	2021-03-09	BC1068	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27993.432	24691.256	0.6	8
Berlayer Creek	2021-03-09	BC1069	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27994.76	24692.36	0.6	5
Berlayer Creek	2021-03-09	BC1070	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27993.863	24695.538	0.8	8
Berlayer Creek	2021-03-09	BC1071	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27974.851	24702.639	0.9	12
Berlayer Creek	2021-03-09	BC1072	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27977.354	24704.175	0.5	8
Berlayer Creek	2021-03-09	BC1073	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27978.902	24709.512	0.9	7
Berlayer Creek	2021-03-09	BC1074	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27978.431	24711.217	1.5	8
Berlayer Creek	2021-03-09	BC1075	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27977.364	24714.541	1.2	13
Berlayer Creek	2021-03-09	BC1076	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27979.012	24719.163	0.6	5
Berlayer Creek	2021-03-09	BC1077	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27966.263	24716.578	1.45	11
Berlayer Creek	2021-03-09	BC1078	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27964.647	24718.816	1	10
Berlayer Creek	2021-03-09	BC1079	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27956.093	24728.781	1.2	6
Berlayer Creek	2021-03-09	BC1080	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27959.483	24730.961	0.7	10
Berlayer Creek	2021-03-09	BC1081	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27946.159	24726.198	1	6
Berlayer Creek	2021-03-09	BC1082	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27944.969	24732.233	0.8	6

Berlayer Creek	2021-03-09	BC1083	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27939.536	24737.502	0.9	6
Berlayer Creek	2021-03-09	BC1084	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27932.902	24741.098	0.9	7
Berlayer Creek	2021-03-09	BC1085	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27925.687	24750.861	0.8	7
Berlayer Creek	2021-03-09	BC1086	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27923.88	24760.188	0.8	7
Berlayer Creek	2021-03-09	BC1087	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27901.953	24781.683	0.3	7
Berlayer Creek	2021-03-09	BC1088	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27899.349	24779.914	0.3	6
Berlayer Creek	2021-03-09	BC1089	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27901.21	24789.255	1.9	6
Berlayer Creek	2021-03-09	BC1090	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27899.406	24785.232	0.4	6
Berlayer Creek	2021-03-09	BC1091	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27892.108	24792.845	0.9	7
Berlayer Creek	2021-03-09	BC1092	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27885.033	24806.412	1.4	8
Berlayer Creek	2021-03-09	BC1093	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27880.609	24805.993	1.2	11
Berlayer Creek	2021-03-09	BC1094	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27878.345	24810.827	0.45	9
Berlayer Creek	2021-03-09	BC1095	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27877.413	24813.753	1.5	6
Berlayer Creek	2021-03-09	BC1096	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27875.869	24820.172	0.7	9
Berlayer Creek	2021-03-09	BC1097	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27867.878	24816.444	0.8	6
Berlayer Creek	2021-03-09	BC1098	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27864.845	24818.931	1	5
Berlayer Creek	2021-03-09	BC1099	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27856.229	24833.561	0.5	4
Berlayer Creek	2021-03-09	BC1100	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27860.573	24829.994	0.8	4
Berlayer Creek	2021-03-09	BC1123	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28053.528	24641.57	0.3	8
Berlayer Creek	2021-03-09	BC1124	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28051.621	24640.268	0.7	13
Berlayer Creek	2021-03-09	BC1125	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28055.356	24640.298	0.4	9
Berlayer Creek	2021-03-09	BC1126	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28055.976	24640.12	0.3	5
Berlayer Creek	2021-03-09	BC1127	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28050.781	24639.094	0.9	13
Berlayer Creek	2021-03-09	BC1128	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28052.269	24641.598	0.7	11
Berlayer Creek	2021-03-09	BC1129	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28051.915	24642.665	0.4	11
Berlayer Creek	2021-03-09	BC1130	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28048.431	24640.583	0.9	13
Berlayer Creek	2021-03-09	BC1131	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28048.31	24635.332	0.9	11
Berlayer Creek	2021-03-09	BC1132	*Avicennia alba*	Acanthaceae	Native	Common	Tree	28047.956	24634.188	0.7	8
Berlayer Creek	2021-03-09	BC1133	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28041.842	24641.681	0.9	13
Berlayer Creek	2021-03-09	BC1134	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28041.382	24641.475	0.75	13
Berlayer Creek	2021-03-09	BC1135	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28038.208	24640.209	0.45	10
Berlayer Creek	2021-03-09	BC1136	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28036.149	24641.282	1.1	13
Berlayer Creek	2021-03-09	BC1137	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28036.538	24642.498	0.35	9
Berlayer Creek	2021-03-09	BC1138	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28037.952	24644.441	0.7	11
Berlayer Creek	2021-03-09	BC1139	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28032.001	24644.111	0.5	11
Berlayer Creek	2021-03-09	BC1140	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28026.7	24650.213	0.35	8
Berlayer Creek	2021-03-09	BC1141	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28024.885	24646.983	1.1	13
Berlayer Creek	2021-03-09	BC1142	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28022.482	24653.153	0.9	13
Berlayer Creek	2021-03-09	BC1143	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28018.112	24656.914	0.3	7
Berlayer Creek	2021-03-09	BC1144	*Avicennia alba*	Acanthaceae	Native	Common	Tree	28018.818	24657.418	1.1	11
Berlayer Creek	2021-03-09	BC1145	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28016.237	24659.775	0.4	7
Berlayer Creek	2021-03-09	BC1146	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28016.522	24659.558	1.1	12
Berlayer Creek	2021-03-09	BC1147	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28003.833	24672.749	0.8	12
Berlayer Creek	2021-03-09	BC1148	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28004.792	24674.963	0.6	10
Berlayer Creek	2021-03-09	BC1149	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	28004.273	24673.702	0.5	8
Berlayer Creek	2021-03-09	BC1150	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28003.783	24673.093	0.75	10
Berlayer Creek	2021-03-09	BC1151	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28003.17	24674.789	0.6	10
Berlayer Creek	2021-03-09	BC1152	*Sonneratia alba*	Lythraceae	Native	Common	Tree	28001.776	24678	0.9	14
Berlayer Creek	2021-03-09	BC1153	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27998.179	24681.917	1	12

Berlayer Creek	2021-03-09	BC1154	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27999.214	24682.324	1	12
Berlayer Creek	2021-03-09	BC1155	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.989	24683.419	1.05	15
Berlayer Creek	2021-03-09	BC1156	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.628	24683.858	0.4	11
Berlayer Creek	2021-03-09	BC1157	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27994.366	24683.938	1.2	15
Berlayer Creek	2021-03-09	BC1158	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27992.626	24687.949	0.65	11
Berlayer Creek	2021-03-09	BC1159	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.369	24688.955	1.2	13
Berlayer Creek	2021-03-09	BC1160	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.071	24689.426	0.6	9
Berlayer Creek	2021-03-09	BC1161	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27993.157	24688.616	0.6	11
Berlayer Creek	2021-03-09	BC1162	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27991.772	24690.988	0.45	7
Berlayer Creek	2021-03-09	BC1163	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27991.988	24690.627	0.7	12
Berlayer Creek	2021-03-09	BC1164	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27971.246	24704.664	0.7	12
Berlayer Creek	2021-03-09	BC1165	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27971.527	24702.773	0.4	12
Berlayer Creek	2021-03-09	BC1166	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27973.094	24703.218	0.4	12
Berlayer Creek	2021-03-09	BC1167	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27973.082	24701.218	0.7	12
Berlayer Creek	2021-03-09	BC1168	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27972.272	24704.264	0.8	12
Berlayer Creek	2021-03-09	BC1169	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27971.469	24705.529	1.05	15
Berlayer Creek	2021-03-09	BC1170	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27970.615	24705.684	0.35	7
Berlayer Creek	2021-03-09	BC1171	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27970.04	24705.512	0.7	12
Berlayer Creek	2021-03-09	BC1172	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27966.505	24706.424	0.8	15
Berlayer Creek	2021-03-09	BC1173	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27968.403	24708.988	0.4	9
Berlayer Creek	2021-03-09	BC1174	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27966.084	24708.698	0.7	12
Berlayer Creek	2021-03-09	BC1175	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27964.34	24709.95	0.55	10
Berlayer Creek	2021-03-09	BC1176	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27966.045	24710.166	1.05	15
Berlayer Creek	2021-03-09	BC1177	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27962.038	24713.58	0.4	8
Berlayer Creek	2021-03-09	BC1178	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27961.844	24711.444	0.8	12
Berlayer Creek	2021-03-09	BC1179	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27961.436	24712.708	0.9	14
Berlayer Creek	2021-03-09	BC1180	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27963.468	24714.04	0.4	12
Berlayer Creek	2021-03-09	BC1181	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27961.415	24715.581	1.1	15
Berlayer Creek	2021-03-09	BC1182	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27959.546	24717.933	1	12
Berlayer Creek	2021-03-09	BC1183	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27955.618	24721.767	0.3	5
Berlayer Creek	2021-03-09	BC1184	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27943.68	24730.018	0.8	15
Berlayer Creek	2021-03-09	BC1185	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27943.969	24731.474	1	10
Berlayer Creek	2021-03-09	BC1186	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27915.821	24758.885	0.6	11
Berlayer Creek	2021-03-09	BC1187	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27916.427	24760.027	1.8	18
Berlayer Creek	2021-03-09	BC1188	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27914.723	24763.281	1.2	15
Berlayer Creek	2021-03-09	BC1189	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27921.724	24761.429	0.7	8
Berlayer Creek	2021-03-09	BC1190	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27921.55	24769.607	0.7	8
Berlayer Creek	2021-03-09	BC1191	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27904.136	24772.307	0.7	10
Berlayer Creek	2021-03-09	BC1192	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27906.546	24781.148	1.1	12
Berlayer Creek	2021-03-09	BC1193	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27898.561	24778.946	0.6	8
Berlayer Creek	2021-03-09	BC1194	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27898.54	24781.419	0.45	9
Berlayer Creek	2021-03-09	BC1195	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27898.595	24781.003	0.8	10
Berlayer Creek	2021-03-09	BC1196	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27899.4	24784.408	0.3	8
Berlayer Creek	2021-03-09	BC1197	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27899.292	24782.649	0.35	9
Berlayer Creek	2021-03-09	BC1198	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27894.752	24786.547	0.7	4
Berlayer Creek	2021-03-09	BC1199	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27891.624	24786.98	0.4	10
Berlayer Creek	2021-03-09	BC1200	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27891.286	24788.978	1.1	14
Berlayer Creek	2021-03-09	BC1201	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27881.21	24799.313	0.45	4
Berlayer Creek	2021-03-09	BC1202	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27871.201	24807.952	0.7	5

Berlayer Creek	2021-03-09	BC1203	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27871.221	24807.583	0.4	5
Berlayer Creek	2021-03-09	BC1204	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27865.304	24811.015	0.7	9
Berlayer Creek	2021-03-09	BC1205	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27864.849	24811.419	0.35	7
Berlayer Creek	2021-03-09	BC1206	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27864.352	24813.024	0.4	7
Berlayer Creek	2021-03-09	BC1207	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27864.537	24813.319	0.45	7
Berlayer Creek	2021-03-09	BC1208	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27862.306	24815.132	0.4	7
Berlayer Creek	2021-03-09	BC1209	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27869.601	24817.262	0.35	5
Berlayer Creek	2021-03-09	BC1210	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27860.509	24816.781	0.4	12
Berlayer Creek	2021-03-09	BC1211	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27862.29	24817.77	0.3	8
Berlayer Creek	2021-03-09	BC1212	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27859.667	24816.569	0.5	9
Berlayer Creek	2021-03-09	BC1213	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27858.271	24816.348	0.4	8
Berlayer Creek	2021-03-09	BC1214	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27857.242	24816.472	0.4	3
Berlayer Creek	2021-03-09	BC1215	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27858.612	24821.265	0.3	6
Berlayer Creek	2021-03-09	BC1216	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27856.944	24819.917	0.3	5
Berlayer Creek	2021-03-09	BC1217	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27854.407	24820.838	0.35	8
Berlayer Creek	2021-03-09	BC1218	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27853.465	24821.944	0.45	10
Berlayer Creek	2021-03-09	BC1219	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27854.335	24827.969	0.4	7
Berlayer Creek	2021-03-09	BC1220	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27853.452	24827.387	0.5	9
Berlayer Creek	2021-03-09	BC1221	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27848.287	24825.883	0.4	10
Berlayer Creek	2021-03-09	BC1222	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27849.826	24824.371	0.4	9
Berlayer Creek	2021-03-09	BC1223	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27847.671	24824.883	0.35	9
Berlayer Creek	2021-03-09	BC1224	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27848.671	24826.665	0.5	12
Berlayer Creek	2021-03-09	BC1225	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27847.796	24827.881	0.3	8
Berlayer Creek	2021-03-09	BC1226	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27848.297	24828.712	0.4	10
Berlayer Creek	2021-03-09	BC1227	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27850.609	24830.685	0.4	8
Berlayer Creek	2021-03-09	BC1228	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27851.551	24836.601	0.5	12
Berlayer Creek	2021-03-09	BC1229	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27850.19	24830.351	0.4	8
Berlayer Creek	2021-03-09	BC1230	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27849.988	24830.464	0.3	8
Berlayer Creek	2021-03-09	BC1231	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27846.538	24830.37	0.45	12
Berlayer Creek	2021-03-09	BC1232	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27845.947	24830.319	0.4	6
Berlayer Creek	2021-03-09	BC1233	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27846.914	24831.663	0.4	10
Berlayer Creek	2021-03-09	BC1234	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27842.317	24831.418	0.3	10
Berlayer Creek	2021-03-09	BC1235	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27842.698	24831.519	0.4	9
Berlayer Creek	2021-03-09	BC1236	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27842.228	24830.48	0.4	9
Berlayer Creek	2021-03-09	BC1237	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27844.9	24833.889	0.4	10
Berlayer Creek	2021-03-09	BC1238	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27845.304	24834.098	0.35	9
Berlayer Creek	2021-03-09	BC1239	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27845.008	24832.705	0.4	10
Berlayer Creek	2021-03-09	BC1240	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27843.424	24832.542	0.3	9
Berlayer Creek	2021-03-09	BC1241	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27843.284	24832.859	0.5	12
Berlayer Creek	2021-03-09	BC1242	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27840.7	24834.142	0.3	8
Berlayer Creek	2021-03-09	BC1243	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27841.17	24837.959	0.6	9
Berlayer Creek	2021-03-09	BC1244	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27841.259	24841.842	0.4	7
Berlayer Creek	2021-03-09	BC1245	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27832.824	24840.435	0.35	5
Berlayer Creek	2021-03-09	BC1246	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27834.198	24841.832	0.5	10
Berlayer Creek	2021-03-09	BC1247	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27833.317	24847.116	0.6	10
Berlayer Creek	2021-03-09	BC1248	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27829.814	24846.846	0.6	5
Berlayer Creek	2021-03-09	BC1249	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27833.217	24848.983	0.4	6
Berlayer Creek	2021-03-09	BC1250	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27829.202	24848.905	0.65	12
Berlayer Creek	2021-03-09	BC1251	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27831.552	24855.331	0.5	12

Berlayer Creek	2021-03-09	BC1252	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27830.476	24853.371	0.35	10
Berlayer Creek	2021-03-09	BC1253	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27828.002	24856.224	0.65	12
Berlayer Creek	2021-03-09	BC1254	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27826.534	24855.558	0.5	12
Berlayer Creek	2021-03-09	BC1255	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27822.067	24858.129	0.7	12
Berlayer Creek	2021-03-09	BC1256	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27823.1	24857.498	0.6	4
Berlayer Creek	2021-03-09	BC1257	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27820.687	24857.354	0.45	10
Berlayer Creek	2021-03-09	BC1258	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27824.217	24858.218	0.55	10
Berlayer Creek	2021-03-09	BC1259	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27820.158	24864.209	0.6	12
Berlayer Creek	2021-03-09	BC1260	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27821.446	24864.193	0.55	10
Berlayer Creek	2021-03-10	BC1261	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27815.042	24866.232	0.5	12
Berlayer Creek	2021-03-10	BC1262	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27813.461	24865.475	0.5	10
Berlayer Creek	2021-03-10	BC1263	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27814.327	24865.997	0.4	3
Berlayer Creek	2021-03-10	BC1264	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27812.901	24868.813	0.5	12
Berlayer Creek	2021-03-10	BC1265	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27814.299	24869.911	0.45	12
Berlayer Creek	2021-03-10	BC1266	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27812.109	24868.906	0.3	1.2
Berlayer Creek	2021-03-10	BC1267	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27814.535	24870.124	0.4	12
Berlayer Creek	2021-03-10	BC1268	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27810.864	24871.141	1	15
Berlayer Creek	2021-03-10	BC1269	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27807.406	24870.619	0.3	5
Berlayer Creek	2021-03-10	BC1270	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27809.878	24871.644	0.6	12
Berlayer Creek	2021-03-10	BC1271	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27808.01	24872.086	0.9	14
Berlayer Creek	2021-03-10	BC1272	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27807.742	24873.624	0.7	12
Berlayer Creek	2021-03-10	BC1273	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27807.671	24870.765	0.4	8
Berlayer Creek	2021-03-10	BC1274	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27810.869	24872.458	0.4	10
Berlayer Creek	2021-03-10	BC1275	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27806.19	24877.7	0.85	15
Berlayer Creek	2021-03-10	BC1276	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27806.048	24879.592	0.3	2.5
Berlayer Creek	2021-03-10	BC1277	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27805.498	24881.922	0.3	9
Berlayer Creek	2021-03-10	BC1278	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27802.363	24877.198	1	14
Berlayer Creek	2021-03-10	BC1279	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27800.649	24877.715	0.8	14
Berlayer Creek	2021-03-10	BC1280	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27798.316	24882.746	0.3	3
Berlayer Creek	2021-03-10	BC1281	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27798.101	24882.27	0.8	14
Berlayer Creek	2021-03-10	BC1282	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27797.222	24883.23	0.8	14
Berlayer Creek	2021-03-10	BC1283	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27795.489	24883.454	0.7	14
Berlayer Creek	2021-03-10	BC1284	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27797.567	24884.143	0.6	12
Berlayer Creek	2021-03-10	BC1285	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27798.582	24885.612	0.8	14
Berlayer Creek	2021-03-10	BC1286	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27797.555	24886.385	0.5	12
Berlayer Creek	2021-03-10	BC1287	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27796.321	24888.434	0.3	1.6
Berlayer Creek	2021-03-10	BC1288	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27796.153	24888.465	0.4	10
Berlayer Creek	2021-03-10	BC1289	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27796.13	24886.164	0.8	14
Berlayer Creek	2021-03-10	BC1290	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27794.801	24885.048	0.9	14
Berlayer Creek	2021-03-10	BC1291	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27792.145	24885.802	0.35	10
Berlayer Creek	2021-03-10	BC1292	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27791.749	24887.373	0.4	10
Berlayer Creek	2021-03-10	BC1293	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27791.038	24888.924	0.9	14
Berlayer Creek	2021-03-10	BC1294	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27792.618	24890.607	0.4	10
Berlayer Creek	2021-03-10	BC1295	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27793.205	24890.828	0.4	12
Berlayer Creek	2021-03-10	BC1296	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27789.814	24888.561	0.7	15
Berlayer Creek	2021-03-10	BC1297	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27789.574	24890.3	0.8	14
Berlayer Creek	2021-03-10	BC1298	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27788.928	24889.9	0.7	12
Berlayer Creek	2021-03-10	BC1299	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27787.592	24890.697	0.5	8
Berlayer Creek	2021-03-10	BC1300	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27788.227	24890.895	0.5	10

Berlayer Creek	2021-03-09	BC1301	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27858.555	24834.513	0.6	5
Berlayer Creek	2021-03-09	BC1302	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27856.407	24833.613	0.4	7
Berlayer Creek	2021-03-09	BC1303	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27855.418	24834.104	0.45	8
Berlayer Creek	2021-03-09	BC1304	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27852.908	24834.746	0.4	9
Berlayer Creek	2021-03-09	BC1305	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27854.725	24836.142	0.3	7
Berlayer Creek	2021-03-09	BC1306	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27852.262	24839.616	0.35	5
Berlayer Creek	2021-03-09	BC1307	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27851.728	24840.121	0.45	6
Berlayer Creek	2021-03-09	BC1308	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27844.807	24838.992	0.6	8
Berlayer Creek	2021-03-09	BC1309	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27844.91	24839.622	0.4	8
Berlayer Creek	2021-03-09	BC1310	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27849.324	24844.181	0.75	9
Berlayer Creek	2021-03-09	BC1311	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27847.697	24844.27	0.45	9
Berlayer Creek	2021-03-09	BC1312	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27844.695	24842.879	0.3	3
Berlayer Creek	2021-03-09	BC1313	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27845.351	24845.877	0.45	7
Berlayer Creek	2021-03-09	BC1314	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27844.831	24847.32	0.45	7
Berlayer Creek	2021-03-09	BC1315	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27844.559	24849.695	0.8	8
Berlayer Creek	2021-03-09	BC1316	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27844.254	24844.353	0.45	6
Berlayer Creek	2021-03-09	BC1317	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27841.008	24848.771	1	11
Berlayer Creek	2021-03-09	BC1318	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27838.815	24847.156	0.4	12
Berlayer Creek	2021-03-09	BC1319	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27838.43	24853.706	1.1	11
Berlayer Creek	2021-03-09	BC1320	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27840.857	24852.965	1	8
Berlayer Creek	2021-03-09	BC1321	*Bruguiera cylindrica*	Rhizophoraceae	Native	Common	Tree	27838.5	24859.004	0.3	7
Berlayer Creek	2021-03-09	BC1322	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27836.779	24862.751	1.5	8
Berlayer Creek	2021-03-09	BC1323	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27836.284	24860.899	1	5
Berlayer Creek	2021-03-09	BC1324	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27834.979	24867.277	0.8	8
Berlayer Creek	2021-03-10	BC1325	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27816.639	24866.387	0.45	13
Berlayer Creek	2021-03-10	BC1326	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27814.838	24865.84	0.4	4
Berlayer Creek	2021-03-10	BC1327	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27817.076	24869.333	0.7	14
Berlayer Creek	2021-03-10	BC1328	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27818.974	24872.182	0.7	14
Berlayer Creek	2021-03-10	BC1329	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27815.819	24874.573	0.3	5
Berlayer Creek	2021-03-10	BC1330	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27815.284	24874.41	0.5	13
Berlayer Creek	2021-03-10	BC1331	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27813.057	24873.273	0.5	13
Berlayer Creek	2021-03-10	BC1332	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27816.622	24876.107	0.3	4
Berlayer Creek	2021-03-10	BC1333	*Cerbera odollam*	Apocynaceae	Native	Vulnerable	Tree	27818.613	24884.409	1	5
Berlayer Creek	2021-03-10	BC1334	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27818.539	24886.403	1.2	9
Berlayer Creek	2021-03-10	BC1335	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27816.795	24885.612	1.3	7
Berlayer Creek	2021-03-10	BC1336	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27814.966	24876.835	0.4	9
Berlayer Creek	2021-03-10	BC1337	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27811.55	24886.586	0.65	14
Berlayer Creek	2021-03-10	BC1338	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27807.668	24892.313	1.3	9
Berlayer Creek	2021-03-10	BC1339	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27803.511	24895.218	0.9	7
Berlayer Creek	2021-03-10	BC1340	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27795.7	24890.521	0.5	14
Berlayer Creek	2021-03-10	BC1341	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27794.423	24890.912	0.55	14
Berlayer Creek	2021-03-10	BC1342	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27794.889	24895.415	0.8	13
Berlayer Creek	2021-03-10	BC1343	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27792.955	24892.116	0.6	14
Berlayer Creek	2021-03-10	BC1344	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27791.027	24891.791	0.8	15
Berlayer Creek	2021-03-10	BC1345	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27797.835	24900.266	1.1	10
Berlayer Creek	2021-03-10	BC1346	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27796.832	24904.442	1	10
Berlayer Creek	2021-03-10	BC1347	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27793.697	24909.172	1.5	9
Berlayer Creek	2021-03-10	BC1348	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27784.062	24898.298	0.3	4
Berlayer Creek	2021-03-10	BC1349	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27782.498	24900.287	0.3	5

Berlayer Creek	2021-03-10	BC1350	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27782.527	24899.913	0.8	15
Berlayer Creek	2021-03-10	BC1351	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27780.612	24900.854	0.6	14
Berlayer Creek	2021-03-10	BC1352	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27780.521	24902.167	0.3	5
Berlayer Creek	2021-03-10	BC1353	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27781.845	24902.088	0.75	15
Berlayer Creek	2021-03-10	BC1354	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27776.221	24904.28	0.65	14
Berlayer Creek	2021-03-10	BC1355	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27781.133	24912.343	0.8	9
Berlayer Creek	2021-03-10	BC1356	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27772.891	24905.908	0.7	7
Berlayer Creek	2021-03-10	BC1357	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27774.327	24908.055	0.3	6
Berlayer Creek	2021-03-10	BC1358	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27773.211	24912.826	0.3	3
Berlayer Creek	2021-03-10	BC1359	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27778.26	24920.41	0.8	9
Berlayer Creek	2021-03-10	BC1360	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27777.873	24920.846	0.6	9
Berlayer Creek	2021-03-10	BC1361	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27775.393	24916.728	1.1	14
Berlayer Creek	2021-03-10	BC1362	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27766.455	24919.913	0.5	7
Berlayer Creek	2021-03-10	BC1363	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27768.596	24923.407	0.3	7
Berlayer Creek	2021-03-10	BC1364	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.385	24922.973	0.6	10
Berlayer Creek	2021-03-10	BC1365	*Xylocarpus granatum*	Meliaceae	Native	Common	Tree	27772.149	24927.754	1.3	12
Berlayer Creek	2021-03-10	BC1366	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27771.878	24929.441	1.2	8
Berlayer Creek	2021-03-10	BC1367	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.677	24923.387	0.8	15
Berlayer Creek	2021-03-10	BC1368	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27766.243	24926.833	0.3	5
Berlayer Creek	2021-03-10	BC1369	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27761.886	24936.815	0.4	8
Berlayer Creek	2021-03-10	BC1370	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27763.895	24936.66	1.6	10
Berlayer Creek	2021-03-10	BC1371	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27758.309	24936.19	0.35	6
Berlayer Creek	2021-03-10	BC1372	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27756.376	24937.294	0.4	7
Berlayer Creek	2021-03-10	BC1373	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27761.177	24940.005	0.8	7
Berlayer Creek	2021-03-10	BC1374	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27760.071	24942.006	0.8	10
Berlayer Creek	2021-03-10	BC1375	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27756.642	24945.852	0.8	9
Berlayer Creek	2021-03-10	BC1376	*Bruguiera cylindrica*	Rhizophoraceae	Native	Common	Tree	27755.309	24945.733	0.3	8
Berlayer Creek	2021-03-10	BC1377	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27754.057	24942.866	0.6	12
Berlayer Creek	2021-03-10	BC1378	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27753.403	24940.558	0.7	14
Berlayer Creek	2021-03-10	BC1379	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27752.228	24936.8	0.75	15
Berlayer Creek	2021-03-10	BC1380	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27752.154	24939.044	0.7	14
Berlayer Creek	2021-03-10	BC1381	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27753.441	24943.203	0.3	12
Berlayer Creek	2021-03-10	BC1382	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.566	24944.438	0.7	15
Berlayer Creek	2021-03-10	BC1383	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.768	24948.765	0.4	13
Berlayer Creek	2021-03-10	BC1384	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27753.659	24950.523	0.4	9
Berlayer Creek	2021-03-10	BC1385	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27752.612	24946.421	0.4	8
Berlayer Creek	2021-03-10	BC1386	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27749.704	24943.596	0.4	8
Berlayer Creek	2021-03-10	BC1387	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27749.729	24945.126	0.8	15
Berlayer Creek	2021-03-10	BC1388	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27745.382	24943.253	0.8	14
Berlayer Creek	2021-03-10	BC1389	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.897	24949.727	0.4	12
Berlayer Creek	2021-03-10	BC1390	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27748.245	24949.784	0.4	8
Berlayer Creek	2021-03-10	BC1391	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27747.203	24950.18	1.3	8
Berlayer Creek	2021-03-10	BC1392	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27746.517	24947.261	0.9	14
Berlayer Creek	2021-03-10	BC1393	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27743.018	24951.95	0.3	5
Berlayer Creek	2021-03-10	BC1394	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27746.711	24953.034	0.35	7
Berlayer Creek	2021-03-10	BC1395	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27741.322	24956.963	0.4	6
Berlayer Creek	2021-03-10	BC1396	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27737.768	24953.846	1	14
Berlayer Creek	2021-03-10	BC1397	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27736.881	24960.435	0.3	4
Berlayer Creek	2021-03-10	BC1398	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27734.747	24962.665	0.6	5

Berlayer Creek	2021-03-10	BC1399	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27730.704	24961.147	0.8	14
Berlayer Creek	2021-03-10	BC1400	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27729.768	24962.35	0.8	14
Berlayer Creek	2021-03-10	BC1401	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27730.423	24964.969	0.8	4
Berlayer Creek	2021-03-10	BC1402	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27729.432	24963.579	1.15	15
Berlayer Creek	2021-03-10	BC1403	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27727.034	24963.499	1	5
Berlayer Creek	2021-03-10	BC1404	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27725.28	24970.371	0.6	5
Berlayer Creek	2021-03-10	BC1405	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27711.13	24975.304	0.4	5
Berlayer Creek	2021-03-10	BC1406	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27709.363	24982.755	0.8	8
Berlayer Creek	2021-03-10	BC1407	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27705.838	24982.861	1	8
Berlayer Creek	2021-03-10	BC1408	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27704.954	24985.322	0.7	7
Berlayer Creek	2021-03-10	BC1409	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27695.447	24984.295	0.3	5
Berlayer Creek	2021-03-10	BC1410	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27699.262	24983.182	0.7	5
Berlayer Creek	2021-03-10	BC1411	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27695.884	24984.674	0.5	7
Berlayer Creek	2021-03-10	BC1412	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27693.691	24984.687	0.7	7
Berlayer Creek	2021-03-10	BC1413	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27699.031	24983.599	0.8	7
Berlayer Creek	2021-03-10	BC1414	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27701.134	24986.554	0.4	6
Berlayer Creek	2021-03-10	BC1415	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27693.115	24988.601	0.4	6
Berlayer Creek	2021-03-10	BC1416	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27693.815	24989.432	0.4	6
Berlayer Creek	2021-03-10	BC1417	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27692.605	24987.024	0.6	10
Berlayer Creek	2021-03-10	BC1418	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27690.479	24989.85	0.7	8
Berlayer Creek	2021-03-10	BC1419	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27690.929	24990.987	0.8	8
Berlayer Creek	2021-03-10	BC1420	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27686.248	24993.028	0.3	5
Berlayer Creek	2021-03-10	BC1421	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27687.766	24995.857	0.6	6
Berlayer Creek	2021-03-10	BC1422	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27684.169	24993.042	0.4	5
Berlayer Creek	2021-03-10	BC1423	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27685.29	24998.458	0.3	5
Berlayer Creek	2021-03-10	BC1424	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27684.241	24997.602	0.3	6
Berlayer Creek	2021-03-10	BC1425	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27683.476	24997.559	0.3	5
Berlayer Creek	2021-03-10	BC1426	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27679.862	24997.747	0.4	2.5
Berlayer Creek	2021-03-10	BC1427	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27679.373	24996.83	0.4	4
Berlayer Creek	2021-03-10	BC1428	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27679.266	24996.932	0.4	4
Berlayer Creek	2021-03-10	BC1429	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27681.178	25000.791	1.55	15
Berlayer Creek	2021-03-11	BC1430	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27674.988	25004.604	0.4	6
Berlayer Creek	2021-03-11	BC1431	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27672.86	25006.932	0.7	8
Berlayer Creek	2021-03-11	BC1432	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27671.34	25007.288	0.5	6
Berlayer Creek	2021-03-11	BC1433	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27672.593	25007.642	0.8	10
Berlayer Creek	2021-03-11	BC1434	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27669.848	25010.457	0.4	10
Berlayer Creek	2021-03-11	BC1435	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27670.107	25010.871	0.35	7
Berlayer Creek	2021-03-11	BC1436	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27670.543	25010.655	0.3	6
Berlayer Creek	2021-03-11	BC1437	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27667.433	25005.124	0.4	6
Berlayer Creek	2021-03-11	BC1438	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27668.155	25012.823	0.45	10
Berlayer Creek	2021-03-11	BC1439	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27666.16	25015.29	0.9	13
Berlayer Creek	2021-03-11	BC1440	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27664.61	25014.416	0.35	5
Berlayer Creek	2021-03-11	BC1441	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27662.031	25010.371	0.4	5
Berlayer Creek	2021-03-11	BC1442	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27666.311	25015.815	0.6	13
Berlayer Creek	2021-03-11	BC1443	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27665.082	25016.308	0.8	13
Berlayer Creek	2021-03-11	BC1444	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27664.893	25018.336	0.75	13
Berlayer Creek	2021-03-11	BC1445	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27662.665	25018.045	0.35	8
Berlayer Creek	2021-03-11	BC1446	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27661.641	25018.949	0.3	6
Berlayer Creek	2021-03-11	BC1447	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27663.993	25020.36	0.85	13

Berlayer Creek	2021-03-11	BC1448	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27657.869	25017.374	0.4	6
Berlayer Creek	2021-03-11	BC1449	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27656.454	25019.096	0.3	7
Berlayer Creek	2021-03-11	BC1450	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27657.347	25019.174	0.35	8
Berlayer Creek	2021-03-11	BC1451	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27653.409	25021.095	0.4	8
Berlayer Creek	2021-03-11	BC1452	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27657.995	25024.998	0.75	13
Berlayer Creek	2021-03-11	BC1453	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27650.584	25028.189	0.5	5
Berlayer Creek	2021-03-11	BC1454	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27654.843	25031.967	0.4	8
Berlayer Creek	2021-03-11	BC1455	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27650.348	25035.52	0.4	7
Berlayer Creek	2021-03-11	BC1456	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27646.37	25040.756	0.3	8
Berlayer Creek	2021-03-11	BC1457	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27645.683	25041.715	0.4	7
Berlayer Creek	2021-03-11	BC1458	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27641.522	25041.163	0.4	7
Berlayer Creek	2021-03-11	BC1459	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27635.419	25044.405	0.45	10
Berlayer Creek	2021-03-11	BC1460	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27639.759	25045.214	0.7	13
Berlayer Creek	2021-03-11	BC1461	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27641.416	25045.693	0.35	12
Berlayer Creek	2021-03-11	BC1462	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27641.718	25045.901	0.85	13
Berlayer Creek	2021-03-11	BC1463	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27642.542	25049.159	0.45	12
Berlayer Creek	2021-03-11	BC1464	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27640.829	25048.021	0.4	12
Berlayer Creek	2021-03-11	BC1465	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27640.969	25048.448	0.4	13
Berlayer Creek	2021-03-11	BC1466	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27639.819	25048.849	0.35	11
Berlayer Creek	2021-03-11	BC1467	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27640.178	25049.475	0.35	11
Berlayer Creek	2021-03-11	BC1468	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27636.016	25050.558	0.35	11
Berlayer Creek	2021-03-11	BC1469	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27637.324	25052.935	0.8	13
Berlayer Creek	2021-03-11	BC1470	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27634.671	25051.468	0.86	13
Berlayer Creek	2021-03-11	BC1471	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27634.49	25048.707	0.95	13
Berlayer Creek	2021-03-11	BC1472	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27636.543	25043.983	0.8	10
Berlayer Creek	2021-03-11	BC1473	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27637.075	25045.201	0.85	13
Berlayer Creek	2021-03-11	BC1474	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27630.589	25047.718	0.95	13
Berlayer Creek	2021-03-11	BC1475	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27618.456	25048.945	0.75	8
Berlayer Creek	2021-03-11	BC1476	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.076	25048.804	0.75	9
Berlayer Creek	2021-03-11	BC1477	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27632.033	25052.846	0.3	7
Berlayer Creek	2021-03-11	BC1478	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27629.705	25056.187	0.4	8
Berlayer Creek	2021-03-11	BC1479	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27631.938	25055.802	0.6	13
Berlayer Creek	2021-03-11	BC1480	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27628.086	25057.48	0.75	14
Berlayer Creek	2021-03-11	BC1481	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27626.685	25058.707	0.4	4
Berlayer Creek	2021-03-11	BC1482	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27627.436	25058.634	0.4	4
Berlayer Creek	2021-03-11	BC1483	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27622.617	25053.764	0.7	12
Berlayer Creek	2021-03-11	BC1484	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27623.389	25059.879	0.8	13
Berlayer Creek	2021-03-11	BC1485	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27620.779	25061.275	0.45	4
Berlayer Creek	2021-03-11	BC1486	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27649.663	25047.996	0.5	5
Berlayer Creek	2021-03-11	BC1487	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27649.31	25047.185	0.45	12
Berlayer Creek	2021-03-11	BC1488	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27647.733	25047.178	0.3	10
Berlayer Creek	2021-03-11	BC1489	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27648.362	25048.221	0.5	10
Berlayer Creek	2021-03-11	BC1490	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27645.75	25048.194	0.6	13
Berlayer Creek	2021-03-11	BC1491	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27645.609	25046.852	0.4	10
Berlayer Creek	2021-03-11	BC1492	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27645.409	25049.235	0.9	14
Berlayer Creek	2021-03-11	BC1493	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27641.994	25051.093	0.65	13
Berlayer Creek	2021-03-11	BC1494	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27640.965	25051.646	0.6	13
Berlayer Creek	2021-03-11	BC1495	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27640.633	25050.469	0.7	12
Berlayer Creek	2021-03-11	BC1496	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27639.852	25052.072	0.6	11

Berlayer Creek	2021-03-11	BC1497	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27641.973	25051.854	0.95	13
Berlayer Creek	2021-03-11	BC1498	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27642.065	25060.099	0.3	4
Berlayer Creek	2021-03-11	BC1499	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27643.211	25063.253	0.3	6
Berlayer Creek	2021-03-11	BC1500	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27634.382	25056.106	0.5	10
Berlayer Creek	2021-03-10	BC1501	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27783.579	24891.845	0.4	6
Berlayer Creek	2021-03-10	BC1502	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27784.866	24893.8	1	15
Berlayer Creek	2021-03-10	BC1503	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27780.156	24897.14	0.8	14
Berlayer Creek	2021-03-10	BC1504	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27774.415	24898.828	0.3	6
Berlayer Creek	2021-03-10	BC1505	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27774.244	24900.258	0.35	6
Berlayer Creek	2021-03-10	BC1506	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27772.451	24900.572	0.3	4
Berlayer Creek	2021-03-10	BC1507	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.176	24903.691	0.7	12
Berlayer Creek	2021-03-10	BC1508	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.961	24906.625	0.6	12
Berlayer Creek	2021-03-10	BC1509	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27767.92	24906.81	1.1	14
Berlayer Creek	2021-03-10	BC1510	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27769.579	24906.535	1	14
Berlayer Creek	2021-03-10	BC1511	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.23	24909.675	0.4	12
Berlayer Creek	2021-03-10	BC1512	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27764.066	24907.137	0.4	6
Berlayer Creek	2021-03-10	BC1513	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27766.054	24910.215	0.7	12
Berlayer Creek	2021-03-10	BC1514	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27764.747	24913.082	0.9	14
Berlayer Creek	2021-03-10	BC1515	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27760.538	24913.309	0.7	12
Berlayer Creek	2021-03-10	BC1516	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27759.532	24912.531	0.5	14
Berlayer Creek	2021-03-10	BC1517	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27757.317	24914.42	0.6	12
Berlayer Creek	2021-03-10	BC1518	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27757.412	24918.075	0.7	12
Berlayer Creek	2021-03-10	BC1519	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27757.532	24916.722	0.6	4
Berlayer Creek	2021-03-10	BC1520	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27758.019	24919.186	0.8	12
Berlayer Creek	2021-03-10	BC1521	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27755.932	24917.605	0.7	12
Berlayer Creek	2021-03-10	BC1522	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27757.503	24918.992	0.6	12
Berlayer Creek	2021-03-10	BC1523	*Sonneratia alba*	Lythraceae	Native	Common	Tree	-5215.212	42591.819	0.5	5
Berlayer Creek	2021-03-10	BC1524	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27758.625	24920.51	0.4	12
Berlayer Creek	2021-03-10	BC1525	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27754.626	24923.679	0.8	14
Berlayer Creek	2021-03-10	BC1526	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27755.048	24923.236	0.5	14
Berlayer Creek	2021-03-10	BC1527	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.873	24922.644	0.4	12
Berlayer Creek	2021-03-10	BC1528	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27750.952	24922.662	0.4	14
Berlayer Creek	2021-03-10	BC1529	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27753.183	24924.393	0.8	14
Berlayer Creek	2021-03-10	BC1530	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27754.393	24923.706	0.4	12
Berlayer Creek	2021-03-10	BC1531	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27753.925	24924.454	0.9	12
Berlayer Creek	2021-03-10	BC1532	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27754.32	24927.017	0.5	10
Berlayer Creek	2021-03-10	BC1533	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.244	24925.583	0.7	12
Berlayer Creek	2021-03-10	BC1534	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.059	24925.145	0.6	14
Berlayer Creek	2021-03-10	BC1535	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.288	24923.719	0.3	8
Berlayer Creek	2021-03-10	BC1536	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.755	24923.877	0.5	10
Berlayer Creek	2021-03-10	BC1537	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27751.808	24923.179	0.6	12
Berlayer Creek	2021-03-10	BC1538	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27747.27	24926.381	0.8	14
Berlayer Creek	2021-03-10	BC1539	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27749.002	24926.894	0.3	10
Berlayer Creek	2021-03-10	BC1540	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27745.917	24930.825	0.75	14
Berlayer Creek	2021-03-10	BC1541	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27745.152	24930.264	0.9	12
Berlayer Creek	2021-03-10	BC1542	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27746.221	24929.708	0.5	10
Berlayer Creek	2021-03-10	BC1543	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27747.979	24931.032	0.8	12
Berlayer Creek	2021-03-10	BC1544	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.746	24932.211	0.4	10
Berlayer Creek	2021-03-10	BC1545	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27748.118	24933.51	0.7	14

Berlayer Creek	2021-03-10	BC1546	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27747.307	24934.408	0.6	14
Berlayer Creek	2021-03-10	BC1547	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27743.365	24934.4	0.9	14
Berlayer Creek	2021-03-10	BC1548	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27742.396	24934.692	0.7	12
Berlayer Creek	2021-03-10	BC1549	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27739.194	24936.124	0.8	14
Berlayer Creek	2021-03-10	BC1550	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27737.569	24934.698	0.6	10
Berlayer Creek	2021-03-10	BC1551	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27740.471	24942.914	0.4	12
Berlayer Creek	2021-03-10	BC1552	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27740.536	24939.528	0.5	8
Berlayer Creek	2021-03-10	BC1553	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27740.932	24942.019	0.3	10
Berlayer Creek	2021-03-10	BC1554	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27737.82	24943.728	1	16
Berlayer Creek	2021-03-10	BC1555	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27737.793	24943.744	0.4	6
Berlayer Creek	2021-03-10	BC1556	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27734.476	24946.827	0.5	6
Berlayer Creek	2021-03-10	BC1557	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27732.863	24942.354	0.6	12
Berlayer Creek	2021-03-10	BC1558	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27731.76	24942.73	0.5	14
Berlayer Creek	2021-03-10	BC1559	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27732.942	24943.944	0.6	14
Berlayer Creek	2021-03-10	BC1560	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27734.805	24946.813	0.9	14
Berlayer Creek	2021-03-10	BC1561	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27732.818	24947.557	0.85	14
Berlayer Creek	2021-03-10	BC1562	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27732.098	24946.008	0.35	12
Berlayer Creek	2021-03-10	BC1563	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27730.712	24946.729	0.5	12
Berlayer Creek	2021-03-10	BC1564	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27729.865	24943.537	0.4	12
Berlayer Creek	2021-03-10	BC1565	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27730.566	24945.822	0.3	12
Berlayer Creek	2021-03-10	BC1566	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27728.862	24948.945	0.5	12
Berlayer Creek	2021-03-10	BC1567	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27728.645	24949.101	0.8	14
Berlayer Creek	2021-03-10	BC1568	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27728.764	24949.265	0.85	14
Berlayer Creek	2021-03-10	BC1569	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27726.885	24949.593	0.5	12
Berlayer Creek	2021-03-10	BC1570	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27727.237	24952.037	0.8	12
Berlayer Creek	2021-03-10	BC1571	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27725.474	24952.997	0.9	14
Berlayer Creek	2021-03-10	BC1572	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27725.404	24952.93	0.4	14
Berlayer Creek	2021-03-10	BC1573	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27723.532	24956.116	0.5	10
Berlayer Creek	2021-03-10	BC1574	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27724.467	24955.222	1	14
Berlayer Creek	2021-03-11	BC1575	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27693.262	25002.228	1.5	15
Berlayer Creek	2021-03-11	BC1576	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27677.526	25012.842	0.6	6
Berlayer Creek	2021-03-11	BC1577	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27672.684	25011.385	0.3	7
Berlayer Creek	2021-03-11	BC1578	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27670.938	25018.582	1	8
Berlayer Creek	2021-03-11	BC1579	*Rhizophora mucronata*	Rhizophoraceae	Native	Common	Tree	27668.213	25017.04	0.5	4
Berlayer Creek	2021-03-11	BC1580	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27656.286	25040.83	0.5	3
Berlayer Creek	2021-03-11	BC1581	*Rhizophora apiculata*	Rhizophoraceae	Native	Common	Tree	27655.902	25046.719	0.2	8
Berlayer Creek	2021-03-11	BC1582	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27646.97	25036.805	0.65	5
Berlayer Creek	2021-03-11	BC1583	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27655.059	25039.341	0.6	10
Berlayer Creek	2021-03-11	BC1584	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27652.628	25038.657	0.6	10
Berlayer Creek	2021-03-11	BC1585	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27653.826	25038.658	0.65	12
Berlayer Creek	2021-03-11	BC1586	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27652.508	25042.404	0.75	12
Berlayer Creek	2021-03-11	BC1587	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27652.627	25037.66	0.35	10
Berlayer Creek	2021-03-11	BC1588	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27652.501	25034.929	0.8	13
Berlayer Creek	2021-03-11	BC1589	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27650.677	25036.804	0.45	7
Berlayer Creek	2021-03-11	BC1590	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27647.935	25036.597	0.3	4
Berlayer Creek	2021-03-11	BC1591	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27646.388	25034.714	0.7	5
Berlayer Creek	2021-03-11	BC1592	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27648.08	25037.496	0.6	12
Berlayer Creek	2021-03-11	BC1593	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27647.703	25038.9	0.3	4
Berlayer Creek	2021-03-11	BC1594	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27647.231	25039.375	0.8	12

Berlayer Creek	2021-03-11	BC1595	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27648.816	25039.547	0.4	10
Berlayer Creek	2021-03-11	BC1596	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27647.842	25042.014	0.6	12
Berlayer Creek	2021-03-11	BC1597	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27646.372	25043.367	0.7	10
Berlayer Creek	2021-03-11	BC1598	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27646.337	25042.965	0.8	12
Berlayer Creek	2021-03-11	BC1599	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27645.937	25045.223	0.8	14
Berlayer Creek	2021-03-11	BC1600	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27649.192	25046.555	0.8	13
Berlayer Creek	2021-03-11	BC1801	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27633.256	25054.953	0.45	8
Berlayer Creek	2021-03-11	BC1802	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27629.148	25067.704	0.7	13
Berlayer Creek	2021-03-11	BC1803	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27626.966	25065.464	1.6	13
Berlayer Creek	2021-03-11	BC1804	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27627.155	25059.651	0.3	4
Berlayer Creek	2021-03-11	BC1805	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27626.234	25060.698	0.9	14
Berlayer Creek	2021-03-11	BC1806	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27629.794	25058.064	0.65	11
Berlayer Creek	2021-03-11	BC1807	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27628.346	25057.97	0.95	13
Berlayer Creek	2021-03-11	BC1808	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27626.943	25057.995	0.5	12
Berlayer Creek	2021-03-11	BC1809	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27626.887	25061.271	0.35	3
Berlayer Creek	2021-03-11	BC1810	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27626.509	25059.663	0.6	8
Berlayer Creek	2021-03-11	BC1811	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27627.155	25065.09	0.45	10
Berlayer Creek	2021-03-11	BC1812	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27625.172	25063.374	0.5	11
Berlayer Creek	2021-03-11	BC1813	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27626.547	25061.228	0.3	10
Berlayer Creek	2021-03-11	BC1814	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27626.155	25060.457	0.4	11
Berlayer Creek	2021-03-11	BC1815	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27624.423	25063.04	0.3	10
Berlayer Creek	2021-03-11	BC1816	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27623.498	25065.197	0.3	5
Berlayer Creek	2021-03-11	BC1817	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27625.188	25066.588	0.5	12
Berlayer Creek	2021-03-11	BC1818	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27625.144	25067.061	0.4	6
Berlayer Creek	2021-03-11	BC1819	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27624.054	25066.554	0.55	6
Berlayer Creek	2021-03-11	BC1820	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27619.03	25070.955	0.6	12
Berlayer Creek	2021-03-11	BC1821	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27619.136	25073.195	0.95	10
Berlayer Creek	2021-03-11	BC1822	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27614.832	25073.053	0.7	12
Berlayer Creek	2021-03-11	BC1823	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27614.441	25073.011	0.3	11
Berlayer Creek	2021-03-11	BC1824	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27613.215	25075.356	0.85	11
Berlayer Creek	2021-03-11	BC1825	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27613.829	25075.392	0.65	11
Berlayer Creek	2021-03-11	BC1826	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27612.517	25074.111	0.9	12
Berlayer Creek	2021-03-11	BC1827	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27613.52	25074.106	0.5	3
Berlayer Creek	2021-03-11	BC1828	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27611.034	25074.624	0.8	12
Berlayer Creek	2021-03-11	BC1829	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27609.057	25076.771	0.5	12
Berlayer Creek	2021-03-11	BC1830	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.167	25075.816	1	12
Berlayer Creek	2021-03-11	BC1831	*Avicennia officinalis*	Acanthaceae	Native	Common	Tree	27609.607	25078.764	1	6
Berlayer Creek	2021-03-11	BC1832	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27606.021	25088.242	1.1	11
Berlayer Creek	2021-03-11	BC1833	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27600.922	25088.92	1.3	7
Berlayer Creek	2021-03-11	BC1834	*Avicennia alba*	Acanthaceae	Native	Common	Tree	27601.019	25090.445	2	6
Berlayer Creek	2021-03-11	BC1835	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27602.757	25082.998	1.35	13
Former BP oil refinery site	2021-03-17	BC1836	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28183.002	24502.673	1.6	8
Former BP oil refinery site	2021-03-17	BC1837	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28173.121	24504.466	1.7	8
Former BP oil refinery site	2021-03-17	BC1838	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28160.64	24503.611	2	8
Former BP oil refinery site	2021-03-17	BC1839	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28147.607	24503.718	2	8
Former BP oil refinery site	2021-03-17	BC1840	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28138.706	24502.023	2	8
Former BP oil refinery site	2021-03-17	BC1841	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28134.128	24504.2	2.1	8
Former BP oil refinery site	2021-03-17	BC1842	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28125.22	24492.107	1.3	8
Former BP oil refinery site	2021-03-17	BC1843	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28120.653	24506.056	2.4	8

Former BP oil refinery site	2021-03-17	BC1844	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28110.94	24494.69	1.65	8
Former BP oil refinery site	2021-03-17	BC1845	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28107.909	24506.927	2.1	8
Former BP oil refinery site	2021-03-17	BC1846	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28093.324	24493.285	1.6	8
Former BP oil refinery site	2021-03-17	BC1847	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28093.711	24490.513	2	7
Former BP oil refinery site	2021-03-17	BC1848	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28086.591	24491.495	2.5	7
Former BP oil refinery site	2021-03-17	BC1849	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28084.213	24496.025	1.45	8
Former BP oil refinery site	2021-03-17	BC1850	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28078.562	24492.704	1.25	8
Former BP oil refinery site	2021-03-17	BC1851	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28078.185	24486.223	1	6
Former BP oil refinery site	2021-03-17	BC1852	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28070.83	24487.779	2	6
Former BP oil refinery site	2021-03-17	BC1853	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28071.915	24493.353	2.25	8
Former BP oil refinery site	2021-03-17	BC1854	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28061.79	24494.306	1.4	8
Former BP oil refinery site	2021-03-17	BC1855	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28058.452	24495.003	1.4	8
Berlayer Creek	2021-03-11	BC1856	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27622.105	25059.947	0.45	3
Berlayer Creek	2021-03-11	BC1857	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27618.805	25059.237	0.85	13
Berlayer Creek	2021-03-11	BC1858	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27624.519	25065.301	0.3	10
Berlayer Creek	2021-03-11	BC1859	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27621.076	25067.861	0.65	13
Berlayer Creek	2021-03-11	BC1860	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27620.551	25069.365	0.65	13
Berlayer Creek	2021-03-11	BC1861	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27620.992	25068.543	0.7	13
Berlayer Creek	2021-03-11	BC1862	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27619.156	25069.785	0.55	13
Berlayer Creek	2021-03-11	BC1863	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27617.603	25069.389	0.3	5
Berlayer Creek	2021-03-11	BC1864	*Avicennia rumphiana*	Acanthaceae	Native	Common	Tree	27616.128	25068.11	0.4	4
Berlayer Creek	2021-03-11	BC1865	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27616.388	25068.602	0.4	13
Berlayer Creek	2021-03-11	BC1866	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27615.149	25067.826	0.4	11
Berlayer Creek	2021-03-11	BC1867	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27611.551	25067.751	0.8	13
Berlayer Creek	2021-03-11	BC1868	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27610.607	25068.822	0.65	13
Berlayer Creek	2021-03-11	BC1869	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.331	25070.455	0.4	11
Berlayer Creek	2021-03-11	BC1870	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.911	25070.49	0.3	8
Berlayer Creek	2021-03-11	BC1871	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27609.923	25072.488	0.6	13
Berlayer Creek	2021-03-11	BC1872	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27609.79	25072.57	0.3	10
Berlayer Creek	2021-03-11	BC1873	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27608.991	25074.851	0.5	13
Berlayer Creek	2021-03-11	BC1874	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27607.965	25076.552	0.9	14
Berlayer Creek	2021-03-11	BC1875	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27607.585	25076.291	0.7	13
Berlayer Creek	2021-03-11	BC1876	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27603.654	25076.847	0.3	3
Berlayer Creek	2021-03-11	BC1877	*Sonneratia alba*	Lythraceae	Native	Common	Tree	27602.666	25079.375	0.85	13
Former BP oil refinery site	2021-03-17	BC1878	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28046.97	24492.218	1.4	8
Former BP oil refinery site	2021-03-17	BC1879	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28040.647	24490.486	1	7
Former BP oil refinery site	2021-03-17	BC1880	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28036.732	24495.014	2.6	8
Former BP oil refinery site	2021-03-17	BC1881	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28031.41	24489.008	1	6
Former BP oil refinery site	2021-03-17	BC1882	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28029.465	24496.073	1.8	8
Former BP oil refinery site	2021-03-17	BC1883	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28021.915	24495.93	2.35	8
Former BP oil refinery site	2021-03-17	BC1884	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28016.061	24496.024	1.9	8
Former BP oil refinery site	2021-03-17	BC1885	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28014.181	24495.859	2	6
Former BP oil refinery site	2021-03-17	BC1886	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27994.863	24498.675	3.1	8
Former BP oil refinery site	2021-03-17	BC1887	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27988.469	24500.523	1.4	8
Former BP oil refinery site	2021-03-17	BC1888	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27980.699	24499.371	1.5	10
Former BP oil refinery site	2021-03-17	BC1889	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27976.446	24502.677	2.2	8
Former BP oil refinery site	2021-03-17	BC1890	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27967.552	24502.867	1.2	6
Former BP oil refinery site	2021-03-17	BC1891	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27966.27	24501.7	2.2	8
Former BP oil refinery site	2021-03-17	BC1892	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27955.716	24506.307	1.2	8

Former BP oil refinery site	2021-03-17	BC1893	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27949.075	24508.37	1.4	8
Former BP oil refinery site	2021-03-17	BC1894	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27937.156	24514.993	1.9	8
Former BP oil refinery site	2021-03-17	BC1895	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27932.697	24518.61	2.25	10
Former BP oil refinery site	2021-03-17	BC1896	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27922.877	24529.488	2.6	10
Former BP oil refinery site	2021-03-17	BC1897	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27919.073	24534.964	2	10
Former BP oil refinery site	2021-03-17	BC1898	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27913.158	24537.054	2.2	10
Former BP oil refinery site	2021-03-17	BC1899	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27907.75	24541.253	2	10
Former BP oil refinery site	2021-03-17	BC1900	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27899.071	24544.847	1.4	10
Former BP oil refinery site	2021-03-17	BC1901	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27895.693	24550.43	2.1	10
Former BP oil refinery site	2021-03-17	BC1902	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27889.498	24553.856	1.5	10
Former BP oil refinery site	2021-03-17	BC1903	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27885.533	24557.673	2.9	10
Former BP oil refinery site	2021-03-17	BC1904	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27879.755	24563.546	2.35	10
Former BP oil refinery site	2021-03-17	BC1905	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27869.852	24571.72	2.2	10
Former BP oil refinery site	2021-03-17	BC1906	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27857.62	24584.67	2.6	12
Former BP oil refinery site	2021-03-17	BC1907	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27855.544	24582.079	1.75	12
Former BP oil refinery site	2021-03-17	BC1908	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27847.946	24590.964	1.8	12
Former BP oil refinery site	2021-03-17	BC1909	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27843.711	24595.444	2.35	12
Former BP oil refinery site	2021-03-17	BC1910	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27837.134	24599.571	1.95	12
Former BP oil refinery site	2021-03-17	BC1911	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27832.721	24601.4	2.7	12
Former BP oil refinery site	2021-03-17	BC1912	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27823.145	24608.028	1.7	12
Former BP oil refinery site	2021-03-17	BC1913	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27823.091	24610.646	1.8	12
Former BP oil refinery site	2021-03-17	BC1914	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27818.149	24612.341	2.8	12
Former BP oil refinery site	2021-03-17	BC1915	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	27804.878	24621.175	1	8
Former BP oil refinery site	2021-03-17	BC1916	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27794.059	24666.407	2.9	12
Former BP oil refinery site	2021-03-17	BC1917	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27782.209	24679.316	3.65	12
Former BP oil refinery site	2021-03-17	BC1918	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27758.485	24700.147	2.6	12
Former BP oil refinery site	2021-03-17	BC1919	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27755.558	24700.008	3.4	12
Former BP oil refinery site	2021-03-17	BC1920	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27724.81	24732.626	2.8	12
Former BP oil refinery site	2021-03-17	BC1921	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27711.552	24747.266	1.5	8
Former BP oil refinery site	2021-03-17	BC1922	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27696.675	24759.575	2.5	8
Former BP oil refinery site	2021-03-17	BC1923	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27669.93	24786.668	1	6
Former BP oil refinery site	2021-03-17	BC1924	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27654.479	24800.202	2.1	8
Former BP oil refinery site	2021-03-17	BC1925	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27640.19	24812.44	2.05	8
Former BP oil refinery site	2021-03-17	BC1926	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27575.777	24873.475	2	8
Former BP oil refinery site	2021-03-17	BC1927	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27556.998	24890.509	2.1	8
Former BP oil refinery site	2021-03-17	BC1928	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27507.542	24936.122	1.2	6
Former BP oil refinery site	2021-03-17	BC1929	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27494.753	24948.601	1.9	8
Former BP oil refinery site	2021-03-17	BC1930	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27483.66	24955.067	1.6	6
Former BP oil refinery site	2021-03-17	BC1931	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27847.837	24778.154	1.4	15
Former BP oil refinery site	2021-03-17	BC1932	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27849.927	24774.901	2.8	15
Keppel Club	2021-05-10	BC1933	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28070.18	24753.02	2	6
Keppel Club	2021-05-10	BC1934	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28053.81	24771.33	1.1	6
Keppel Club	2021-05-10	BC1935	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28054.54	24771.44	1.1	6
Keppel Club	2021-05-10	BC1936	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28054.39	24767.91	1.1	8
Keppel Club	2021-05-10	BC1937	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28042.73	24780.71	1	8
Keppel Club	2021-05-10	BC1938	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28036.8	24784.78	1	7
Keppel Club	2021-05-10	BC1939	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28030.89	24787.48	1.8	6
Keppel Club	2021-05-10	BC1940	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28021.53	24793.54	2	8
Keppel Club	2021-05-10	BC1941	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28021.04	24788.22	1.1	8

Keppel Club	2021-05-10	BC1942	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28015.07	24795.12	1.1	9
Keppel Club	2021-05-10	BC1943	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27996.93	24803.06	3.5	6
Keppel Club	2021-05-10	BC1944	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28002.75	24809.67	1.5	8
Keppel Club	2021-05-10	BC1945	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28001.61	24815.36	2.4	14
Keppel Club	2021-05-10	BC1946	*Barringtonia racemosa*	Lecythidaceae	Native	Critically Endangered	Tree	28000.74	24814.44	1.4	7
Keppel Club	2021-05-10	BC1947	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27994.12	24816.3	1.4	8
Keppel Club	2021-05-10	BC1948	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27994.06	24822.51	1	7
Keppel Club	2021-05-10	BC1949	*Gnetum gnemon* var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	27982.18	24827.46	1.6	8
Keppel Club	2021-05-10	BC1949A	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27956.43	24856.67	2.2	10
Keppel Club	2021-05-10	BC1949B	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27949.03	24855	2	13
Keppel Club	2021-05-10	BC1950	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27938.54	24865.83	3.2	18
Keppel Club	2021-05-10	BC1951	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27941.57	24848.87	1.2	6
Keppel Club	2021-05-10	BC1952	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	27944.3	24847.71	2.4	16
Keppel Club	2021-05-10	BC1953	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27942.73	24837	2	9
Keppel Club	2021-05-10	BC1954	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27949.23	24837.1	2	10
Keppel Club	2021-05-10	BC1955	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27950.47	24823.05	2.8	18
Keppel Club	2021-05-10	BC1956	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27952.96	24824.81	1	11
Keppel Club	2021-05-10	BC1957	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27952.88	24821.32	4.4	18
Keppel Club	2021-05-10	BC1958	*Elaeocarpus mastersii*	Elaeocarpaceae	Native	Common	Tree	27968.57	24810.78	1.6	12
Keppel Club	2021-05-10	BC1959	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27975.64	24805.24	1.1	11
Keppel Club	2021-05-10	BC1960	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27982.22	24799.58	1.2	7
Keppel Club	2021-05-10	BC1961	*Syzygium zeylanicum*	Myrtaceae	Native	Common	Shrub	27991.23	24779.83	1.9	8
Keppel Club	2021-05-10	BC1961A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27986.07	24778.91	1.2	8
Keppel Club	2021-05-10	BC1962	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28062.7	24659.05	6	8
Keppel Club	2021-05-10	BC1962A	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28052.49	24673.36	2.6	15
Keppel Club	2021-05-10	BC1962B	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28048.23	24681.13	1.2	11
Keppel Club	2021-05-10	BC1962C	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28024.18	24725.85	1.4	8
Keppel Club	2021-05-10	BC1963	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28023.47	24736.2	1.5	10
Keppel Club	2021-05-10	BC1963A	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28028.99	24741.5	1.4	10
Keppel Club	2021-05-10	BC1964	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28022.12	24732.17	2	10
Keppel Club	2021-05-10	BC1965	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27886.25	24862.77	1.5	9
Keppel Club	2021-05-10	BC1966	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27891.88	24867.03	2	10
Keppel Club	2021-05-10	BC1967	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27889.48	24871.46	2.3	10
Keppel Club	2021-05-10	BC1968	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27885.44	24872.34	1.6	8
Keppel Club	2021-05-10	BC1968A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27863.39	24892.61	1.1	7
Keppel Club	2021-05-10	BC1969	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27852.93	24904.94	1.3	8
Keppel Club	2021-05-10	BC1969A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27848.39	24917.03	1.4	6
Keppel Club	2021-05-10	BC1969B	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27804.73	24964.83	1.5	7
Keppel Club	2021-05-10	BC1969C	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27802.6	24971.6	1.4	7
Keppel Club	2021-05-10	BC1970	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27800.82	24972.7	2.2	7
Keppel Club	2021-05-10	BC1970A	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27758.43	25009.24	1.7	8
Keppel Club	2021-05-10	BC1970B	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27762.4	25004.81	1.25	8
Keppel Club	2021-05-10	BC1971	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27758.04	25010.45	1	5
Keppel Club	2021-05-10	BC1972	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27729.82	25012.88	1.2	8
Keppel Club	2021-05-10	BC1973	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27880.33	25003.3	1.1	7
Keppel Club	2021-05-10	BC1974	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27880.64	25006.3	1.5	7
Keppel Club	2021-05-10	BC1975	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27876.58	25006.89	1.7	6
Keppel Club	2021-05-10	BC1976	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27881.64	25005.67	1.2	7
Keppel Club	2021-05-10	BC1977	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27881.13	25005.43	1.15	6

Keppel Club	2021-05-10	BC1978	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27890.6	25002.6	1.3	7
Keppel Club	2021-05-10	BC1978A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27934	25009.55	1.2	8
Keppel Club	2021-05-10	BC1979	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27945.76	25016.12	2.9	10
Keppel Club	2021-05-10	BC1980	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27939.38	25016.16	1.4	10
Keppel Club	2021-05-10	BC1981	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27943.94	25020.47	1.3	10
Keppel Club	2021-05-10	BC1982	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27943.91	25019.53	1.2	10
Keppel Club	2021-05-10	BC1983	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27951.7	25024.41	1.4; 1.8	13
Keppel Club	2021-05-10	BC1984	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27956.48	25028.59	1.4	7
Keppel Club	2021-05-10	BC1985	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27959.03	25030.98	2	7
Keppel Club	2021-05-10	BC1985A	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27958.99	25026.39	1.3	7
Keppel Club	2021-05-10	BC1986	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27977.7	25030.37	2.3	12
Keppel Club	2021-05-10	BC1987	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27972.97	25035.36	1	8
Keppel Club	2021-05-10	BC1988	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27913.07	25009.43	1.9	14
Keppel Club	2021-05-10	BC1989	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27910.53	25015.69	1.7	14
Keppel Club	2021-05-10	BC1990	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	27877.59	25010.43	1.15	9
Keppel Club	2021-05-10	BC1991	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27878.64	25007.25	1.4	6
Keppel Club	2021-05-10	BC1992	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27866.51	25015.16	1.2	6
Keppel Club	2021-05-10	BC1993	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27861.96	25016.88	1.3	7
Keppel Club	2021-05-17	BC1994A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27868.95	25001.75	1.2	9
PSA Club	2021-02-03	EN1225	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27881.957	25674.896	3.65	18
PSA Club	2021-02-03	EN1238	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27975.688	25759.219	3.05	15
PSA Club	2021-02-03	EN1239	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27963.672	25761.807	3.2	15
PSA Club	2021-02-03	EN1240	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27946.045	25756.539	2.8	15
PSA Club	2021-02-03	EN1241	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27915.838	25753.261	2.7	15
PSA Club	2021-02-03	EN1242	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27901.47	25752.824	3.5	15
PSA Club	2021-02-03	EN1243	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27868.238	25734.097	3.2	18
PSA Club	2021-02-03	EN1244	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27870.92	25723.582	3.8	18
PSA Club	2021-02-03	EN1245	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27871.187	25714.506	4.3	18
PSA Club	2021-02-03	EN1246	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27876.377	25704.477	3.05	18
PSA Club	2021-02-03	EN1247	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27875.808	25694.456	3.3	18
PSA Club	2021-02-03	EN1248	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27876.769	25686.217	2.9	18
PSA Club	2021-02-03	EN1249	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27878.073	25668.535	2.9	18
PSA Club	2021-02-03	EN1250	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27880.611	25658.17	2.95	18
PSA Club	2021-02-03	EN1611	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27880.336	25643.748	2.4	8
PSA Club	2021-02-03	EN1612	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27881.593	25629.02	1.5	11
PSA Club	2021-02-03	EN1613	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27883.205	25627.185	2.7	14
PSA Club	2021-02-03	EN1614	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27883.128	25618.176	2.9	16
PSA Club	2021-02-03	EN1615	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27883.024	25609.787	3	14
PSA Club	2021-02-03	EN1616	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27745.502	25327.183	3	12
PSA Club	2021-02-03	EN1617	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27745.738	25333.662	3	12
PSA Club	2021-02-03	EN1618	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27748.425	25340.908	2.1	12
PSA Club	2021-02-03	EN1619	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27753.145	25346.283	3	12
PSA Club	2021-02-03	EN1620	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27754.369	25352.991	1	12
PSA Club	2021-02-03	EN1621	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27759.469	25355.851	4	17
PSA Club	2021-02-03	EN1622	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27759.998	25362.833	1.5	13
PSA Club	2021-02-03	EN1623	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27761.991	25365.646	1.4	6
PSA Club	2021-02-03	EN1624	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	27758.964	25376.145	3.1	12
PSA Club	2021-02-03	EN1625	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27764.794	25379.969	1.3	10
PSA Club	2021-02-03	EN1626	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27761.081	25383.388	1.5	15

PSA Club	2021-02-03	EN1626A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27761.792	25380.902	2.4	18
PSA Club	2021-02-03	EN1627	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27763.934	25385.465	1.5	15
PSA Club	2021-02-03	EN1628	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27768.031	25391.413	2.7	9
PSA Club	2021-02-03	EN1629	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27769.192	25398.633	1.2	16
PSA Club	2021-02-03	EN1630	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27773.054	25399.453	3.1	13
PSA Club	2021-02-03	EN1631	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27792.294	25414.698	1.4	8
PSA Club	2021-02-03	EN1632	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27777.48	25410.316	2.2	12
PSA Club	2021-02-03	EN1633	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27781.416	25413.709	1	12
PSA Club	2021-02-03	EN1634	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27787.582	25421.884	1.1	10
PSA Club	2021-02-03	EN1635	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27756.725	25413.009	1.4	12
PSA Club	2021-02-03	EN1636	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27789.079	25428.263	1.1	10
PSA Club	2021-02-03	EN1637	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27791.277	25433.488	1.5	12
PSA Club	2021-02-03	EN1638	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27790.814	25439.005	1.4	12
PSA Club	2021-02-03	EN1639	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27789.642	25443.972	1.3	12
PSA Club	2021-02-03	EN1640	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27771.385	25423.69	1.35	12
PSA Club	2021-02-03	EN1641	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27789.741	25455.392	1.2	12
PSA Club	2021-02-03	EN1642	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27788.117	25457.953	1.1	12
PSA Club	2021-02-03	EN1643	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27789.815	25461.656	1.35	12
PSA Club	2021-02-03	EN1644	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27790.484	25464.88	1	12
PSA Club	2021-02-03	EN1645	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27790.778	25468.981	1.15	12
PSA Club	2021-02-03	EN1646	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27792.065	25474.885	1	12
PSA Club	2021-02-03	EN1647	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27794.799	25477.558	1.15	12
PSA Club	2021-02-03	EN1648	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27797.488	25480.639	1.2	12
PSA Club	2021-02-03	EN1649	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27801.511	25482.799	1.3	12
PSA Club	2021-02-03	EN1650	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27804.582	25488.536	1.2	12
PSA Club	2021-02-03	EN1651	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27803.314	25495.719	1.3	12
PSA Club	2021-02-03	EN1652	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27807.607	25496.779	1.3	12
PSA Club	2021-02-03	EN1653	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27813.96	25502.015	1.25	12
PSA Club	2021-02-03	EN1654	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27817.437	25503.168	1.2	10
PSA Club	2021-02-03	EN1655	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27820.98	25506.106	1.2	12
PSA Club	2021-02-03	EN1656	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27824.518	25508.16	1.15	12
PSA Club	2021-02-03	EN1657	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27843.788	25514.984	1.2	12
PSA Club	2021-02-03	EN1658	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27840.491	25514.431	1.2	12
PSA Club	2021-02-03	EN1659	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27837.706	25522.278	1	12
PSA Club	2021-02-03	EN1660	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27852.85	25525.347	1	12
PSA Club	2021-02-03	EN1661	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27856.035	25525.056	1.1	11
PSA Club	2021-02-03	EN1662	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27859.396	25526.74	1.1	12
PSA Club	2021-02-03	EN1663	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27863.727	25527.674	1.1	12
PSA Club	2021-02-03	EN1664	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27876.845	25530.796	1	10
PSA Club	2021-02-03	EN1665	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27884.486	25533.993	1.2	12
PSA Club	2021-02-03	EN1666	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27888.268	25536.347	1.2	12
PSA Club	2021-02-03	EN1667	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27892.428	25537.158	1.35	12
PSA Club	2021-02-03	EN1668	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27895.733	25539.273	1.1	12
PSA Club	2021-02-03	EN1669	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27900.418	25540.746	1.15	12
PSA Club	2021-02-03	EN1670	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27902.924	25542.861	1.1	12
PSA Club	2021-02-03	EN1671	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27927.322	25552.545	1	14
PSA Club	2021-02-03	EN1672	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27932.365	25554.045	3.1	16
PSA Club	2021-02-03	EN1673	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27937.258	25555.963	3	15
PSA Club	2021-02-03	EN1674	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27977.18	25589.155	3	15

PSA Club	2021-02-03	EN1675	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27985.423	25592.494	2.4	10
PSA Club	2021-02-03	EN1676	*Plumeria rubra*	Apocynaceae	Exotic	Cultivated Only	Tree	27969.277	25639.677	2.1	5
PSA Club	2021-02-03	EN1677	*Plumeria rubra*	Apocynaceae	Exotic	Cultivated Only	Tree	27972.363	25633.241	1.6	4
PSA Club	2021-02-03	EN1678	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27976.472	25614.616	1.8	6
PSA Club	2021-02-03	EN1679	*Plumeria rubra*	Apocynaceae	Exotic	Cultivated Only	Tree	27977.696	25614.832	1.3	4
PSA Club	2021-02-03	EN1680	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27980.453	25611.24	1.65	16
PSA Club	2021-02-03	EN1681	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27986.35	25616.498	1.4	16
PSA Club	2021-02-03	EN1682	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27997.052	25622.266	1.55	16
PSA Club	2021-02-03	EN1683	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28006.922	25631.566	1.5	16
PSA Club	2021-02-03	EN1684	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28019.126	25632.885	2.3	16
PSA Club	2021-02-03	EN1685	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28028.763	25636.605	2	16
PSA Club	2021-02-03	EN1686	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28018.43	25642.65	1.6	14
PSA Club	2021-02-03	EN1687	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28055.272	25649.017	2	16
PSA Club	2021-02-03	EN1688	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28052.17	25658.304	1.8	16
PSA Club	2021-02-03	EN1689	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28030.261	25654.582	2.7	16
PSA Club	2021-02-03	EN1690	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28018.84	25654.024	1.8	16
PSA Club	2021-02-03	EN1691	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28008.226	25652.758	1.9	16
Bukit Chermin Road	2021-02-03	EN1692	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27919.876	25562.85	1	7
Bukit Chermin Road	2021-02-03	EN1693	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27900.178	25553.034	1	10
Bukit Chermin Road	2021-02-03	EN1694	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27899.975	25547.494	1	10
Bukit Chermin Road	2021-02-03	EN1695	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27888.489	25547.182	1	8
Bukit Chermin Road	2021-02-03	EN1696	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27887.04	25546.828	1	11
Bukit Chermin Road	2021-02-03	EN1697	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27876.932	25541.834	1	10
Bukit Chermin Road	2021-02-03	EN1698	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27873.63	25540.417	1.05	10
Bukit Chermin Road	2021-02-03	EN1699	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27865.42	25536.441	1.1	12
Bukit Chermin Road	2021-02-03	EN1700	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27861.592	25535.057	1	12
Bukit Chermin Road	2021-02-03	EN1701	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27857.627	25533.43	1	10
Bukit Chermin Road	2021-02-03	EN1702	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27853.94	25531.255	1	10
Bukit Chermin Road	2021-02-03	EN1703	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27840	25525.507	1	12
Bukit Chermin Road	2021-02-03	EN1704	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27837.542	25522.958	1.25	12
PSA Club	2021-02-03	EN1705	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27835.123	25522.072	1	12
PSA Club	2021-02-03	EN1706	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27833.111	25521.194	1	12
PSA Club	2021-02-03	EN1707	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27829.448	25519.96	1.3	12
PSA Club	2021-02-03	EN1708	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27825.873	25518.287	1.1	12
PSA Club	2021-02-03	EN1709	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27822.294	25516.389	1.7	12
PSA Club	2021-02-03	EN1710	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27817.555	25515.228	1.3	12
PSA Club	2021-02-03	EN1711	*Roystonea oleracea*	Arecaceae	Exotic	Cultivated Only	Tree	27813.991	25513.581	1.15	12
Star Living	2021-02-03	EN1712	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	28242.168	24551.429	1.1	9
Star Living	2021-02-03	EN1713	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	28250.439	24548.62	1	7
Star Living	2021-02-03	EN1714	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28279.683	24550.318	1.3	10
Labrador Ville Road	2021-02-03	EN1715	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27773.392	24666.627	1.1	10
Labrador Ville Road	2021-02-03	EN1716	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27767.596	24675.063	1.15	12
Labrador Ville Road	2021-02-03	EN1717	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27764.359	24681.137	1	5
Labrador Ville Road	2021-02-03	EN1718	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27762.146	24687.026	1	9
Three peacocks restarant	2021-02-03	EN1719	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27517.796	24896.474	2.8	14
Three peacocks restarant	2021-02-03	EN1720	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27517.862	24906.698	2.6	14
Three peacocks restarant	2021-02-03	EN1720A	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27488.321	24897.119	2	8
Three peacocks restarant	2021-02-03	EN1720B	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27489.338	24886.356	1.2	12
Three peacocks restarant	2021-02-03	EN1720C	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27485.059	24881.215	1	10

Three peacocks restarant	2021-02-03	EN1720D	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27481.086	24877.247	1	9
Three peacocks restarant	2021-02-03	EN1720E	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27476.887	24872.927	1	8
Three peacocks restarant	2021-02-03	EN1720F	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27466.777	24874.788	1	9
Three peacocks restarant	2021-02-03	EN1720G	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27437.469	24895.971	4.4	18
Park	2021-02-04	EN1722	*Sterculia parviflora*	Malvaceae	Native	Critically Endangered	Tree	27557.766	24792.475	1.4	11
Park	2021-02-04	EN1723	*Sterculia cordata*	Malvaceae	Native	Critically Endangered	Tree	27547.412	24792.813	1.1	9
Park	2021-02-04	EN1724	*Pterygota alata*	Malvaceae	Exotic	Cultivated Only	Tree	27530.147	24797.448	1.1	11
Park	2021-02-04	EN1725	*Sterculia parviflora*	Malvaceae	Native	Critically Endangered	Tree	27524.823	24801.266	1.5	14
Park	2021-02-04	EN1726	*Pterygota alata*	Malvaceae	Exotic	Cultivated Only	Tree	27520.98	24799.368	1.2	15
Park	2021-02-04	EN1727	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	27478.582	24829.276	1.6	7
Park	2021-02-04	EN1728	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27491.836	24828.882	1.4	10
Park	2021-02-04	EN1729	*Pterygota alata*	Malvaceae	Exotic	Cultivated Only	Tree	27460.44	24803.131	1.3	15
Park	2021-02-04	EN1730	*Sabal palmetto*	Arecaceae	Exotic	Cultivated Only	Tree	27427.042	24800.796	1.3	8
Park	2021-02-04	EN1731	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27430.497	24800.345	1.6	9
Park	2021-02-04	EN1732	*Sabal palmetto*	Arecaceae	Exotic	Cultivated Only	Tree	27417.546	24808.744	1.1	7
Park	2021-02-04	EN1733	*Ficus benghalensis*	Moraceae	Exotic	Cultivated Only	Strangler	27413.124	24817.135	3	7
Park	2021-02-04	EN1734	*Pongamia pinnata*	Fabaceae	Native	Endangered	Tree	27408.485	24822.36	1	7
Park	2021-02-04	EN1735	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27357.688	24869.461	1.7	10
Park	2021-02-04	EN1736	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27323.74	24878.091	1	11
Park	2021-02-04	EN1737	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27301.219	24885.849	1.2	9
Park	2021-02-04	EN1738	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27286.157	24889.65	2.2	9
Park	2021-02-04	EN1739	*Pongamia pinnata*	Fabaceae	Native	Endangered	Tree	27386.009	24877.375	1	9
Park	2021-02-04	EN1739A	*Pongamia pinnata*	Fabaceae	Native	Endangered	Tree	27389.634	24872.601	1.1	8
Park	2021-02-04	EN1740	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27399.213	24884.201	1.7	13
Park	2021-02-04	EN1741	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27406.325	24882.745	2.1	9
Park	2021-02-04	EN1742	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27404.463	24889.273	1	9
Park	2021-02-04	EN1743	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27415.837	24896.335	1.5	10
Park	2021-02-04	EN1744	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27418.131	24900.17	1.8	10
Park	2021-02-04	EN1745	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27424.55	24903.509	1.1	8
Park	2021-02-04	EN1746	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27417.075	24915.181	1	8
Park	2021-02-04	EN1747	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27423.739	24912.967	1.1	8
Park	2021-02-04	EN1748	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27424.355	24918.167	1.6	9
Park	2021-02-04	EN1749	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27417.526	24919.862	1.6	9
Park	2021-02-04	EN1750	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27432.442	24918.245	1.2	9
Park	2021-02-04	EN1751	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27433.804	24926.701	1.1	10
Park	2021-02-04	EN1752	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27442.448	24922.735	1.1	11
Park	2021-02-04	EN1753	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27446.74	24932.452	1.1	10
Park	2021-02-04	EN1754	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27446.429	24939.052	1	8
Park	2021-02-04	EN1755	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27459.141	24943.073	1.9	15
Park	2021-02-04	EN1756	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27459.066	24948.632	1.1	8
Park	2021-02-04	EN1757	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27455.683	24957.164	1.9	10
Park	2021-02-04	EN1758	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27464.45	24957.743	1.1	8
Park	2021-02-04	EN1759	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27468.231	24964.326	1.5	13
Park	2021-02-04	EN1760	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27468.534	24963.734	3	15
Park	2021-02-04	EN1761	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27475.396	24971.904	1.9	13
Park	2021-02-04	EN1762	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27547.783	24992.086	1.2	9
Park	2021-02-04	EN1763	*Elaeocarpus grandiflorus*	Elaeocarpaceae	Exotic	Cultivated Only	Tree	27560.993	25012.102	1	10
Park	2021-02-04	EN1764	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27556.051	25011.312	3	12
Park	2021-02-04	EN1765	*Elaeocarpus grandiflorus*	Elaeocarpaceae	Exotic	Cultivated Only	Tree	27567.007	25020.914	1	9

Park	2021-02-04	EN1766	*Elaeocarpus grandiflorus*	Elaeocarpaceae	Exotic	Cultivated Only	Tree	27574.696	25014.324	1.1	9
Park	2021-02-04	EN1767	*Elaeocarpus grandiflorus*	Elaeocarpaceae	Exotic	Cultivated Only	Tree	27582.159	25018.211	1.1	9
Park	2021-02-04	EN1768	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27576.164	25045.207	1.1	8
Park	2021-02-04	EN1769	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27570.739	25051.344	1.1	8
Park	2021-02-04	EN1770	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27569.069	25034.45	1.1	7
Park	2021-02-04	EN1771	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27559.851	25026.461	1.5	10
Park	2021-02-04	EN1772	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27563.219	25023.552	1.5	10
Park	2021-02-04	EN1773	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27561.592	25019.147	1.5	10
Park	2021-02-04	EN1774	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27557.28	25022.046	1.5	10
Park	2021-02-04	EN1774A	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27555.209	25021.563	1.3	12
Park	2021-02-04	EN1775	*Oncosperma tigillarium*	Arecaceae	Native	Vulnerable	Shrub	27548.89	25013.374	1.5	10
Park	2021-02-04	EN1776	*Alstonia scholaris*	Apocynaceae	Exotic	Cultivated Only	Tree	27560.004	25017.723	1.1	11
Park	2021-02-04	EN1777	*Pongamia pinnata*	Fabaceae	Native	Endangered	Tree	27541.488	25025.745	1.4	9
Park	2021-02-04	EN1778	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27530.789	25013.672	2.9	9
Park	2021-02-04	EN1779	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27541.326	24994.401	1.1	10
Park	2021-02-04	EN1780	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27537.292	24986.269	1.5	9
Park	2021-02-04	EN1781	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27513.841	24997.082	1.6	9
Park	2021-02-04	EN1782	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27497.237	24978.867	2.8	10
Park	2021-02-04	EN1783	*Coccoloba uvifera*	Polygonaceae	Exotic	Cultivated Only	Tree	27484.248	24985.207	1.2	9
Park	2021-02-04	EN1784	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27470.412	24987.265	1.5	17
Park	2021-02-04	EN1785	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27473.75	25011.495	1.8	9
Park	2021-02-04	EN1786	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27466.679	25009.724	1.4	8
Park	2021-02-04	EN1787	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27455.256	24989.036	1.8	9
Park	2021-02-04	EN1788	*Terminalia calamansanai*	Combretaceae	Exotic	Cultivated Only	Tree	27459.313	24973.662	1.4	16
Park	2021-02-04	EN1789	*Terminalia calamansanai*	Combretaceae	Exotic	Cultivated Only	Tree	27455.929	24979.819	1.4	16
Park	2021-02-04	EN1790	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27454.013	24965.636	1.3	11
Park	2021-02-04	EN1791	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27440.03	24970.319	1.2	9
Park	2021-02-04	EN1792	*Pometia pinnata*	Sapindaceae	Native	Endangered	Tree	27442.821	24962.879	1	10
Park	2021-02-04	EN1793	*Terminalia calamansanai*	Combretaceae	Exotic	Cultivated Only	Tree	27441.094	24954.651	1.2	16
Park	2021-02-04	EN1794	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27434.489	24957.613	1.2	10
Park	2021-02-04	EN1795	*Hibiscus tiliaceus*	Malvaceae	Native	Common	Tree	27419.526	24959.487	1.4	8
Park	2021-02-04	EN1796	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27434.98	24946.211	1.7	10
Park	2021-02-04	EN1796A	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27428.474	24945.679	1	8
Park	2021-02-04	EN1797	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27429.282	24938.197	1	8
Park	2021-02-04	EN1798	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27411.957	24929.748	1	8
Park	2021-02-04	EN1799	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	27420.705	24937.378	1.1	8
Park	2021-02-04	EN1800	*Barringtonia asiatica*	Lecythidaceae	Native	Critically Endangered	Tree	27408.535	24942.827	1.1	7
Keppel Club	2021-05-17	WS0869	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27668.438	25235.114	2.8	15
Keppel Club	2021-05-17	WS0870	*Lagerstroemia floribunda*	Lythraceae	Exotic	Cultivated Only	Tree	27904.587	25872.122	1.2	10
Keppel Club	2021-05-17	WS0871	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27906.816	25860.403	1.1	10
Keppel Club	2021-05-17	WS0872	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27917.72	25862.483	1.1	10
Keppel Club	2021-05-17	WS0873	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27926.888	25846.151	1.1	10
Keppel Club	2021-05-17	WS0874	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27929.501	25833.889	1	10
Keppel Club	2021-05-17	WS0875	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27931.464	25823.937	1.1	10
Keppel Club	2021-05-17	WS0876	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27930.674	25812.819	1.2	10
Keppel Club	2021-05-17	WS0877	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27905.671	25802.986	1	8
Keppel Club	2021-05-17	WS0878	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27897.926	25799.126	1	10
Keppel Club	2021-05-17	WS0879	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27895.4	25794.021	1.25	10
Keppel Club	2021-05-17	WS0880	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27884.98	25787.535	1.05	6

Keppel Club	2021-05-17	WS0884	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27834.064	25555.186	2.1	12
Keppel Club	2021-05-17	WS0885	*Mangifera foetida*	Anacardiaceae	Native	Vulnerable	Tree	27828.217	25556.065	1.05	8
Keppel Club	2021-05-17	WS0886	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27827.261	25559.337	3	10
Keppel Club	2021-05-17	WS0887	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27834.286	25563.282	2.9	10
Keppel Club	2021-05-17	WS0888	*Couroupita guianensis*	Lecythidaceae	Exotic	Cultivated Only	Tree	27769.659	25734.855	2.5	10
Keppel Club	2021-05-17	WS0889	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27769.404	25728.124	1.7	10
Keppel Club	2021-05-17	WS0890	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27767.286	25731.727	1.7	10
Keppel Club	2021-05-17	WS0891	*Couroupita guianensis*	Lecythidaceae	Exotic	Cultivated Only	Tree	27765.394	25739.545	1	8
Keppel Club	2021-05-17	WS0891a	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27835.64	25810.956	1	10
Keppel Club	2021-05-17	WS0892	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27873.465	25777.085	1	10
Keppel Club	2021-05-17	WS0892a	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27854.625	25757.628	1.7	8
Keppel Club	2021-05-17	WS0892b	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27854.202	25754.06	2	12
Keppel Club	2021-05-17	WS0893	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27881.141	25761.2	4	20
Keppel Club	2021-05-17	WS0894	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27831.815	25726.085	1.2	6
Keppel Club	2021-05-17	WS0895	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27831.445	25711.765	1.2	10
Keppel Club	2021-05-17	WS0896	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27823.171	25619.79	1.4	10
Keppel Club	2021-05-17	WS0897	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27877.198	25645.023	2.4	20
Keppel Club	2021-05-17	WS0898	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27878.609	25622.584	2.5	20
Keppel Club	2021-05-17	WS0899	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	27880.09	25623.461	2.2	18
Keppel Club	2021-04-26	WS0901	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28090.77	25279.77	2.3	18
Keppel Club	2021-04-26	WS0902	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28089.56	25279.66	2	18
Keppel Club	2021-04-26	WS0903	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28093.72	25279.04	1.8	18
Keppel Club	2021-04-26	WS0904	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28091.53	25271.43	3	18
Keppel Club	2021-04-26	WS0905	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28099.29	25265.46	2.4	18
Keppel Club	2021-04-26	WS0906	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	28097.35	25266.15	1.2	12
Keppel Club	2021-04-26	WS0907	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28096.85	25257.06	3.6	18
Keppel Club	2021-04-26	WS0908	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28102.86	25249.13	1.1	13
Keppel Club	2021-04-26	WS0909	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28115.42	25245.03	2.1	18
Keppel Club	2021-04-26	WS0910	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28112.29	25239.33	1	12
Keppel Club	2021-04-26	WS0911	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	28109.49	25240.31	1.05	12
Keppel Club	2021-04-26	WS0912	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	28116.29	25228.87	1	9
Keppel Club	2021-04-26	WS0913	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28121.98	25231.78	3	18
Keppel Club	2021-04-26	WS0914	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28118.14	25218.27	1	8
Keppel Club	2021-04-26	WS0915	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28121.13	25215.15	3.6	18
Keppel Club	2021-04-26	WS0916	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28118.44	25216.63	1.1	13
Keppel Club	2021-04-26	WS0917	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28180.86	25071.55	1	8
Keppel Club	2021-04-26	WS0918	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28182.14	25064.4	1	8
Keppel Club	2021-04-26	WS0919	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28203.51	24997	2.8	18
Keppel Club	2021-04-26	WS0920	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28197.75	24991.83	2.8	18
Keppel Club	2021-04-26	WS0921	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	28196.78	24991.21	1.8	12
Keppel Club	2021-04-26	WS0922	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	28236.35	24912.63	1.1	14
Keppel Club	2021-04-26	WS0923	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28235.79	24911.27	1.1	11
Keppel Club	2021-04-26	WS0924	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	28238.24	24906.68	1.3	12
Keppel Club	2021-04-26	WS0925	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28243.32	24904	1.5	8
Keppel Club	2021-04-26	WS0926	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	28242.21	24903.81	2.6	10
Keppel Club	2021-04-26	WS0927	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	28246.56	24898.75	3.8	8
Keppel Club	2021-04-26	WS0928	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28246.78	24899.75	1.6	8
Keppel Club	2021-04-26	WS0929	*Lepisanthes rubiginosa*	Sapindaceae	Native	Common	Tree	28249.21	24894.74	1.1	8
Keppel Club	2021-04-26	WS0930	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28242.47	24877.6	2	14

Keppel Club	2021-04-26	WS0931	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28245.9	24868.25	1.3	7
Keppel Club	2021-04-26	WS0932	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28247.33	24864.8	2.5	15
Keppel Club	2021-04-26	WS0933	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28252.97	24854.12	1	11
Keppel Club	2021-04-26	WS0934	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	28265.25	24851.67	3.1	13
Keppel Club	2021-04-26	WS0935	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28277.74	24834.42	3.6	13
Keppel Club	2021-04-26	WS0936	*Calophyllum inophyllum*	Calophyllaceae	Native	Critically Endangered	Tree	28279.4	24815.06	2.7	10
Keppel Club	2021-04-26	WS0937	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28278.96	24815.28	1	8
Keppel Club	2021-04-26	WS0938	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28278.52	24813.5	1.8	12
Keppel Club	2021-04-26	WS0939	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	28279.07	24808.49	1.05	10
Keppel Club	2021-04-26	WS0940	*Buchanania arborescens*	Anacardiaceae	Native	Common	Tree	28282.94	24808.05	1	13
Keppel Club	2021-04-26	WS0941	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28282.28	24807.71	1.3	13
Keppel Club	2021-04-26	WS0942	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28281.06	24803.04	2.1	14
Keppel Club	2021-04-26	WS0943	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28282.5	24795.25	2.6	15
Keppel Club	2021-04-26	WS0944	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28289.24	24778.55	3.8	12
Keppel Club	2021-04-26	WS0945	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28289.69	24764.53	1.05	9
Keppel Club	2021-04-26	WS0946	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	28298.31	24760.86	1.1	12
Keppel Club	2021-04-26	WS0947	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28297.87	24757.19	2.2	12
Keppel Club	2021-04-26	WS0948	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	28286.15	24753.18	1	14
Keppel Club	2021-05-03	WS0949	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28298.18	24750.24	1.8	9
Keppel Club	2021-05-03	WS0950	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28298.73	24739.22	4.2	13
Keppel Club	2021-05-03	WS0951	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28297.54	24731.29	2.5	16
Keppel Club	2021-05-03	WS0951A	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28304.31	24679.93	2.5	15
Keppel Club	2021-05-03	WS0952	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	28297.26	24669.28	1.7	8
Keppel Club	2021-05-03	WS0953	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	28288.86	24665.51	1.5	9
Keppel Club	2021-05-03	WS0954	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28314.89	24628.53	2	8
Keppel Club	2021-05-03	WS0955	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28230.61	24637.92	4.6	16
Keppel Club	2021-05-03	WS0956	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28199.14	24641.17	3.4	16
Keppel Club	2021-05-03	WS0957	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28185.1	24640.71	1.8	12
Keppel Club	2021-05-03	WS0958	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28187.5	24643.48	3.4	18
Keppel Club	2021-05-03	WS0959	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28168.62	24641.35	3.8	18
Keppel Club	2021-05-03	WS0959A	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28168.62	24641.35	3.2	18
Keppel Club	2021-05-03	WS0960	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28179	24637.62	1.3	14
Keppel Club	2021-05-03	WS0961	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28163.72	24644.78	1.3	9
Keppel Club	2021-05-03	WS0961A	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28144.77	24643.36	4.5	14
Keppel Club	2021-05-03	WS0961B	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28143.13	24638.44	3.5	14
Keppel Club	2021-05-03	WS0962	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28162.56	24648.35	1.3	13
Keppel Club	2021-05-03	WS0963	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28129.25	24644.88	2	20
Keppel Club	2021-05-03	WS0964	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28135.93	24641.87	3.1	20
Keppel Club	2021-05-03	WS0965	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28124.88	24650.93	1.1	8
Keppel Club	2021-05-03	WS0966	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28115.14	24649.71	5.1	16
Keppel Club	2021-05-03	WS0966A	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28112.73	24639	1.4	10
Keppel Club	2021-05-03	WS0967	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28109.07	24654.16	1.1	13
Keppel Club	2021-05-03	WS0968	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28088.92	24654.08	1.2	5
Keppel Club	2021-05-03	WS0969	*Pisonia grandis*	Nyctaginaceae	Exotic	Cultivated Only	Tree	28095.74	24639.47	1.2	8
Keppel Club	2021-05-03	WS0970	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28098.84	24638.95	1.8	6
Keppel Club	2021-05-03	WS0971	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28094.33	24635.62	1.15	9
Keppel Club	2021-05-03	WS0972	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	28081.75	24632.36	1	9
Keppel Club	2021-05-03	WS0973	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	28076.46	24638.38	1	8
Keppel Club	2021-05-03	WS0974	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28038.35	24664.45	1.4	11

Keppel Club	2021-05-03	WS0975	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27833.3	24872.84	1.4	12
Keppel Club	2021-05-03	WS0976	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27831.64	24878.84	1.6	12
Keppel Club	2021-05-03	WS0977	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27828.47	24881.57	2	14
Keppel Club	2021-05-03	WS0978	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27829.86	24882.52	1.3	8
Keppel Club	2021-05-03	WS0979	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27702.91	25002.8	1.6	12
Keppel Club	2021-05-03	WS0979A	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27692.89	25013.7	1	9
Keppel Club	2021-05-03	WS0980	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27686.78	25021.6	1.3	9
Keppel Club	2021-05-03	WS0980A	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27685.52	25021.28	1.1	8
Keppel Club	2021-05-03	WS0981	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27663.86	25032.53	1.7	10
Keppel Club	2021-05-03	WS0982	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27670.04	25056.91	1.3	8
Keppel Club	2021-05-03	WS0983	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27673.13	25075.51	1.3	8
Keppel Club	2021-05-03	WS0984	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27704.66	25048.14	1.1	10
Keppel Club	2021-05-03	WS0985	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27706.27	25051.5	1.6	10
Keppel Club	2021-05-03	WS0985A	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27716.08	25039.99	1.9	16
Keppel Club	2021-05-03	WS0985B	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	27716.03	25046.61	1.7	10
Keppel Club	2021-05-03	WS0985C	*Syzygium syzygioides*	Myrtaceae	Native	Vulnerable	Tree	27728.86	25047.83	2.4	10
Keppel Club	2021-05-10	WS0988	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28175.36	24652.6	1.3	9
Keppel Club	2021-05-10	WS0989	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28119.62	24668.84	2.8	16
Keppel Club	2021-05-10	WS0990	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28108.85	24670.85	1.3	10
Keppel Club	2021-05-10	WS0991	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28071.64	24698.13	1	10
Keppel Club	2021-05-10	WS0992	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28063.07	24702.36	5.5	12
Keppel Club	2021-05-10	WS0993	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28055.17	24718.1	1.2	12
Keppel Club	2021-05-10	WS0994	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28047.76	24721.5	1.8	12
Keppel Club	2021-05-10	WS0996	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28020.97	24762.08	1.5	8
Keppel Club	2021-05-10	WS0997	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28014.66	24768.5	1.2	9
Keppel Club	2021-05-10	WS0997A	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	28014.21	24776.29	1.6	9
Keppel Club	2021-05-10	WS0998	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28084.13	24753.74	2.2	10
Keppel Club	2021-05-10	WS0999	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28082.96	24749.09	1	10
Keppel Club	2021-05-10	WS1000	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28083.41	24749.57	1.1	10
Keppel Club	2021-05-10	WS1001	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28078.71	24751.68	1.2	10
Keppel Club	2021-05-10	WS1002	*Polyalthia longifolia*	Annonaceae	Exotic	Cultivated Only	Tree	28076.52	24746.04	2.2	10
Keppel Club	2021-03-01	WS321	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27786.771	25149.394	1	7
Keppel Club	2021-03-01	WS322	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27791.489	25142.844	1	8
Keppel Club	2021-03-01	WS323	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27794.406	25144.606	1	8
Keppel Club	2021-03-01	WS324	*Claoxylon indicum*	Euphorbiaceae	Native	Common	Tree	27803.981	25145.967	1.2	10
Keppel Club	2021-03-01	WS325	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27801.117	25157.937	1.2	13
Keppel Club	2021-03-01	WS326	*Pipturus argenteus*	Urticaceae	Exotic	Naturalised	Tree	27807.816	25144.312	0.7	9
Keppel Club	2021-03-01	WS327	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27814.442	25146.712	1	9
Keppel Club	2021-03-01	WS328	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27814.095	25139.342	2.2	15
Keppel Club	2021-03-01	WS329	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27826.138	25133.846	3	9
Keppel Club	2021-03-01	WS330	*Claoxylon indicum*	Euphorbiaceae	Native	Common	Tree	27834.612	25125.377	1.6	8
Keppel Club	2021-03-01	WS331	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27821.747	25121.217	1.1	8
Keppel Club	2021-03-01	WS332	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27838.069	25120.915	1.3	10
Keppel Club	2021-03-01	WS333	*Spathodea campanulata*	Bignoniaceae	Exotic	Naturalised	Tree	27846.7	25133.478	1.6	16
Keppel Club	2021-03-01	WS334	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27851.011	25125.599	2.1	15
Keppel Club	2021-03-01	WS335	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27851.752	25138.582	2.5	8
Keppel Club	2021-03-01	WS336	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27855.587	25132.009	1.8	11
Keppel Club	2021-03-01	WS337	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27856.77	25131.716	2.5	8
Keppel Club	2021-03-01	WS338	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27856.726	25125.319	3.5	17

Keppel Club	2021-03-01	WS339	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27867.272	25129.422	2.4	8
Keppel Club	2021-03-01	WS340	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27867.437	25129.782	2.5	8
Keppel Club	2021-03-01	WS341	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27865.891	25118.956	1.4	5
Keppel Club	2021-03-01	WS342	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27858.945	25118.727	3	12
Keppel Club	2021-03-01	WS343	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27866.642	25110.592	1.1	9
Keppel Club	2021-03-01	WS344	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27854.406	25117.995	1.6	10
Keppel Club	2021-03-01	WS345	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27861.057	25114.207	1	10
Keppel Club	2021-03-01	WS346	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27864.212	25113.672	1	10
Keppel Club	2021-03-01	WS347	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27855.466	25116.666	1	12
Keppel Club	2021-03-01	WS348	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27854.392	25111.127	2.5	7
Keppel Club	2021-03-01	WS349	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27843.039	25113.321	1.1	13
Keppel Club	2021-03-01	WS350	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27840.851	25114.273	1	12
Keppel Club	2021-03-01	WS351	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27837.096	25115.07	1	12
Keppel Club	2021-03-01	WS352	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27828.172	25114.209	1.05	12
Keppel Club	2021-03-01	WS353	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27826.404	25112.324	1	12
Keppel Club	2021-03-01	WS354	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27830.189	25109.14	1.2	12
Keppel Club	2021-03-01	WS355	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27821.966	25113.316	1.1	12
Keppel Club	2021-03-01	WS356	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27820.428	25108.615	1.2	12
Keppel Club	2021-03-01	WS357	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27815.254	25112.381	1	12
Keppel Club	2021-03-01	WS358	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27814.207	25112.807	1	11
Keppel Club	2021-03-01	WS359	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27812.203	25112.963	1	12
Keppel Club	2021-03-01	WS360	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27810.491	25114.206	1.2	12
Keppel Club	2021-03-01	WS361	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27802.775	25108.76	1	11
Keppel Club	2021-03-01	WS362	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27807.343	25105.682	1.3	10
Keppel Club	2021-03-01	WS363	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27805.428	25105.228	2.5	6
Keppel Club	2021-03-01	WS364	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27801.507	25102.413	1	10
Keppel Club	2021-03-01	WS365	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27779.414	25094.64	1.6	7
Keppel Club	2021-03-01	WS366	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27774.314	25096.67	1.6	7
Keppel Club	2021-03-01	WS367	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27749.206	25064.696	1.1	12
Keppel Club	2021-03-01	WS367A	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27751.741	25064.381	1.1	12
Keppel Club	2021-03-01	WS368	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27754.249	25066.038	1	8
Keppel Club	2021-03-01	WS369	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27802.522	25073.515	2.2	14
Keppel Club	2021-03-01	WS370	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27813.517	25073.366	1.9	16
Keppel Club	2021-03-01	WS371	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27815.111	25070.395	2.2	8
Keppel Club	2021-03-01	WS372	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27842.408	25069.981	1.2	12
Keppel Club	2021-03-01	WS373	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27844.963	25067.763	3.8	12
Keppel Club	2021-03-01	WS374	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27852.731	25068.573	2.7	14
Keppel Club	2021-03-01	WS375	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27863.64	25066.306	2	8
Keppel Club	2021-03-01	WS376	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27871.013	25068.715	2.5	10
Keppel Club	2021-03-01	WS377	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27875.513	25068.147	2.6	15
Keppel Club	2021-03-01	WS378	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27882.663	25070.445	2.9	16
Keppel Club	2021-03-01	WS378A	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27899.974	25071.602	2.1	15
Keppel Club	2021-03-01	WS379	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27904.019	25076.329	1.6	12
Keppel Club	2021-03-01	WS380	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27905.981	25071.602	1.6	10
Keppel Club	2021-03-01	WS381	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27908.281	25075.215	1.3	10
Keppel Club	2021-03-01	WS382	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27910.341	25071.75	1	11
Keppel Club	2021-03-01	WS383	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27916.927	25073.26	1.7	11
Keppel Club	2021-03-01	WS384	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27914.47	25071.54	1	9
Keppel Club	2021-03-01	WS385	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27916.223	25079.144	1.3	10

Keppel Club	2021-03-01	WS386	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27918.75	25072.419	1.3	10
Keppel Club	2021-03-01	WS387	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27921.312	25080.031	1.3	11
Keppel Club	2021-03-01	WS388	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27922.32	25071.812	1.9	13
Keppel Club	2021-03-01	WS389	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27937.67	25082.85	3	15
Keppel Club	2021-03-01	WS390	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27928.098	25077.799	3.4	15
Keppel Club	2021-03-01	WS391	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27944.867	25079.254	3.2	15
Keppel Club	2021-03-01	WS392	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27951.452	25082.504	3.3	15
Keppel Club	2021-03-01	WS393	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27958.675	25084.076	4	17
Keppel Club	2021-03-01	WS394	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27965.459	25087.434	2.4	15
Keppel Club	2021-03-01	WS395	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27972.411	25083.769	3	15
Keppel Club	2021-03-01	WS395A	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27978.355	25088.716	1.1	10
Keppel Club	2021-03-01	WS396	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27985.47	25089.371	1.2	13
Keppel Club	2021-03-01	WS397	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27981.669	25089.839	1	8
Keppel Club	2021-03-01	WS398	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27991.593	25089.857	4	12
Keppel Club	2021-03-01	WS399	*Citharexylum spinosum*	Verbenaceae	Exotic	Cultivated Only	Tree	28059.04	25095.101	1.3	6
Keppel Club	2021-03-01	WS400	*Citharexylum spinosum*	Verbenaceae	Exotic	Cultivated Only	Tree	28061.225	25098.37	1.3	6
Keppel Club	2021-03-01	WS401	*Citharexylum spinosum*	Verbenaceae	Exotic	Cultivated Only	Tree	28064.82	25096.11	1.2	4
Keppel Club	2021-03-01	WS402	*Citharexylum spinosum*	Verbenaceae	Exotic	Cultivated Only	Tree	28066.446	25099.529	1.3	6
Keppel Club	2021-03-01	WS403	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	28084.408	25113.213	1.4	10
Keppel Club	2021-03-01	WS404	*Bauhinia × blakeana*	Fabaceae	Exotic	Not assessed	Tree	28089.448	25106.286	1	7
Keppel Club	2021-03-01	WS405	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28095.729	25111.996	4.2	12
Keppel Club	2021-03-01	WS406	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	28096.172	25119.851	3.7	11
Keppel Club	2021-03-01	WS407	*Anacardium occidentale*	Anacardiaceae	Exotic	Casual	Tree	28090.639	25129.014	1	4
Keppel Club	2021-03-01	WS408	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	28084.765	25128.576	2.8	10
Keppel Club	2021-03-01	WS408A	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28105.294	25125.145	1.6	13
Keppel Club	2021-03-01	WS408B	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28105.125	25132.41	1.6	13
Keppel Club	2021-03-01	WS408C	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28108.17	25132.143	1.5	13
Keppel Club	2021-03-01	WS409	*Livistona chinensis*	Arecaceae	Exotic	Cultivated Only	Tree	28063.731	25132.866	1.2	7
Keppel Club	2021-03-01	WS410	*Livistona chinensis*	Arecaceae	Exotic	Cultivated Only	Tree	28049.641	25136.117	1.05	7
Keppel Club	2021-03-01	WS410A	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27932.368	25145.345	1	10
Keppel Club	2021-03-01	WS410B	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27914.808	25136.316	1.55	10
Keppel Club	2021-03-01	WS410C	*Roystonea regia*	Arecaceae	Exotic	Cultivated Only	Tree	27895.291	25128.191	1.6	10
Keppel Club	2021-03-01	WS411	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27669.827	25129.478	1.7	8
Keppel Club	2021-03-01	WS411A	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27676.131	25132.918	1.2	8
Keppel Club	2021-03-01	WS411B	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27688.3	25139.958	1.3	8
Keppel Club	2021-03-01	WS412	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27651.562	25141.646	2.7	6
Keppel Club	2021-03-01	WS413	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27693.772	25158.179	2.3	5
Keppel Club	2021-03-01	WS414	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27666.505	25144.32	2.2	8
Keppel Club	2021-03-01	WS415	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27701.272	25167.102	2.2	8
Keppel Club	2021-03-01	WS416	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27697.087	25184.263	1.8	6
Keppel Club	2021-03-01	WS417	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27718.003	25171.74	2.2	5
Keppel Club	2021-03-01	WS418	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27694.875	25195.692	1.2	8
Keppel Club	2021-03-01	WS418A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27709.008	25198.748	1.2	8
Keppel Club	2021-03-01	WS419	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27707.196	25185.031	2.3	5
Keppel Club	2021-03-01	WS420	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27727.764	25175.852	1.7	5
Keppel Club	2021-03-01	WS421	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27728.255	25160.756	1.8	6
Keppel Club	2021-03-01	WS421A	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27724.054	25159.157	1.2	5
Keppel Club	2021-03-08	WS422	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28022.928	25165.144	4.3	15
Keppel Club	2021-03-08	WS423	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28007.686	25175.134	3.2	17

Keppel Club	2021-03-08	WS424	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28004.184	25178.451	1.2	15
Keppel Club	2021-03-08	WS425	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27995.867	25183.627	1.6	10
Keppel Club	2021-03-08	WS426	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27993.117	25186.228	1.2	10
Keppel Club	2021-03-08	WS427	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27986.239	25189.081	1.4	8
Keppel Club	2021-03-08	WS428	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27979.925	25193.948	2.9	15
Keppel Club	2021-03-08	WS429	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27983.108	25194.839	1.8	13
Keppel Club	2021-03-08	WS430	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27977.009	25202.384	1.5	11
Keppel Club	2021-03-08	WS431	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27971.494	25204.132	1.1	11
Keppel Club	2021-03-08	WS432	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27969.356	25207.433	1.4	13
Keppel Club	2021-03-08	WS433	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27958.336	25213.675	2.8	13
Keppel Club	2021-03-08	WS434	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27956.413	25219.609	1.5	13
Keppel Club	2021-03-08	WS435	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27950.498	25221.428	2.15	13
Keppel Club	2021-03-08	WS436	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27956.43	25233.256	1.3	13
Keppel Club	2021-03-08	WS436A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27948.024	25238.454	1.4	13
Keppel Club	2021-03-08	WS437	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27943.968	25227.262	2.4	15
Keppel Club	2021-03-08	WS438	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27929.999	25238.217	3	18
Keppel Club	2021-03-08	WS439	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27926.85	25241.9	1.7	15
Keppel Club	2021-03-08	WS440	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27919.732	25250.773	4.6	18
Keppel Club	2021-03-08	WS441	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27912.149	25251.91	2.4	13
Keppel Club	2021-03-08	WS442	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27912.194	25259.671	2.7	15
Keppel Club	2021-03-08	WS443	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27903.831	25266.365	3	15
Keppel Club	2021-03-08	WS444	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27904.725	25278.902	3.7	16
Keppel Club	2021-03-08	WS445	*Couroupita guianensis*	Lecythidaceae	Exotic	Cultivated Only	Tree	27894.322	25264.844	1.45	11
Keppel Club	2021-03-08	WS446	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27894.779	25274.699	2.5	15
Keppel Club	2021-03-08	WS447	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27889.331	25289.111	2.5	13
Keppel Club	2021-03-08	WS448	*Acacia mangium*	Fabaceae	Exotic	Naturalised	Tree	27885.203	25304.125	1.6	13
Keppel Club	2021-03-08	WS448A	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27880.379	25304.813	1.1	10
Keppel Club	2021-03-08	WS449	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27871.187	25300.451	1.7	12
Keppel Club	2021-03-08	WS450	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27866.184	25303.07	1.4	13
Keppel Club	2021-03-08	WS451	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27831.374	25368.973	1.1	13
Keppel Club	2021-03-08	WS452	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27866.249	25311.213	1.3	13
Keppel Club	2021-03-08	WS453	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27860.414	25318.664	1.6	13
Keppel Club	2021-03-08	WS454	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27863.595	25311.526	1.2	13
Keppel Club	2021-03-08	WS455	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27868.975	25315.537	1.1	13
Keppel Club	2021-03-08	WS456	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27875.68	25318.208	1.8	13
Keppel Club	2021-03-08	WS457	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27881.594	25319.093	1.5	13
Keppel Club	2021-03-08	WS458	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27876.798	25323.767	1.3	11
Keppel Club	2021-03-08	WS459	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27865.504	25322.353	1.1	13
Keppel Club	2021-03-08	WS460	*Diospyros blancoi*	Ebenaceae	Exotic	Cultivated Only	Tree	27884.957	25323.042	1.1	8
Keppel Club	2021-03-08	WS461	*Diospyros blancoi*	Ebenaceae	Exotic	Cultivated Only	Tree	27885.368	25329.805	1.05	8
Keppel Club	2021-03-08	WS462	*Diospyros blancoi*	Ebenaceae	Exotic	Cultivated Only	Tree	27885.433	25335.9	1	8
Keppel Club	2021-03-08	WS463	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27865.779	25334.081	1.5	13
Keppel Club	2021-03-08	WS464	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27854.002	25333.295	1.3	13
Keppel Club	2021-03-08	WS465	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27847.766	25341.845	1.3	10
Keppel Club	2021-03-08	WS466	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27855.046	25353.243	1.2	13
Keppel Club	2021-03-08	WS467	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27862.124	25355.561	1.6	13
Keppel Club	2021-03-08	WS468	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27871.416	25361.011	1.7	15
Keppel Club	2021-03-08	WS469	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27861.404	25367.252	1.4	18
Keppel Club	2021-03-08	WS470	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27866.836	25373.336	1	10

Keppel Club	2021-03-08	WS471	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27873.578	25369.498	1.4	13
Keppel Club	2021-03-08	WS472	*Acacia mangium*	Fabaceae	Exotic	Naturalised	Tree	27864.068	25377.412	1.6	13
Keppel Club	2021-03-08	WS473	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27864.503	25386.223	2.2	11
Keppel Club	2021-03-08	WS474	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27881.864	25386.203	4.7	18
Keppel Club	2021-03-08	WS475	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27884.488	25390.939	2.3	15
Keppel Club	2021-03-08	WS476	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27884.138	25372.508	2.2	13
Keppel Club	2021-03-08	WS477	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27891.721	25375.261	2.15	15
Keppel Club	2021-03-08	WS478	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27892.994	25365.385	1.6	15
Keppel Club	2021-03-08	WS479	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27887.463	25362.895	1.8	15
Keppel Club	2021-03-08	WS480	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27890.726	25354.482	2.4	15
Keppel Club	2021-03-08	WS481	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27884.756	25403.697	1.75	15
Keppel Club	2021-03-08	WS482	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	27876.857	25401.322	1.8	13
Keppel Club	2021-03-08	WS483	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	27876.217	25428.487	2.6	15
Keppel Club	2021-03-08	WS484	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27879.712	25444.946	1.7	15
Keppel Club	2021-03-08	WS485	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27871.932	25445.265	2	15
Keppel Club	2021-03-08	WS485a	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27868.676	25444.016	1.1	12
Keppel Club	2021-03-08	WS486	*Moringa drouhardii*	Moringaceae	Exotic	Cultivated Only	Tree	27871.685	25452.458	1.2	7
Keppel Club	2021-03-08	WS487	*Moringa drouhardii*	Moringaceae	Exotic	Cultivated Only	Tree	27871.444	25455.369	1.4	7
Keppel Club	2021-03-08	WS488	*Moringa drouhardii*	Moringaceae	Exotic	Cultivated Only	Tree	27877.789	25463.4	1.4	5
Keppel Club	2021-03-08	WS489	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27873.603	25464.928	1.2	12
Keppel Club	2021-03-08	WS490	*Plumeria rubra*	Apocynaceae	Exotic	Cultivated Only	Tree	27893.072	25535.094	1.1	6
Keppel Club	2021-03-15	WS491	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	27936.046	25455.91	4	14
Keppel Club	2021-03-15	WS492	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	27939.656	25451.807	1.2	12
Keppel Club	2021-03-15	WS493	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27925.909	25448.647	2	12
Keppel Club	2021-03-15	WS494	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27928.401	25444.615	1.65	12
Keppel Club	2021-03-15	WS495	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27928.805	25439.815	1.9	14
Keppel Club	2021-03-15	WS496	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27935.577	25439.121	2.5	14
Keppel Club	2021-03-15	WS497	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27926.463	25433.443	1.3	6
Keppel Club	2021-03-15	WS498	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27946.356	25445.647	2.8	9
Keppel Club	2021-03-15	WS499	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27940.204	25431.874	1.95	12
Keppel Club	2021-03-15	WS500	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27942.252	25428.457	2.1	15
Keppel Club	2021-03-15	WS501	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27940.311	25423.986	2	15
Keppel Club	2021-03-15	WS502	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27934.402	25430.787	1.25	13
Keppel Club	2021-03-15	WS503	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27931.12	25428.647	2.3	17
Keppel Club	2021-03-15	WS504	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27926.625	25424.195	1.5	12
Keppel Club	2021-03-15	WS505	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27933.17	25421.784	1.3	14
Keppel Club	2021-03-15	WS505a	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27935.972	25416.854	1.85	17
Keppel Club	2021-03-15	WS506	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27938.483	25412.075	1.6	14
Keppel Club	2021-03-15	WS507	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27931.107	25414.899	1.5	15
Keppel Club	2021-03-15	WS508	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27928.968	25411.633	1.5	14
Keppel Club	2021-03-15	WS509	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27933.759	25406.137	1.3	12
Keppel Club	2021-03-15	WS510	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27939.892	25405.323	1.5	7
Keppel Club	2021-03-15	WS510a	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27935.635	25403.147	2.2	17
Keppel Club	2021-03-15	WS511	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27937.033	25399.049	1.45	13
Keppel Club	2021-03-15	WS512	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27932.055	25403.771	1.3	6
Keppel Club	2021-03-15	WS513	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27931.964	25394.947	1.4	13
Keppel Club	2021-03-15	WS514	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27933.176	25390.868	2.15	15
Keppel Club	2021-03-15	WS515	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27937.297	25389.244	2	14
Keppel Club	2021-03-15	WS516	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27933.447	25384.82	2	14

Keppel Club	2021-03-15	WS517	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27938.521	25385.603	1.8	12
Keppel Club	2021-03-15	WS518	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27939.564	25379.405	1.3	9
Keppel Club	2021-03-15	WS519	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27941.744	25376.161	2.1	13
Keppel Club	2021-03-15	WS520	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27941.693	25371.74	1	9
Keppel Club	2021-03-15	WS521	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27944.66	25367.679	2.7	15
Keppel Club	2021-03-15	WS522	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	27942.078	25363.49	1.5	13
Keppel Club	2021-03-15	WS523	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27946.56	25358.935	2.3	15
Keppel Club	2021-03-15	WS524	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27947.946	25354.304	2.5	15
Keppel Club	2021-03-15	WS525	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27970.741	25296.009	1.6	9
Keppel Club	2021-03-15	WS526	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27974.217	25290.91	1.4	9
Keppel Club	2021-03-15	WS527	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27973.439	25287.849	1.1	9
Keppel Club	2021-03-15	WS528	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27975.647	25287.262	1.4	9
Keppel Club	2021-03-15	WS529	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27975.312	25284.259	1.3	9
Keppel Club	2021-03-15	WS530	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27978.345	25283.369	1.4	9
Keppel Club	2021-03-15	WS531	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27980.441	25279.157	1.7	9
Keppel Club	2021-03-15	WS532	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27979.462	25276.087	1	9
Keppel Club	2021-03-15	WS533	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	27983.87	25274.982	2.4	9
Keppel Club	2021-03-15	WS534	*Asteromyrtus symphyocarpa*	Myrtaceae	Exotic	Cultivated Only	Tree	27991.063	25267.975	2.4	5
Keppel Club	2021-03-15	WS535	*Asteromyrtus symphyocarpa*	Myrtaceae	Exotic	Cultivated Only	Tree	27997.646	25267.006	1.6	7
Keppel Club	2021-03-15	WS536	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	27998.97	25250.95	2.5	13
Keppel Club	2021-03-15	WS537	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28004.411	25252.447	2.9	14
Keppel Club	2021-03-15	WS538	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28006.411	25245.783	2.8	15
Keppel Club	2021-03-15	WS539	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28013.696	25241.54	2.7	15
Keppel Club	2021-03-15	WS540	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28018.33	25232.969	3.2	12
Keppel Club	2021-03-15	WS541	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28027.029	25227.8	1	12
Keppel Club	2021-03-15	WS542	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28024.784	25220.62	3.65	14
Keppel Club	2021-03-15	WS543	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28034.573	25205.693	7.5	12
Keppel Club	2021-03-15	WS544	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28035.813	25219.247	1.6	12
Keppel Club	2021-03-15	WS545	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28049.409	25199.211	1	5
Keppel Club	2021-03-15	WS546	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28055.513	25190.095	1.45	7
Keppel Club	2021-03-15	WS547	*Filicium decipiens*	Sapindaceae	Exotic	Cultivated Only	Tree	28058.505	25188.996	1.3	9
Keppel Club	2021-03-15	WS548	*Sabal palmetto*	Arecaceae	Exotic	Cultivated Only	Tree	28125.675	25080.086	1.75	6
Keppel Club	2021-03-15	WS548a	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28132.319	25074.211	1.6	11
Keppel Club	2021-03-15	WS548b	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28139.317	25073.812	1.45	11
Keppel Club	2021-03-15	WS549	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28143.552	25075.131	1.3	10
Keppel Club	2021-03-15	WS549a	*Terminalia mantaly*	Combretaceae	Exotic	Cultivated Only	Tree	28136.68	25078.495	1.6	12
Keppel Club	2021-03-15	WS550	*Tamarindus indica*	Fabaceae	Exotic	Casual	Tree	28107.133	25044.334	5.3	9
Keppel Club	2021-03-15	WS551	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28102.045	25010.431	1.7	10
Keppel Club	2021-03-15	WS552	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28107.31	25009.149	2.2	10
Keppel Club	2021-03-15	WS553	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28103.51	25028.111	4.7	14
Keppel Club	2021-03-15	WS554	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28106.115	25002.234	1.95	13
Keppel Club	2021-03-15	WS555	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28100.768	24996.821	2.5	13
Keppel Club	2021-03-15	WS556	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28106.119	24993.493	2.1	12
Keppel Club	2021-03-15	WS557	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28105.054	24987.292	3.4	13
Keppel Club	2021-03-15	WS558	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28101.728	24979.404	2.1	14
Keppel Club	2021-03-15	WS559	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28106.164	24972.646	2.2	12
Keppel Club	2021-03-15	WS560	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28104.6	24966.644	2.5	12
Keppel Club	2021-03-15	WS560a	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28106.105	24955.773	1.7	12
Keppel Club	2021-03-15	WS561	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28110.524	24947.544	1.9	12

Keppel Club	2021-03-15	WS562	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28109.057	24940.329	1.4	10
Keppel Club	2021-03-15	WS563	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28111.26	24935.097	1.2	11
Keppel Club	2021-03-15	WS564	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28112.702	24930.047	2.1	11
Keppel Club	2021-03-15	WS565	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28114.512	24923.946	2.3	12
Keppel Club	2021-03-15	WS566	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28118.542	24919.662	1.95	8
Keppel Club	2021-03-15	WS566a	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28120.337	24902.97	1	10
Keppel Club	2021-03-15	WS567	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28127.705	24904.867	1.3	11
Keppel Club	2021-03-15	WS567a	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28123.112	24895.965	2.5	15
Keppel Club	2021-03-15	WS567b	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28124.49	24896.788	2.4	14
Keppel Club	2021-03-15	WS568	*Lagerstroemia speciosa*	Lythraceae	Exotic	Cultivated Only	Tree	28126.366	24889.96	1.3	7
Keppel Club	2021-03-15	WS569	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28135.892	24877.321	2.1	11
Keppel Club	2021-03-15	WS570	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28143.927	24886.913	3.1	13
Keppel Club	2021-03-15	WS571	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28147.526	24881.549	1.9	8
Keppel Club	2021-03-15	WS572	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28151.843	24875.255	3.1	13
Keppel Club	2021-03-15	WS573	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28149.52	24868.641	1.2	10
Keppel Club	2021-03-15	WS573a	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28149.183	24863.519	1.55	12
Keppel Club	2021-03-15	WS574	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28153.82	24856.58	2.4	13
Keppel Club	2021-03-15	WS574a	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28154.525	24852.901	1.3	11
Keppel Club	2021-03-15	WS574b	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28160.154	24848.467	1.5	10
Keppel Club	2021-03-15	WS575	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28160.88	24836.766	2.55	14
Keppel Club	2021-03-15	WS576	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28175.358	24815.909	1.75	10
Keppel Club	2021-03-15	WS577	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	28210.43	24737.473	1	11
Keppel Club	2021-03-15	WS578	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28203.352	24735.171	3.2	11
Keppel Club	2021-03-22	WS579	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27812.906	25244.709	1.1	7
Keppel Club	2021-03-22	WS580	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27809.874	25249.177	1.6	12
Keppel Club	2021-03-22	WS581	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27810.893	25250.539	2	12
Keppel Club	2021-03-22	WS582	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27812.68	25254.268	2	5
Keppel Club	2021-03-22	WS583	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27822.416	25255.351	1.1	10
Keppel Club	2021-03-22	WS584	*Pithecellobium dulce*	Fabaceae	Exotic	Casual	Tree	27800.45	25258.003	1.6	8
Keppel Club	2021-03-22	WS585	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27798.888	25257.723	2	6
Keppel Club	2021-03-22	WS586	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27791.126	25273.052	7	20
Keppel Club	2021-03-22	WS587	*Artocarpus heterophyllus*	Moraceae	Exotic	Casual	Tree	27773.109	25283.071	1	7
Keppel Club	2021-03-22	WS588	*Nephelium lappaceum*	Sapindaceae	Native	Critically Endangered	Tree	27767.995	25281.361	1.2	10
Keppel Club	2021-03-22	WS589	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27763.851	25285.971	1.2	10
Keppel Club	2021-03-22	WS590	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27790.331	25296.91	1.3	6
Keppel Club	2021-03-22	WS591	*Tabebuia rosea*	Bignoniaceae	Exotic	Casual	Tree	27791.89	25297.465	1.3	10
Keppel Club	2021-03-22	WS592	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	27789.405	25308.867	1.5	12
Keppel Club	2021-03-22	WS593	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27801.19	25300.057	5	12
Keppel Club	2021-03-22	WS594	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27789.959	25320.88	3	18
Keppel Club	2021-03-22	WS595	*Terminalia catappa*	Combretaceae	Native	Common	Tree	27786.897	25335.864	2	18
Keppel Club	2021-03-22	WS596	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27780.307	25345.884	1.7	15
Keppel Club	2021-03-22	WS597	*Artocarpus heterophyllus*	Moraceae	Exotic	Casual	Tree	27776.354	25350.773	1.5	15
Keppel Club	2021-03-22	WS598	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	27787.944	25354.759	1	15
Keppel Club	2021-03-22	WS599	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27790.571	25355.629	2	10
Keppel Club	2021-03-22	WS600	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27792.424	25359.873	1	7
Keppel Club	2021-03-22	WS601	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27794.172	25362.882	1.8	7
Keppel Club	2021-03-22	WS602	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27793.212	25363.151	1	10
Keppel Club	2021-03-22	WS603	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27786.395	25362.008	1.1	8
Keppel Club	2021-03-22	WS604	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27785.328	25365.145	1	8

Keppel Club	2021-03-22	WS605	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	27785.036	25366.694	1.9	6
Keppel Club	2021-03-22	WS606	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27792.462	25349.786	1.2	8
Keppel Club	2021-03-22	WS607	*Durio zibethinus*	Malvaceae	Exotic	Casual	Tree	27808.598	25362.577	1.3	6
Keppel Club	2021-03-22	WS608	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27793	25375.102	1.1	5
Keppel Club	2021-03-22	WS609	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27792.205	25379.984	1.3	10
Keppel Club	2021-03-22	WS610	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27795.839	25386.552	1.3	10
Keppel Club	2021-03-22	WS611	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	27787.219	25394.233	1.2	10
Keppel Club	2021-03-22	WS612	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27785.329	25393.748	1.2	10
Keppel Club	2021-03-22	WS613	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27781.863	25393.828	1.2	10
Keppel Club	2021-03-22	WS614	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27783.659	25383.017	1.1	10
Keppel Club	2021-03-22	WS615	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	27938.885	25510.041	1.2	8
Keppel Club	2021-03-22	WS616	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	27945.092	25506.23	2	8
Keppel Club	2021-03-22	WS617	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	27937.56	25516.635	1.35	10
Keppel Club	2021-03-22	WS618	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27936.63	25518.319	1.3	9
Keppel Club	2021-03-22	WS619	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	27932.672	25518.174	1.3	9
Keppel Club	2021-03-22	WS620	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27930.485	25533.795	2.2	15
Keppel Club	2021-03-22	WS621	*Dimocarpus longan*	Sapindaceae	Exotic	Casual	Tree	27945.382	25545.645	4.5	15
Keppel Club	2021-03-22	WS622	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27937.91	25546.078	1.2	8
Keppel Club	2021-03-22	WS623	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27940.704	25551.731	2	5
Keppel Club	2021-03-22	WS624	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	27923.575	25546.289	10	18
Keppel Club	2021-03-29	WS625	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	28000.515	25577.783	7.2	13
Keppel Club	2021-03-29	WS626	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28079.793	25605.577	1.5	13
Keppel Club	2021-03-29	WS627	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28079.422	25610.976	1.2	8
Keppel Club	2021-03-29	WS628	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28082.69	25612.388	1.5	7
Keppel Club	2021-03-29	WS629	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28087.655	25617.654	4	8
Keppel Club	2021-03-29	WS630	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28087.261	25611.154	1.6	9
Keppel Club	2021-03-29	WS631	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28087.699	25608.095	1.1	6
Keppel Club	2021-03-29	WS632	*Hevea brasiliensis*	Euphorbiaceae	Exotic	Naturalised	Tree	28089.294	25593.949	1.4	14
Keppel Club	2021-03-29	WS633	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28092.713	25587.767	1.45	14
Keppel Club	2021-03-29	WS633A	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28095.855	25577.736	1.6	11
Keppel Club	2021-03-29	WS634	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28093.325	25586.68	2.7	8
Keppel Club	2021-03-29	WS635	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28100.68	25576.427	2	10
Keppel Club	2021-03-29	WS636	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28104.093	25572.285	1.5	9
Keppel Club	2021-03-29	WS637	*Ficus religiosa*	Moraceae	Exotic	Naturalised	Strangler	28106.249	25567.202	5.5	14
Keppel Club	2021-03-29	WS638	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28106.665	25557.701	6	14
Keppel Club	2021-03-29	WS639	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28105.897	25542.774	6	12
Keppel Club	2021-03-29	WS640	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28111.379	25526.856	3.6	20
Keppel Club	2021-03-29	WS641	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28112.305	25526.992	1.6	7
Keppel Club	2021-03-29	WS642	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28112.933	25520.886	1.7	12
Keppel Club	2021-03-29	WS643	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28112.858	25520.228	1.2	9
Keppel Club	2021-03-29	WS644	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28114.169	25492.493	1	8
Keppel Club	2021-03-29	WS645	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28120.765	25485.532	1.6	14
Keppel Club	2021-03-29	WS646	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28110.855	25487.972	1.2	6
Keppel Club	2021-03-29	WS646a	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28106.994	25491.705	1.6	10
Keppel Club	2021-03-29	WS647	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28094.17	25510.869	2.5	13
Keppel Club	2021-03-29	WS648	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28088.839	25508.694	2.4	16
Keppel Club	2021-03-29	WS649	*Mangifera indica*	Anacardiaceae	Exotic	Casual	Tree	28082.834	25510.525	1.45	8
Keppel Club	2021-03-29	WS650	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28081.565	25498.595	1.4	8
Keppel Club	2021-03-29	WS651	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28074.663	25497.107	1.9	12

Keppel Club	2021-03-29	WS652	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28069.045	25487.876	3.1	16
Keppel Club	2021-03-29	WS653	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	28066.832	25489.421	1.2	14
Keppel Club	2021-03-29	WS654	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28066.086	25483.375	1.2	12
Keppel Club	2021-03-29	WS655	*Averrhoa carambola*	Oxalidaceae	Exotic	Casual	Tree	28060.6	25480.79	1.1	6
Keppel Club	2021-03-29	WS656	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	28060.265	25465.63	1.8	8
Keppel Club	2021-03-29	WS657	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28060.866	25460.216	1.9	13
Keppel Club	2021-03-29	WS658	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28052.289	25449.951	1.5	8
Keppel Club	2021-03-29	WS659	*Terminalia catappa*	Combretaceae	Native	Common	Tree	28053.978	25441.861	1.8	12
Keppel Club	2021-03-29	WS660	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28050.023	25418.087	3	12
Keppel Club	2021-03-29	WS661	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	28056.068	25420.569	1.8	6
Keppel Club	2021-03-29	WS662	*Senna siamea*	Fabaceae	Exotic	Cultivated Only	Tree	28042.651	25418.131	2.5	15
Keppel Club	2021-03-29	WS663	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28040.74	25415.311	1.5	14
Keppel Club	2021-03-29	WS664	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28037.554	25406.252	2.4	12
Keppel Club	2021-03-29	WS665	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28041.027	25397.257	1.8	12
Keppel Club	2021-03-29	WS666	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28041.707	25390.277	2.1	14
Keppel Club	2021-03-29	WS667	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28044.617	25383.762	2.1	14
Keppel Club	2021-03-29	WS668	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28051.925	25368.147	2.4	14
Keppel Club	2021-03-29	WS669	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28051.495	25370.941	1.1	9
Keppel Club	2021-03-29	WS670	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28053.967	25362.65	3	14
Keppel Club	2021-03-29	WS671	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28054.981	25355.664	2.4	14
Keppel Club	2021-03-29	WS672	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28059.198	25360.764	1.3	12
Keppel Club	2021-03-29	WS673	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28061.259	25354.973	2	15
Keppel Club	2021-03-29	WS674	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28058.481	25350.166	3.2	14
Keppel Club	2021-03-29	WS675	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28063.956	25339.939	2.5	14
Keppel Club	2021-03-29	WS676	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28067.497	25333.208	2.1	14
Keppel Club	2021-03-29	WS677	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28068.502	25329.156	2.2	14
Keppel Club	2021-03-29	WS678	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28071.981	25320.431	2.2	14
Keppel Club	2021-03-29	WS679	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	28075.458	25318.25	1.1	10
Keppel Club	2021-03-29	WS680	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28075.364	25319.247	2.6	16
Keppel Club	2021-03-29	WS681	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28076.218	25310.991	2.2	14
Keppel Club	2021-03-29	WS682	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28078.561	25304.084	2.4	14
Keppel Club	2021-03-29	WS683	*Casuarina equisetifolia*	Casuarinaceae	Native	Common	Tree	28083.439	25302.501	3.2	16
Keppel Club	2021-03-29	WS684	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28079.437	25299.681	2.6	14
Keppel Club	2021-03-29	WS685	*Ficus vasculosa*	Moraceae	Native	Endangered	Tree	28091.172	25291.739	2	14
Keppel Club	2021-04-05	WS686	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28080.224	25574.467	2.7	9
Keppel Club	2021-04-05	WS687	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28082.279	25574.885	3	9
Keppel Club	2021-04-05	WS688	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	28081.612	25570.447	1.1	5
Keppel Club	2021-04-05	WS689	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	28073.176	25564.214	1.55	10
Keppel Club	2021-04-05	WS690	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28065.555	25559.862	1.2	16
Keppel Club	2021-04-05	WS691	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28059.889	25552.055	3.1	12
Keppel Club	2021-04-05	WS692	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	28057.971	25550.964	1.6	5
Keppel Club	2021-04-05	WS693	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28053.383	25551.862	1.8	16
Keppel Club	2021-04-05	WS694	*Streblus elongatus*	Moraceae	Native	Vulnerable	Tree	28047.626	25541.55	2.2	14
Keppel Club	2021-04-05	WS695	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28048.699	25542.255	1.9	10
Keppel Club	2021-04-05	WS696	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	28048.311	25530.515	1.05	8
Keppel Club	2021-04-05	WS697	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	28039.983	25524.311	1	9
Keppel Club	2021-04-05	WS698	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28036.369	25525.264	3	12
Keppel Club	2021-04-05	WS699	*Ficus microcarpa*	Moraceae	Native	Common	Strangler	28036.195	25519.5	2.2	9
Keppel Club	2021-04-05	WS700	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28030.813	25521.018	4.6	11

Keppel Club	2021-04-05	WS701	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	28024.934	25518.35	1	10
Keppel Club	2021-04-05	WS702	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28020.369	25512.085	3.4	10
Keppel Club	2021-04-05	WS703	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28019.501	25506.285	3.3	9
Keppel Club	2021-04-05	WS704	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28013.239	25502.289	2.3	7
Keppel Club	2021-04-05	WS705	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28001.913	25513.857	3	9
Keppel Club	2021-04-05	WS706	*Eucalyptus alba*	Myrtaceae	Exotic	Cultivated Only	Tree	27997.863	25500.073	1.4	8
Keppel Club	2021-04-05	WS707	*Livistona chinensis*	Arecaceae	Exotic	Cultivated Only	Tree	27991.029	25483.108	1.3	7
Keppel Club	2021-04-05	WS708	*Dimocarpus longan*	Sapindaceae	Exotic	Casual	Tree	27983.088	25459.862	2.8	12
Keppel Club	2021-04-05	WS709	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	27988.804	25432.798	1.9	9
Keppel Club	2021-04-05	WS710	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27994.088	25428.235	1.6	9
Keppel Club	2021-04-05	WS711	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27993.183	25424.828	1.6	9
Keppel Club	2021-04-05	WS712	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28037.428	25297.164	2.1	12
Keppel Club	2021-04-05	WS713	*Samanea saman*	Fabaceae	Exotic	Casual	Tree	28039.869	25284.047	1.8	11
Keppel Club	2021-04-05	WS714	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28049.542	25264.252	3.3	10
Keppel Club	2021-04-05	WS715	*Diospyros blancoi*	Ebenaceae	Exotic	Cultivated Only	Tree	28051.498	25255.388	1.8	7
Keppel Club	2021-04-05	WS716	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28057.242	25255.779	1.5	10
Keppel Club	2021-04-05	WS717	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28058.924	25250.669	1.6	10
Keppel Club	2021-04-05	WS718	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28072.94	25219.863	2.2	7
Keppel Club	2021-04-05	WS719	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28073.365	25216.793	1.2	7
Keppel Club	2021-04-05	WS719A	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28074.969	25213.231	1	7
Keppel Club	2021-04-05	WS720	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28074.631	25208.146	1	7
Keppel Club	2021-04-05	WS721	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28076.235	25204.889	1.3	7
Keppel Club	2021-04-05	WS722	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28079.137	25200.69	1.3	7
Keppel Club	2021-04-05	WS723	*Mimusops elengi*	Sapotaceae	Exotic	Casual	Tree	28079.253	25197.658	1.8	7
Keppel Club	2021-04-05	WS724	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28141.733	24986.921	2.1	11
Keppel Club	2021-04-05	WS725	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28144.668	24982.789	1.3	11
Keppel Club	2021-04-05	WS726	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28178.795	24927.025	3	12
Keppel Club	2021-04-05	WS727	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28192.598	24921.311	2.8	14
Keppel Club	2021-04-05	WS728	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28168.525	24916.257	3.1	17
Keppel Club	2021-04-05	WS729	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28166.073	24911.344	2.3	9
Keppel Club	2021-04-05	WS730	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28168.505	24910.644	1.5	15
Keppel Club	2021-04-05	WS731	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28170.583	24908.755	1.65	7
Keppel Club	2021-04-05	WS732	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28168.504	24903.091	1.6	9
Keppel Club	2021-04-05	WS733	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28177.321	24904.17	1.9	12
Keppel Club	2021-04-05	WS734	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28182.793	24909.538	4	14
Keppel Club	2021-04-05	WS735	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28202.381	24875.105	1.5	14
Keppel Club	2021-04-05	WS736	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28198.541	24869.536	2	13
Keppel Club	2021-04-05	WS737	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28192.016	24863.345	3.9	14
Keppel Club	2021-04-05	WS738	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28196.338	24856.922	2.1	13
Keppel Club	2021-04-05	WS739	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28201.626	24856.97	3.1	12
Keppel Club	2021-04-05	WS740	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28212.937	24862.221	1.8	13
Keppel Club	2021-04-05	WS741	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28209.641	24852.101	2.2	12
Keppel Club	2021-04-05	WS742	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28203.951	24852.366	1.7	13
Keppel Club	2021-04-05	WS743	*Parkia timoriana*	Fabaceae	Exotic	Cultivated Only	Tree	28205.158	24843.9	3.7	19
Keppel Club	2021-04-05	WS744	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28209.569	24836.897	1.9	12
Keppel Club	2021-04-05	WS745	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28214.458	24838.276	1.8	12
Keppel Club	2021-04-05	WS746	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28198.061	24845.546	2.4	10
Keppel Club	2021-04-19	WS747	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28214.788	24828.777	3	8
Keppel Club	2021-04-19	WS748	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28215.361	24822.692	1.2	9

Keppel Club	2021-04-19	WS749	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28211.959	24811.4	1	9
Keppel Club	2021-04-19	WS750	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28219.075	24805.715	1.25	8
Keppel Club	2021-04-19	WS751	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28219.756	24798.705	2.5	9
Keppel Club	2021-04-19	WS752	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28224.453	24793.413	1.35	9
Keppel Club	2021-04-19	WS753	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28225.586	24784.781	1.2	9
Keppel Club	2021-04-19	WS754	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28223.476	24774.014	4.9	6
Keppel Club	2021-04-19	WS755	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28231.858	24772.467	2.8	11
Keppel Club	2021-04-19	WS756	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28232.681	24765.851	1.1	8
Keppel Club	2021-04-19	WS757	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28236.913	24764.128	1.3	9
Keppel Club	2021-04-19	WS758	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28248.915	24743.421	2.8	10
Keppel Club	2021-04-19	WS759	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28247.553	24731.695	2.2	10
Keppel Club	2021-04-19	WS760	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28247.422	24719.372	1.4	8
Keppel Club	2021-04-19	WS760A	*Parkia timoriana*	Fabaceae	Exotic	Cultivated Only	Tree	28242.306	24693.962	1.7	13
Keppel Club	2021-04-19	WS761	*Vitex pinnata*	Lamiaceae	Native	Common	Tree	28277.65	24672.83	1.1	8
Keppel Club	2021-04-19	WS762	*Syzygium polyanthum*	Myrtaceae	Native	Vulnerable	Tree	28278.528	24671.662	1.5	6
Keppel Club	2021-04-19	WS763	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28267.798	24671.328	3.5	9
Keppel Club	2021-04-19	WS764	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28256.154	24670.051	1.1	8
Keppel Club	2021-04-19	WS765	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28159.678	24705.991	2.3	15
Keppel Club	2021-04-19	WS766	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28149.676	24708.714	2	13
Keppel Club	2021-04-19	WS767	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28122.216	24783.294	4.5	11
Keppel Club	2021-04-19	WS768	*Cyrtophyllum fragrans*	Gentianaceae	Native	Common	Tree	28110.416	24792.951	2.4	11
Keppel Club	2021-04-19	WS769	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	28103.528	24797.351	1.4	8
Keppel Club	2021-04-26	WS770	*Acacia auriculiformis*	Fabaceae	Exotic	Naturalised	Tree	28171.349	24706.953	2	12
Keppel Club	2021-04-26	WS770A	*Parkia timoriana*	Fabaceae	Exotic	Cultivated Only	Tree	28185.64	24720.163	3	15
Keppel Club	2021-04-26	WS771	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28186.322	24727.503	3	15
Keppel Club	2021-04-26	WS772	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28204.413	24718.269	2	10
Keppel Club	2021-04-26	WS773	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28200.491	24711.766	2.3	15
Keppel Club	2021-04-26	WS774	*Arenga pinnata*	Arecaceae	Exotic	Cultivated Only	Tree	28195.406	24706.006	1.5	12
Keppel Club	2021-04-26	WS775	*Dillenia indica*	Dilleniaceae	Native	Critically Endangered	Tree	28130.986	24813.424	1.5	7
Keppel Club	2021-04-26	WS776	*Dillenia indica*	Dilleniaceae	Native	Critically Endangered	Tree	28128.49	24818.199	1	7
Keppel Club	2021-04-26	WS777	*Dillenia indica*	Dilleniaceae	Native	Critically Endangered	Tree	28129.061	24821.777	1.1	6
Keppel Club	2021-04-26	WS778	*Dillenia indica*	Dilleniaceae	Native	Critically Endangered	Tree	28125.475	24822.478	1.1	6
Keppel Club	2021-04-26	WS779	*Dillenia indica*	Dilleniaceae	Native	Critically Endangered	Tree	28125.661	24828.491	1.85	6
Keppel Club	2021-04-26	WS780	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28117.766	24833.292	3	12
Keppel Club	2021-04-26	WS781	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28108.671	24848.68	2.2	12
Keppel Club	2021-04-26	WS782	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28104.183	24858.459	2.6	12
Keppel Club	2021-04-26	WS782A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28102.039	24866.099	1.4	12
Keppel Club	2021-04-26	WS783	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28098.382	24868.139	2.6	12
Keppel Club	2021-04-26	WS784	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28093.964	24877.343	2.6	12
Keppel Club	2021-04-26	WS785	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28092.803	24882.564	1.3	12
Keppel Club	2021-04-26	WS786	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28088.94	24885.858	2.4	12
Keppel Club	2021-04-26	WS786A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28089.674	24892.52	1.6	12
Keppel Club	2021-04-26	WS787	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28085.521	24892.488	1.4	12
Keppel Club	2021-04-26	WS788	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28088.318	24896.94	2	12
Keppel Club	2021-04-26	WS789	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28081.6	24898.38	1.7	12
Keppel Club	2021-04-26	WS790	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28084.665	24902.704	1.8	12
Keppel Club	2021-04-26	WS791	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28078.361	24911.327	2.1	12
Keppel Club	2021-04-26	WS792	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28080.411	24914.756	1.3	12
Keppel Club	2021-04-26	WS793	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28075.85	24918.499	1.1	6

Keppel Club	2021-04-26	WS794	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28079.455	24920.457	1.9	12
Keppel Club	2021-04-26	WS795	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28075.655	24923.989	2.4	12
Keppel Club	2021-04-26	WS796	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28074.321	24926.261	1.6	10
Keppel Club	2021-04-26	WS797	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28069.082	24945.114	2.3	15
Keppel Club	2021-04-26	WS798	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28068.725	24953.338	2	15
Keppel Club	2021-04-26	WS799	*Swietenia macrophylla*	Meliaceae	Exotic	Casual	Tree	28066.248	24963.266	1	12
Keppel Club	2021-04-26	WS800	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28055.722	24956.816	2.8	15
Keppel Club	2021-04-26	WS801	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28057.389	24963.782	1.7	12
Keppel Club	2021-04-26	WS801A	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28061.264	24989.067	1.55	12
Keppel Club	2021-04-26	WS801B	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28060.896	24995.654	1.45	12
Keppel Club	2021-04-26	WS801C	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28047.834	24992.14	1.65	12
Keppel Club	2021-04-26	WS801D	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	28047.876	24986.996	1.4	12
Keppel Club	2021-04-26	WS802	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28049.495	24963.244	1.1	5
Keppel Club	2021-04-26	WS803	*Ceiba pentandra*	Malvaceae	Exotic	Casual	Tree	28048.903	24969.632	1.8	15
Keppel Club	2021-04-26	WS804	*Ceiba pentandra*	Malvaceae	Exotic	Casual	Tree	28044.223	24968.544	1.6	15
Keppel Club	2021-04-26	WS805	*Ceiba pentandra*	Malvaceae	Exotic	Casual	Tree	28038.775	24977.131	2.1	15
Keppel Club	2021-04-26	WS806	*Ceiba pentandra*	Malvaceae	Exotic	Casual	Tree	28038.031	24973.669	2.5	15
Keppel Club	2021-04-26	WS807	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	28025.912	24966.915	2	10
Keppel Club	2021-04-26	WS808	*Lannea coromandelica*	Anacardiaceae	Exotic	Cultivated Only	Tree	28021.668	24958.52	2	12
Keppel Club	2021-04-26	WS809	*Ficus fistulosa*	Moraceae	Native	Common	Tree	28016.654	24964.031	2	8
Keppel Club	2021-04-26	WS810	*Ficus benjamina*	Moraceae	Cryptogenic	-	Strangler	28001.078	24964.159	4	8
Keppel Club	2021-04-26	WS811	*Cinnamomum iners*	Lauraceae	Native	Common	Tree	27994.351	24978.075	1.8	8
Keppel Club	2021-04-26	WS812	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27999.33	24976.657	2	15
Keppel Club	2021-04-26	WS813	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28003.559	24984.833	2	15
Keppel Club	2021-04-26	WS814	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	28004.319	24989.845	1.5	7
Keppel Club	2021-04-26	WS815	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28010.24	24988.71	2.4	15
Keppel Club	2021-04-26	WS816	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	28012.694	24988.536	2.4	15
Keppel Club	2021-04-26	WS817	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	28015.217	24995.67	1.3	7
Keppel Club	2021-04-26	WS818	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	28035.896	24981.589	2.1	12
Keppel Club	2021-05-10	WS819	*Andira inermis*	Fabaceae	Exotic	Casual	Tree	28092.325	24807.003	2.4	12
Keppel Club	2021-05-10	WS820	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28080.693	24821.567	1.3	14
Keppel Club	2021-05-10	WS821	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28074.752	24826.959	1.7	13
Keppel Club	2021-05-10	WS822	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28082.819	24833.263	2	13
Keppel Club	2021-05-10	WS823	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28074.814	24835.336	1.5	13
Keppel Club	2021-05-10	WS824	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28068.796	24844.142	1.8	13
Keppel Club	2021-05-10	WS825	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28058.885	24841.197	1.6	12
Keppel Club	2021-05-10	WS826	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28062.574	24848.096	1.3	11
Keppel Club	2021-05-10	WS826A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28067.277	24851.699	1	10
Keppel Club	2021-05-10	WS827	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	28061.434	24859.108	2.1	11
Keppel Club	2021-05-10	WS828	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28056.895	24852.995	1.75	10
Keppel Club	2021-05-10	WS829	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28054.528	24845.174	1.35	11
Keppel Club	2021-05-10	WS830	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28050.283	24849.645	2.7	11
Keppel Club	2021-05-10	WS831	*Syzygium grande*	Myrtaceae	Native	Common	Tree	28052.02	24857.936	1.4	10
Keppel Club	2021-05-10	WS832	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27967.639	24892.468	3	22
Keppel Club	2021-05-10	WS833	*Falcataria moluccana*	Fabaceae	Exotic	Naturalised	Tree	27969.577	24895.11	4	22
Keppel Club	2021-05-10	WS834	*Planchonella obovata*	Sapotaceae	Native	Vulnerable	Tree	27979.513	24890.215	2	13
Keppel Club	2021-05-10	WS835	*Syzygium lineatum*	Myrtaceae	Native	Common	Tree	27985.46	24900.601	1.5	7
Keppel Club	2021-05-10	WS836	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27986.194	24905.873	2	6
Keppel Club	2021-05-10	WS837	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27997.403	24909.506	1	7

Keppel Club	2021-05-10	WS838	*Khaya grandifoliola*	Meliaceae	Exotic	Cultivated Only	Tree	28004.985	24905.568	2.2	14
Keppel Club	2021-05-10	WS839	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28009.417	24901.139	1.1	13
Keppel Club	2021-05-10	WS840	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	28014.822	24897.709	2.85	15
Keppel Club	2021-05-10	WS841	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27996.896	24899.946	1.2	10
Keppel Club	2021-05-10	WS842	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27995.199	24897.622	2	10
Keppel Club	2021-05-10	WS843	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27985.397	24887.632	1.1	8
Keppel Club	2021-05-10	WS844	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27946.75	24904.045	1.55	9
Keppel Club	2021-05-10	WS844A	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27943.516	24907.6	2	9
Keppel Club	2021-05-10	WS845	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	27932.537	24921.01	2.5	16
Keppel Club	2021-05-10	WS846	*Khaya senegalensis*	Meliaceae	Exotic	Cultivated Only	Tree	27933.748	24926.258	2	16
Keppel Club	2021-05-10	WS847	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27913.38	24985.86	1.1	8
Keppel Club	2021-05-10	WS848	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27913.453	24985.214	1.2	8
Keppel Club	2021-05-10	WS849	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27905.936	24986.13	1	7
Keppel Club	2021-05-10	WS850	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27902.117	24983.158	1.1	7
Keppel Club	2021-05-10	WS851	*Syzygium myrtifolium*	Myrtaceae	Native	Presumed Extinct	Tree	27894.38	24986.116	1.1	8
Keppel Club	2021-05-10	WS852	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27869.145	24968.958	2.2	15
Keppel Club	2021-05-10	WS853	*Diospyros blancoi*	Ebenaceae	Exotic	Cultivated Only	Tree	27868.811	24957.473	2.2	15
Keppel Club	2021-05-10	WS854	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27864.49	24961.516	1.15	8
Keppel Club	2021-05-10	WS855	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27864.892	24965.268	1.1	13
Keppel Club	2021-05-10	WS856	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27866.459	24968.446	1.5	13
Keppel Club	2021-05-10	WS857	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27865.043	24970.385	1.4	13
Keppel Club	2021-05-10	WS858	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27870.743	24975.025	1.8	11
Keppel Club	2021-05-10	WS859	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27867.501	24974.99	1.6	15
Keppel Club	2021-05-10	WS860	*Mangifera odorata*	Anacardiaceae	Native	Vulnerable	Tree	27862.566	24982.887	1	12
Keppel Club	2021-05-10	WS860A	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27858.866	24980.594	2.5	9
Keppel Club	2021-05-10	WS860B	*Cocos nucifera*	Arecaceae	Exotic	Naturalised	Tree	27859.449	24980.522	1.3	15
Keppel Club	2021-05-10	WS860C	*Adenanthera pavonina*	Fabaceae	Exotic	Naturalised	Tree	27860.308	24983.384	1.5	18
Keppel Club	2021-05-10	WS861	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27860.165	24999.606	1.8	16
Keppel Club	2021-05-10	WS861A	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27860.165	24999.606	2.2	10
Keppel Club	2021-05-10	WS862	*Pterocarpus indicus*	Fabaceae	Exotic	Casual	Tree	27852.866	24993.97	5	18
Keppel Club	2021-05-10	WS862A	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27845.112	25002.591	2.5	15
Keppel Club	2021-05-10	WS862B	*Alstonia angustiloba*	Apocynaceae	Native	Common	Tree	27853.388	25008.147	2.2	15
Keppel Club	2021-05-10	WS863	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27839.124	25011.281	1.4	14
Keppel Club	2021-05-10	WS863A	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27836.28	25013.278	2	12
Keppel Club	2021-05-10	WS863B	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27831.002	25014.567	2	12
Keppel Club	2021-05-10	WS863C	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27828.247	25017.426	2	12
Keppel Club	2021-05-10	WS864	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27828.562	25012.758	1.5	14
Keppel Club	2021-05-10	WS865	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27922.765	24928.013	1.3	10
Keppel Club	2021-05-10	WS866	*Syzygium grande*	Myrtaceae	Native	Common	Tree	27913.778	24929.42	1.2	9
Keppel Club	2021-05-10	WS867	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27823.579	25012.792	1.5	16
Keppel Club	2021-05-10	WS868	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27806.843	25001.907	1.6	14
Keppel Club	2021-05-10	WS868A	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27811.245	24995.977	1.6	14
Keppel Club	2021-05-10	WS868B	*Elaeis guineensis*	Arecaceae	Exotic	Cultivated Only	Tree	27807.342	24984.282	1.5	12
Keppel Club	2021-05-17	WS881	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	27850.207	25539.464	3.5	15
Keppel Club	2021-05-17	WS882	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	27858.56	25544.763	3.2	15
Keppel Club	2021-05-17	WS883	*Peltophorum pterocarpum*	Fabaceae	Native	Critically Endangered	Tree	27842.699	25533.921	2.7	13

Appendix I
List of Probable and Recorded Faunal Species

Delivering a better world

Butterflies

S/N	Scientific name	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Rarity	Probable?	Recorded?
1	*Ampittia dioscorides camertes*	Hesperiidae	Bush hopper	Not Assessed	Not Assessed	No	Moderately common	Yes	No
2	*Ancistroides nigrita maura*	Hesperiidae	Chocolate demon	Not Assessed	Not Assessed	No	Common	Yes	No
3	*Astictopterus jama jama*	Hesperiidae	Forest hopper	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately rare	Yes	No
4	*Baoris farri farri*	Hesperiidae	Bamboo paintbrush swift	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
5	*Baoris oceia*	Hesperiidae	Paintbrush swift	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
6	*Borbo cinnara*	Hesperiidae	Formosan swift	Not Assessed	Endangered	Yes	Moderately common	Yes	No
7	*Burara harisa consobrina*	Hesperiidae	Orange awlet	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
8	*Caltoris cormasa*	Hesperiidae	Full stop swift	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
9	*Cephrenes acalle pinasicus*	Hesperiidae	Plain palm dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately rare	Yes	No
10	*Erionota hiraca apicalis*	Hesperiidae	White tipped skipper	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
11	*Erionota thrax thrax*	Hesperiidae	Banana skipper	Not Assessed	Not Assessed	No	Moderately common	Yes	Yes
12	*Erionota torus*	Hesperiidae	Torus skipper	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
13	*Hasora chromus chromus*	Hesperiidae	Common banded awl	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
14	*Hidari irava*	Hesperiidae	Coconut skipper	Not Assessed	Not Assessed	No	Common	Yes	No
15	*Iambrix salsala salsala*	Hesperiidae	Chestnut bob	Not Assessed	Not Assessed	No	Common	Yes	Yes
16	*Matapa aria*	Hesperiidae	Common redeye	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
17	*Notocrypta paralysos varians*	Hesperiidae	Banded demon	Not Assessed	Not Assessed	No	Moderately common	Yes	No
18	*Odontoptilum angulatum angulatum*	Hesperiidae	Chestnut angle	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
19	*Oriens gola pseudolus*	Hesperiidae	Common dartlet	Not Assessed	Not Assessed	No	Moderately common	Yes	No
20	*Pelopidas assamensis*	Hesperiidae	Great swift	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
21	*Pelopidas conjunctus conjunctus*	Hesperiidae	Conjoined swift	Not Assessed	Not assessed	No	Moderately rare	Yes	No
22	*Pelopidas mathias mathias*	Hesperiidae	Small branded swift	Not Assessed	Not Assessed	No	Common	Yes	Yes
23	*Plastingia naga*	Hesperiidae	Chequered lancer	Not Assessed	Not Assessed	No	Moderately common	Yes	No
24	*Polytremis lubricans*	Hesperiidae	Contiguous swift	Not Assessed	Not Assessed	No	Common	Yes	No
25	*Potanthus omaha omaha*	Hesperiidae	Lesser dart	Not Assessed	Not Assessed	No	Common	Yes	Yes
26	*Potanthus serina*	Hesperiidae	Large dart	Not Assessed	Not assessed	No	Moderately common	Yes	No
27	*Potanthus trachala tytleri*	Hesperiidae	Detached dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately rare	Yes	No
28	*Pyroneura latoia latoia*	Hesperiidae	Yellow vein lancer	Not Assessed	Not Assessed	No	Moderately common	Yes	No
29	*Suastus gremius gremius*	Hesperiidae	Palm bob	Not Assessed	Not Assessed	No	Common	Yes	No
30	*Taractrocera archias quinta*	Hesperiidae	Yellow grass dart	Not Assessed	Not Assessed	No	Moderately common	Yes	No
31	*Taractrocera ardonia lamia*	Hesperiidae	Spotted grass dart	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
32	*Telicota augias augias*	Hesperiidae	Pale palm dart	Not Assessed	Not Assessed	No	Moderately common	Yes	No
33	*Telicota besta bina*	Hesperiidae	Besta palm dart	Not Assessed	Not Assessed	No	Moderately common	Yes	No
34	*Telicota colon stinga*	Hesperiidae	Common palm dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately common	Yes	No
35	*Telicota linna*	Hesperiidae	Linna palm dart	Not Assessed	Not assessed	No	Moderately rare	Yes	No
36	*Udaspes folus*	Hesperiidae	Grass demon	Not Assessed	Not Assessed	No	Moderately common	Yes	No
37	*Unkana ambasa batara*	Hesperiidae	Hoary palmer	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
38	*Zographetus doxus*	Hesperiidae	Spotted flitter	Not Assessed	Not Assessed	No	Rare	Yes	No
39	*Badamia exclamationis*	Lycaenidae	Brown awl	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
40	*Cephrenes trichopepla*	Hesperiidae	Yellow palm dart	Not Assessed	Not assessed	No	Common	Yes	No
41	*Hasora badra badra*	Hesperiidae	Common awl	Not Assessed	Not Assessed	No	Moderately common	Yes	No
42	*Pelopidas agna agna*	Hesperiidae	Bengal swift	Not Assessed	Endangered	Yes	Moderately common	Yes	No
43	*Acytolepis puspa lambi*	Lycaenidae	Common hedge blue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
44	*Allotinus unicolor unicolor*	Lycaenidae	Lesser darkwing	Not Assessed	Not Assessed	No	Moderately common	Yes	No
45	*Ancema blanka blanka*	Lycaenidae	Silver royal	Not Assessed	Critically Endangered	Yes	Very rare	Yes	No
46	*Anthene emolus goberus*	Lycaenidae	Ciliate blue	Not Assessed	Not Assessed	No	Common	Yes	No
47	*Anthene lycaenina miya*	Lycaenidae	Pointed ciliate blue	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
48	*Arhopala amphimuta amphimuta*	Lycaenidae	NA	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately common	Yes	No
49	*Arhopala major major*	Lycaenidae	NA	Not Assessed	Data Deficient	No	Common	Yes	No
50	*Bindahara phocides phocides*	Lycaenidae	Plane	Not Assessed	Not Assessed	No	Rare	Yes	No
51	*Catochrysops panormus exiguus*	Lycaenidae	Silver forget-me-not	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
52	*Catochrysops strabo strabo*	Lycaenidae	Forget-me-not	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
53	*Catopyrops ancyra*	Lycaenidae	Ancyra blue	Not Assessed	Vulnerable	Yes	Moderately rare	Yes	No
54	*Cheritra freja frigga*	Lycaenidae	Common imperial	Least Concern	Not Assessed	No	Moderately rare	Yes	No
55	*Cupolita saronis sumatrana*	Lycaenidae	Sumatran sunbeam	Not Assessed	Not Assessed	No	Moderately common	Yes	No
56	*Deudorix eliotti*	Lycaenidae	Eliot's cornelian	Not Assessed	Not Assessed	No	Very rare	Yes	No
57	*Deudorix epijarbas cinnabarus*	Lycaenidae	Cornelian	Not Assessed	Not Assessed	No	Rare	Yes	No
58	*Drupadia ravindra moorei*	Lycaenidae	Common posy	Not Assessed	Not Assessed	No	Common	Yes	No
59	*Euchrysops cnejus cnejus*	Lycaenidae	Gram blue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
60	*Flos apidanus saturatus*	Lycaenidae	Plain plushblue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
61	*Horaga syrinx maenala*	Lycaenidae	Ambon onyx	Not Assessed	Not Assessed	No	Moderately common	Yes	No
62	*Hypolycaena erylus teatus*	Lycaenidae	Common tit	Not Assessed	Not Assessed	No	Common	Yes	No
63	*Ionolyce helicon merguiana*	Lycaenidae	Pointed line blue	Not Assessed	Not Assessed	No	Common	Yes	No
64	*Iraota rochana boswelliana*	Lycaenidae	Scarce silverstreak	Not Assessed	Not Assessed	No	Moderately common	Yes	No
65	*Jacoona anasuja anasuja*	Lycaenidae	Great imperial	Not Assessed	Data Deficient	No	Rare	Yes	No
66	*Jamides alecto ageladas*	Lycaenidae	Metallic caerulean	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately rare	Yes	No
67	*Jamides bochus nabonassar*	Lycaenidae	Dark caerulean	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
68	*Jamides celeno aelianus*	Lycaenidae	Common caerulean	Not Assessed	Not Assessed	No	Common	Yes	No
69	*Jamides elpis pseudelpis*	Lycaenidae	Glistening caerulean	Not Assessed	Data Deficient	No	Rare	Yes	No
70	*Lampides boeticus*	Lycaenidae	Pea blue	Not Assessed	Not Assessed	No	Common	Yes	No
71	*Liphyra brassolis abbreviata*	Lycaenidae	Moth butterfly	Not Assessed	Nationally Extinct (Rediscovered)	No	Very rare	Yes	No
72	*Logania marmorata damis*	Lycaenidae	Pale mottle	Not Assessed	Not Assessed	No	Moderately common	Yes	No
73	*Loxura atymnus fuconius*	Lycaenidae	Yamfly	Not Assessed	Not Assessed	No	Moderately common	Yes	No
74	*Megisba malaya sikkima*	Lycaenidae	Malayan	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
75	*Miletus biggsii biggsii*	Lycaenidae	Bigg's brownwing	Not Assessed	Not Assessed	No	Moderately common	Yes	No
76	*Miletus gopara gopara*	Lycaenidae	NA	Not Assessed	Nationally Extinct	Yes	Very rare	Yes	No
77	*Miletus symethus petronius*	Lycaenidae	Blue brownwing/great brownie	Not Assessed	Not Assessed	No	Moderately common	Yes	No
78	*Nacaduba angusta kerriana*	Lycaenidae	White fourline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Rare	Yes	No
79	*Nacaduba berenice icena*	Lycaenidae	Rounded sixline blue	Not Assessed	Not Assessed	No	Common	Yes	No
80	*Nacaduba beroe neon*	Lycaenidae	Opaque sixline blue	Not Assessed	Not Assessed	No	Common	Yes	No
81	*Nacaduba biocellata*	Lycaenidae	Two spotted line blue	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
82	*Nacaduba kurava nemana*	Lycaenidae	Transparent sixline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately common	Yes	Yes
83	*Nacaduba pactolus odon*	Lycaenidae	Large fourline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Moderately rare	Yes	No
84	*Petrelaea dana*	Lycaenidae	Dingy line blue	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
85	*Pratapa deva elata*	Lycaenidae	White royal	Not Assessed	Critically Endangered	Yes	Moderately rare	Yes	No
86	*Prosotas aluta nanda*	Lycaenidae	Barred line blue	Not Assessed	Not assessed	No	Rare	Yes	No
87	*Prosotas dubiosa lumpura*	Lycaenidae	Tailless line blue	Not Assessed	Not Assessed	No	Common	Yes	Yes
88	*Prosotas nora superdates*	Lycaenidae	Common line blue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
89	*Rapala iarbus iarbus*	Lycaenidae	Common red flash	Not Assessed	Not Assessed	No	Moderately common	Yes	No
90	*Rapala manea chozeba*	Lycaenidae	Slate flash	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
91	*Rapala pheretima sequeira*	Lycaenidae	Copper flash	Not Assessed	Not Assessed	No	Moderately common	Yes	Yes
92	*Rapala varuna orseis*	Lycaenidae	Indigo flash	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
93	*Remelana jangala jangala*	Lycaenidae	Chocolate royal	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
94	*Semanga superba deliciosa*	Lycaenidae	NA	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
95	*Spalgis epius epius*	Lycaenidae	Apefly	Not Assessed	Not Assessed	No	Moderately common	Yes	No
96	*Spindasis lohita senama*	Lycaenidae	Long banded silverline	Not Assessed	Not Assessed	No	Moderately common	Yes	No
97	*Spindasis syama terana*	Lycaenidae	Club silverline	Not Assessed	Not Assessed	No	Moderately common	Yes	No
98	*Surendra vivarna amisena*	Lycaenidae	Acacia blue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
99	*Tajuria cippus maxentius*	Lycaenidae	Peacock royal	Not Assessed	Not Assessed	No	Moderately common	Yes	No
100	*Tajuria dominus dominus*	Lycaenidae	NA	Not Assessed	Not Assessed	No	Very rare	Yes	No
101	*Tajuria mantra mantra*	Lycaenidae	Felder's royal	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
102	*Zeltus amasa maximinianus*	Lycaenidae	Fluffy tit	Not Assessed	Not Assessed	No	Moderately common	Yes	No
103	*Zizeeria maha serica*	Lycaenidae	Pale grass blue	Not Assessed	Not Assessed	No	Common	Yes	Yes
104	*Zizina otis lampa*	Lycaenidae	Lesser grass blue	Not Assessed	Not Assessed	No	Common	Yes	Yes
105	*Zizula hylax pygmaea*	Lycaenidae	Pygmy grass blue	Not Assessed	Not Assessed	No	Common	Yes	Yes
106	*Arhopala centaurus nakula*	Lycaenidae	Centaur oakblue	Not Assessed	Not Assessed	No	Moderately common	Yes	No
107	*Curetis santana malayica*	Lycaenidae	Malayan sunbeam	Not Assessed	Not Assessed	No	Moderately common	Yes	No
108	*Hypolycaena thecloides thecloides*	Lycaenidae	Dark tit	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
109	*Nacaduba pavana singapura*	Lycaenidae	Singapore fourline blue	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
110	*Rapala suffusa barthema*	Lycaenidae	Suffused flash	Not Assessed	Not Assessed	No	Moderately common	Yes	No
111	*Cupha erymanthis lotis*	Nymphalidae (Brush Foots)	Rustic	Not Assessed	Not Assessed	No	Moderately common	Yes	No
112	*Doleschallia bisaltide bisaltide*	Nymphalidae (Brush Foots)	Autumn leaf	Not Assessed	Not assessed	No	Common	Yes	No
113	*Elymnias panthera panthera*	Nymphalidae (Brush Foots)	Tawny palmfly	Not Assessed	Not Assessed	No	Moderately common	Yes	No
114	*Euploea phaenareta castelnaui*	Nymphalidae (Brush Foots)	King crow	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
115	*Euploea radamanthus radamanthus*	Nymphalidae (Brush Foots)	Magpie crow	Not Assessed	Not Assessed	No	Moderately common	Yes	No
116	*Euripus nyctelius nyctelius*	Nymphalidae (Brush Foots)	Courtier	Not Assessed	Critically Endangered	Yes	Rare	Yes	No
117	*Euthalia aconthea gurda*	Nymphalidae (Brush Foots)	Baron	Not Assessed	Not Assessed	No	Common	Yes	Yes
118	*Euthalia adonia pinwilli*	Nymphalidae (Brush Foots)	Green baron	Not Assessed	Not Assessed	No	Moderately common	Yes	No
119	*Euthalia monina monina*	Nymphalidae (Brush Foots)	Malay baron	Not Assessed	Not Assessed	No	Common	Yes	No
120	*Faunis canens arcesilas*	Nymphalidae (Brush Foots)	Common faun	Not Assessed	Not Assessed	No	Common	Yes	No
121	*Hypolimnas bolina bolina*	Nymphalidae (Brush Foots)	Great eggfly	Not Assessed	Not Assessed	No	Moderately common	Yes	No
122	*Junonia almana javana*	Nymphalidae (Brush Foots)	Peacock pansy	Least Concern	Not Assessed	No	Common	Yes	Yes
123	*Junonia atlites atlites*	Nymphalidae (Brush Foots)	Grey pansy	Not Assessed	Not Assessed	No	Moderately common	Yes	No
124	*Junonia hedonia ida*	Nymphalidae (Brush Foots)	Chocolate pansy	Not Assessed	Not Assessed	No	Common	Yes	Yes
125	*Junonia orithya wallacei*	Nymphalidae (Brush Foots)	Blue pansy	Not Assessed	Not Assessed	No	Common	Yes	No
126	*Lethe europa malaya*	Nymphalidae (Brush Foots)	Bamboo tree brown	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
127	*Moduza procris milonia*	Nymphalidae (Brush Foots)	Commander	Not Assessed	Not Assessed	No	Moderately common	Yes	No
128	*Mycalesis mineus macromalayana*	Nymphalidae (Brush Foots)	Dark brand bush brown	Not Assessed	Not Assessed	No	Common	Yes	Yes
129	*Mycalesis perseoides perseoides*	Nymphalidae (Brush Foots)	Burmese bush brown	Not Assessed	Data Deficient	No	Common	Yes	Yes
130	*Mycalesis perseus cepheus*	Nymphalidae (Brush Foots)	Dingy bush brown	Not Assessed	Not Assessed	No	Moderately common	Yes	No
131	*Mycalesis visala phamis*	Nymphalidae (Brush Foots)	Long brand bush brown	Not Assessed	Not Assessed	No	Moderately common	Yes	No
132	*Neptis hylas papaja*	Nymphalidae (Brush Foots)	Common sailor	Not Assessed	Not Assessed	No	Moderately common	Yes	No
133	*Orsotriaena medus cinerea*	Nymphalidae (Brush Foots)	Dark grass brown	Not Assessed	Not Assessed	No	Common	Yes	No
134	*Pantoporia paraka paraka*	Nymphalidae (Brush Foots)	Perak lascar	Not Assessed	Not Assessed	No	Moderately common	Yes	No
135	*Parantica agleoides agleoides*	Nymphalidae (Brush Foots)	Dark glassy tiger	Not Assessed	Not Assessed	No	Common	Yes	No
136	*Phaedyma columella singa*	Nymphalidae (Brush Foots)	Short banded sailor	Not Assessed	Not Assessed	No	Common	Yes	Yes
137	*Phalanta phalantha phalantha*	Nymphalidae (Brush Foots)	Leopard	Not Assessed	Not Assessed	No	Common	Yes	No
138	*Polyura schreiber tisamenus*	Nymphalidae (Brush Foots)	Blue nawab	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
139	*Tanaecia iapis pusada*	Nymphalidae (Brush Foots)	Horsfield's baron	Not Assessed	Not Assessed	No	Common	Yes	No
140	*Tanaecia pelea pelea*	Nymphalidae (Brush Foots)	Malay viscount	Not Assessed	Not Assessed	No	Common	Yes	No
141	*Vindula dejone erotella*	Nymphalidae (Brush Foots)	Cruiser	Not Assessed	Not Assessed	No	Common	Yes	No
142	*Ypthima baldus newboldi*	Nymphalidae (Brush Foots)	Common five-ring	Not Assessed	Not Assessed	No	Common	Yes	No
143	*Ypthima horsfieldii humei*	Nymphalidae (Brush Foots)	Malayan five-ring	Not Assessed	Not Assessed	No	Common	Yes	No
144	*Ypthima huebneri*	Nymphalidae (Brush Foots)	Common four-ring	Not Assessed	Not Assessed	No	Moderately common	Yes	No
145	*Ypthima pandocus corticaria*	Nymphalidae (Brush Foots)	Common three-ring	Not Assessed	Not Assessed	No	Common	Yes	No
146	*Acraea terpsicore*	Nymphalidae (Brush Foots)	Tawny coster	Not Assessed	Not assessed	No	Common	Yes	Yes
147	*Amathusia phidippus phidippus*	Nymphalidae (Brush Foots)	Palm king	Not Assessed	Not Assessed	No	Moderately rare	Yes	Yes
148	*Cethosia cyane*	Nymphalidae (Brush Foots)	Leopard lacewing	Not Assessed	Not assessed	No	Common	Yes	No
149	*Danaus chrysippus chrysippus*	Nymphalidae (Brush Foots)	Plain tiger	Not Assessed	Not Assessed	No	Common	Yes	Yes
150	*Danaus genutia genutia*	Nymphalidae (Brush Foots)	Common tiger	Not Assessed	Not Assessed	No	Moderately common	Yes	Yes
151	*Danaus melanippus hegesippus*	Nymphalidae (Brush Foots)	Black veined tiger	Not Assessed	Not Assessed	No	Moderately common	Yes	No
152	*Elymnias hypermnestra agina*	Nymphalidae (Brush Foots)	Common palmfly	Not Assessed	Not Assessed	No	Common	Yes	Yes
153	*Euploea mulciber mulciber*	Nymphalidae (Brush Foots)	Striped blue crow	Not Assessed	Not Assessed	No	Common	Yes	No
154	*Hypolimnas anomala anomala*	Nymphalidae (Brush Foots)	Malayan eggfly	Not Assessed	Not Assessed	No	Common	Yes	No
155	*Hypolimnas bolina jacintha*	Nymphalidae (Brush Foots)	Jacintha eggfly	Not Assessed	Not Assessed	No	Common	Yes	No
156	*Ideopsis vulgaris macrina*	Nymphalidae (Brush Foots)	Blue glassy tiger	Not Assessed	Not Assessed	No	Common	Yes	No

Butterflies

S/N	Scientific name	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Rarity	Probable?	Recorded?
157	*Lebadea martha parkeri*	Nymphalidae (Brush Foots)	Knight	Not Assessed	Not Assessed	No	Moderately common	Yes	No
158	*Melanitis leda leda*	Nymphalidae (Brush Foots)	Common evening brown	Not Assessed	Not Assessed	No	Moderately rare	Yes	No
159	*Polyura hebe plautus*	Nymphalidae (Brush Foots)	Plain nawab	Not Assessed	Not Assessed	No	Common	Yes	Yes
160	*Chilasa clytia clytia*	Papilionidae (Swallowtails & Birdwings)	Common mime	Not Assessed	Not Assessed	No	Common	Yes	No
161	*Graphium agamemnon agamemnon*	Papilionidae (Swallowtails & Birdwings)	Tailed jay	Not Assessed	Not Assessed	No	Common	Yes	No
162	*Graphium antiphates itamputi*	Papilionidae (Swallowtails & Birdwings)	Fivebar swordtail	Not Assessed	Not Assessed	No	Moderately common	Yes	No
163	*Graphium sarpedon luctatius*	Papilionidae (Swallowtails & Birdwings)	Common bluebottle	Not Assessed	Not Assessed	No	Common	Yes	No
164	*Pachliopta aristolochiae asteris*	Papilionidae (Swallowtails & Birdwings)	Common rose	Not Assessed	Vulnerable	Yes	Moderately common	Yes	No
165	*Papilio demoleus malayanus*	Papilionidae (Swallowtails & Birdwings)	Lime butterfly	Not Assessed	Not Assessed	No	Common	Yes	No
166	*Troides helena cerberus*	Papilionidae (Swallowtails & Birdwings)	Common birdwing	Not Assessed; CITES protected (Appendix II)	Vulnerable	Yes	Moderately common	Yes	No
167	*Papilio polytes romulus*	Papilionidae (Swallowtails & Birdwings)	Common mormon	Not Assessed	Not Assessed	No	Common	Yes	Yes
168	*Catopsilia pomona pomona*	Pieridae (Whites & Sulphurs)	Lemon emigrant	Not Assessed	Not Assessed	No	Common	Yes	Yes
169	*Catopsilia pyranthe pyranthe*	Pieridae (Whites & Sulphurs)	Mottled emigrant	Not Assessed	Not Assessed	No	Common	Yes	No
170	*Catopsilia scylla cornelia*	Pieridae (Whites & Sulphurs)	Orange emigrant	Not Assessed	Not Assessed	No	Common	Yes	Yes
171	*Eurema andersonii andersonii*	Pieridae (Whites & Sulphurs)	Anderson's grass yellow	Not Assessed	Not Assessed	No	Moderately common	Yes	No
172	*Eurema blanda snelleni*	Pieridae (Whites & Sulphurs)	Three spot grass yellow	Not Assessed	Not Assessed	No	Common	Yes	Yes
173	*Eurema simulatrix tecmessa*	Pieridae (Whites & Sulphurs)	Forest grass yellow	Not Assessed	Not Assessed	No	Moderately common	Yes	No
174	*Leptosia nina malayana*	Pieridae (Whites & Sulphurs)	Psyche	Not Assessed	Not Assessed	No	Common	Yes	No
175	*Appias libythea olferna*	Pieridae (Whites & Sulphurs)	Striped albatross	Not Assessed	Not Assessed	No	Common	Yes	Yes
176	*Delias hyparete metarete*	Pieridae (Whites & Sulphurs)	Painted jezebel	Not Assessed	Not Assessed	No	Common	Yes	Yes
177	*Eurema hecabe contubernalis*	Pieridae (Whites & Sulphurs)	Common grass yellow	Not Assessed	Not Assessed	No	Common	Yes	Yes
178	*Abisara saturata kausambioides*	Riodinidae (Metalmarks)	Malayan plum judy	Not Assessed	Not Assessed	No	Moderately common	Yes	Yes
179	*Chilades pandava pandava*	Lycaenidae	Cycad blue	Not Assessed	Not Assessed	No	Common	Yes	Yes
-	*Arhopala sp.*	Lycaenidae	NA	NA	NA	NA	NA	NA	Yes
-	*Eurema sp.*	Pieridae (Whites & Sulphurs)	NA	NA	NA	NA	NA	NA	Yes
-	*Jamides sp.*	Lycaenidae	NA	NA	NA	NA	NA	NA	Yes
-	*Lycaeninae sp.*	Lycaenidae	NA	NA	NA	NA	NA	NA	Yes

Odonates

S/N	*Scientific name*	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	DistributionAbundance/Rarity	Probable?	Recorded?
1	*Anax guttatus*	Aeshnidae	Emperor	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
2	*Gynacantha basiguttata*	Aeshnidae	Spoon-tailed duskhawker	Least Concern	Vulnerable	Yes	Restricted and Rare	Yes	No
3	*Gynacantha subinterrupta*	Aeshnidae	Dingy duskhawker	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
4	*Gynacantha dohrni*	Aeshnidae	Spear-tail duskhawker	Not Assessed	Least Concern	No	Widespread but Uncommon	Yes	Yes
5	*Agriocnemis femina*	Coenagrionidae	Variable wisp	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
6	*Agriocnemis rubescens*	Coenagrionidae	Variable sprite	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
7	*Ceriagrion cerinorubellum*	Coenagrionidae	Ornate coraltail	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
8	*Ischnura senegalensis*	Coenagrionidae	Common bluetail	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
9	*Mortonagrion arthuri*	Coenagrionidae	Arthur's midget	Near Threatened	Vulnerable	Yes	Restricted and Rare	Yes	No
10	*Pseudagrion australasiae*	Coenagrionidae	Look-alike sprite	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
11	*Pseudagrion microcephalum*	Coenagrionidae	Blue sprite	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
12	*Agriocnemis pygmaea*	Coenagrionidae	Wandering wisp	Least Concern	Endangered	Yes	Restricted and Very Rare	Yes	No
13	*Epophthalmia vittigera*	Corduliidae	Pond cruiser	Least Concern	Least Concern	No	Widespread and Common	Yes	No
14	*Hemicordulia tenera*	Corduliidae	Emerald	Least Concern	Endangered	Yes	Restricted and Rare	Yes	No
15	*Ictinogomphus decoratus*	Gomphidae	Common flangetail	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
16	*Acisoma panorpoides*	Libellulidae	Trumpet tail	Least Concern	Least Concern	No	Widespread and Common	Yes	No
17	*Aethriamanta aethra*	Libellulidae	Blue adjudant	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
18	*Aethriamanta brevipennis*	Libellulidae	Scarlet adjudant	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
19	*Aethriamanta gracilis*	Libellulidae	Pond adjudant	Least Concern	Least Concern	No	Widespread and Common	Yes	No
20	*Agrionoptera insignis*	Libellulidae	Grenadier	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
21	*Brachydiplax chalybea*	Libellulidae	Blue dasher	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
22	*Brachythemis contaminata*	Libellulidae	Common amberwing	Least Concern	Least Concern	No	Widespread and Common	Yes	No
23	*Camacinia gigantea*	Libellulidae	Sultan	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
24	*Cratilla lineata*	Libellulidae	Lined forest skimmer	Least Concern	Near Threatened	No	Widespread but Rare	Yes	No
25	*Cratilla metallica*	Libellulidae	Dark-tipped forest skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	No
26	*Crocothemis servilia*	Libellulidae	Common scarlet	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
27	*Diplacodes nebulosa*	Libellulidae	Black-tipped percher	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
28	*Diplacodes trivialis*	Libellulidae	Blue percher	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
29	*Hydrobasileus croceus*	Libellulidae	Water monarch	Least Concern	Least Concern	No	Widespread and Common	Yes	No
30	Indothemis limbata	Libellulidae	Restless demon	Least Concern	Endangered	Yes	Restricted and Uncommon	Yes	No
31	Lathrecista asiatica	Libellulidae	Scarlet grenadier	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
32	*Macrodiplax cora*	Libellulidae	Coastal glider	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
33	*Neurothemis fluctuans*	Libellulidae	Common parasol	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
34	*Orthetrum chrysis*	Libellulidae	Spine-tufted skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
35	*Orthetrum luzonicum*	Libellulidae	Slender blue skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	No
36	*Orthetrum sabina*	Libellulidae	Variegated green skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
37	*Orthetrum testaceum*	Libellulidae	Scarlet skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
38	*Pantala flavescens*	Libellulidae	Wandering glider	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
39	*Pornothemis starrei*	Libellulidae	Mangrove marshal	Not Assessed	Near Threatened	No	Widespread but Uncommon	Yes	No
40	*Potamarcha congener*	Libellulidae	Common chaser	Least Concern	Least Concern	No	Widespread and Common	Yes	No
41	*Raphismia bispina*	Libellulidae	Mangrove dwarf	Least Concern	Near Threatened	No	Widespread but Uncommon	Yes	No
42	*Rhodothemis rufa*	Libellulidae	Common redbolt	Least Concern	Least Concern	No	Widespread and Common	Yes	No
43	*Rhyothemis phyllis*	Libellulidae	Yellow-barred flutterer	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
44	*Rhyothemis triangularis*	Libellulidae	Sapphire flutterer	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
45	*Tholymis tillarga*	Libellulidae	White-barred duskhawk	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
46	*Tramea transmarina*	Libellulidae	Saddlebag glider	Least Concern	Least Concern	No	Widespread and Common	Yes	No
47	*Trithemis aurora*	Libellulidae	Crimson dropwing	Least Concern	Least Concern	No	Widespread and Common	Yes	Yes
48	*Trithemis pallidinervis*	Libellulidae	Dancing dropwing	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
49	*Urothemis signata*	Libellulidae	Scarlet basker	Not Assessed	Least Concern	No	Widespread and Common	Yes	No
50	*Zyxomma petiolatum*	Libellulidae	Slender duskdarter	Least Concern	Least Concern	No	Widespread and Common	Yes	No
51	*Nesoxenia lineata*	Libellulidae	Striped grenadier	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	No
52	*Orthetrum glaucum*	Libellulidae	Common blue skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	No
53	*Trithemis festiva*	Libellulidae	Indigo dropwing	Least Concern	Least Concern	No	Widespread and Common	Yes	No
-	*Gynacantha sp.*	Aeshnidae	Unidentified duskhawker	NA	NA	NA	NA	NA	Yes
-	*Pseudagrion sp.*	Coenagrionidae	Unidentified sprite	NA	NA	NA	NA	NA	Yes
-	Unidentified Libellulidae	Libellulidae	Unidentified Libellulidae	NA	NA	NA	NA	NA	Yes

Birds

S/N	Scientific name	Family	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Threatened	Distribution/Rarity (singaporebirds.com)	Residence	Native status	Probable?	Recorded?	Recorded (migratory)?
1	*Gerygone sulphurea*	Acanthizidae	Golden-bellied gerygone	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
2	*Accipiter gularis*	Accipitridae	Japanese sparrowhawk	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
3	*Accipiter soloensis*	Accipitridae	Chinese sparrowhawk	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
4	*Accipiter virgatus*	Accipitridae	Besra	Least Concern	Not Assessed	No	Rare	Passage migrant	Migrant	Yes	No	No
5	*Aviceda leuphotes*	Accipitridae	Black baza	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
6	*Butastur indicus*	Accipitridae	Grey-faced buzzard	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
7	*Buteo buteo*	Accipitridae	Common buzzard	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
8	*Clanga clanga*	Accipitridae	Greater spotted eagle	Vulnerable	Not Assessed	Yes	Rare	Winter visitor	Migrant	Yes	No	No
9	*Milvus migrans*	Accipitridae	Black kite	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
10	*Nisaetus alboniger*	Accipitridae	Blyth's hawk-eagle	Least Concern	Not Assessed	No	Rare	Non-breeding visitor	Migrant	Yes	No	No
11	*Pernis ptilorhynchus*	Accipitridae	Crested honey-buzzard	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
12	*Accipiter trivirgatus*	Accipitridae	Crested goshawk	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
13	*Elanus caeruleus*	Accipitridae	Black-winged kite	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
14	*Haliaeetus ichthyaetus*	Accipitridae	Grey-headed fish eagle	Near Threatened	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
15	*Haliaeetus leucogaster*	Accipitridae	White-bellied sea eagle	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
16	*Haliastur indus*	Accipitridae	Brahminy kite	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
17	*Nisaetus cirrhatus*	Accipitridae	Changeable hawk-eagle	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
18	*Spilornis cheela*	Accipitridae	Crested serpent eagle	Least Concern	Critically Endangered	Yes	Rare	Resident, breeding not proven	Native	Yes	No	No
19	*Aegithina tiphia*	Aegithinidae	Common iora	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
20	*Alcedo atthis*	Alcedinidae	Common kingfisher	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
21	*Ceyx erithaca*	Alcedinidae	Oriental dwarf kingfisher	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
22	*Halcyon pileata*	Alcedinidae	Black-capped kingfisher	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
23	*Halcyon coromanda*	Alcedinidae	Ruddy kingfisher	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
24	*Halcyon smyrnensis*	Alcedinidae	White-throated kingfisher	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	Yes
25	*Pelargopsis capensis*	Alcedinidae	Stork-billed kingfisher	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	Yes	Yes
26	*Todiramphus chloris*	Alcedinidae	Collared kingfisher	Least Concern	Not Assessed	No	Abundant	Resident breeder	Native	Yes	Yes	Yes
27	*Apus pacificus*	Apodidae	Pacific swift	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
28	*Hirundapus cochinchinensis*	Apodidae	Silver-backed needletail	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
29	*Hirundapus giganteus*	Apodidae	Brown-backed needletail	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
30	*Aerodramus fuciphagus*	Apodidae	Edible-nest swiftlet	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
31	*Aerodramus maximus*	Apodidae	Black-nest swiftlet	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
32	*Apus nipalensis*	Apodidae	House swift	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
33	*Cypsiurus balasiensis*	Apodidae	Asian palm swift	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
34	*Ardea alba*	Ardeidae	Great egret	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
35	*Ardea intermedia*	Ardeidae	Intermediate egret	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
36	*Ardeola bacchus*	Ardeidae	Chinese pond heron	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
37	*Ardeola speciosa*	Ardeidae	Javan pond heron	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
38	*Bubulcus coromandus*	Ardeidae	Eastern cattle egret	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
39	*Egretta garzetta*	Ardeidae	Little egret	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
40	*Gorsachius melanolophus*	Ardeidae	Malayan night heron	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
41	*Ixobrychus cinnamomeus*	Ardeidae	Cinnamon bittern	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Migrant	Yes	Yes	Yes
42	*Ixobrychus eurhythmus*	Ardeidae	Von Schrenck's bittern	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
43	*Ixobrychus flavicollis*	Ardeidae	Black bittern	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
44	*Nycticorax nycticorax*	Ardeidae	Black-crowned night heron	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Migrant	Yes	No	No
45	*Ardea cinerea*	Ardeidae	Grey heron	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
46	*Ardea purpurea*	Ardeidae	Purple heron	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
47	*Ardea sumatrana*	Ardeidae	Great-billed heron	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
48	*Butorides striata*	Ardeidae	Striated heron	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
49	*Egretta sacra*	Ardeidae	Pacific reef heron	Least Concern	Not Assessed	No	Uncommon	Resident, breeding not proven	Native	Yes	No	No
50	*Ixobrychus sinensis*	Ardeidae	Yellow bittern	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
51	*Anthracoceros albirostris*	Bucerotidae	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
52	*Cacatua galerita*	Cacatuidae	Sulphur-crested cockatoo	Least Concern	Not Assessed	No	NA	Introduced	Introduced	Yes	No	No
53	*Cacatua goffiniana*	Cacatuidae	Tanimbar corella	Near Threatened	Not Assessed	No	Common	Introduced resident breeder	Introduced	Yes	Yes	Yes
54	*Pericrocotus divaricatus*	Campephagidae	Ashy minivet	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
55	*Lalage nigra*	Campephagidae	Pied triller	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
56	*Caprimulgus jotaka*	Caprimulgidae	Grey nightjar	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
57	*Caprimulgus affinis*	Caprimulgidae	Savanna nightjar	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
58	*Caprimulgus macrurus*	Caprimulgidae	Large-tailed nightjar	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
59	*Charadrius mongolus*	Charadriidae	Lesser sand plover	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
60	*Pluvialis fulva*	Charadriidae	Pacific golden plover	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
61	*Vanellus indicus*	Charadriidae	Red-wattled lapwing	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
62	*Chloropsis cochinchinensis*	Chloropseidae	Blue-winged leafbird	Least Concern	Not Assessed	No	Common	Resident, breeding not proven	Native	Yes	No	No
63	*Anastomus oscitans*	Ciconiidae	Asian openbill	Least Concern	Not Assessed	No	Rare	Non-breeding visitor	Non-breeding visitor	Yes	No	No
64	*Cisticola juncidis*	Cisticolidae	Zitting cisticola	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
65	*Orthotomus atrogularis*	Cisticolidae	Dark-necked tailorbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
66	*Orthotomus ruficeps*	Cisticolidae	Ashy tailorbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
67	*Orthotomus sericeus*	Cisticolidae	Rufous-tailed tailorbird	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
68	*Orthotomus sutorius*	Cisticolidae	Common tailorbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
69	*Prinia flaviventris*	Cisticolidae	Yellow-bellied prinia	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
70	*Columba livia*	Columbidae	Rock dove	Least Concern	Not Assessed	No	Abundant	Introduced resident breeder	Introduced	Yes	Yes	Yes
71	*Ptilinopus jambu*	Columbidae	Jambu fruit dove	Near Threatened	Not Assessed	No	Uncommon	Non-breeding visitor	Migrant	Yes	No	No
72	*Chalcophaps indica*	Columbidae	Common emerald dove	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	Yes	Yes
73	*Ducula bicolor*	Columbidae	Pied imperial pigeon	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	Yes
74	*Geopelia striata*	Columbidae	Zebra dove	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
75	*Spilopelia chinensis*	Columbidae	Spotted dove	Least Concern	Not Assessed	No	Abundant	Resident breeder	Native	Yes	Yes	Yes
76	*Treron curvirostra*	Columbidae	Thick-billed green pigeon	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	Yes
77	*Treron vernans*	Columbidae	Pink-necked green pigeon	Least Concern	Not Assessed	No	Abundant	Resident breeder	Native	Yes	Yes	Yes
78	*Streptopelia tranquebarica*	Columbidae	Red turtle dove	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	No	No
79	*Eurystomus orientalis*	Coraciidae	Oriental dollarbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
80	*Corvus splendens*	Corvidae	House crow	Least Concern	Not Assessed	No	Common	Introduced resident breeder	Introduced	Yes	Yes	Yes
81	*Corvus macrorhynchos*	Corvidae	Large-billed crow	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	Yes	Yes
82	*Chrysococcyx basalis*	Cuculidae	Horsfield's bronze cuckoo	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
83	*Clamator coromandus*	Cuculidae	Chestnut-winged cuckoo	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
84	*Cuculus micropterus*	Cuculidae	Indian cuckoo	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
85	*Eudynamys scolopaceus*	Cuculidae	Asian koel	Least Concern	Not Assessed	No	Common	Resident breeder	Migrant	Yes	Yes	Yes
86	*Cacomantis merulinus*	Cuculidae	Plaintive cuckoo	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
87	*Cacomantis sepulcralis*	Cuculidae	Rusty-breasted cuckoo	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	Native	Yes	No	No
88	*Cacomantis sonneratii*	Cuculidae	Banded bay cuckoo	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
89	*Centropus bengalensis*	Cuculidae	Lesser coucal	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
90	*Centropus sinensis*	Cuculidae	Greater coucal	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	Yes	Yes
91	*Chrysococcyx minutillus*	Cuculidae	Little bronze-cuckoo	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
92	*Chrysococcyx xanthorhynchus*	Cuculidae	Violet cuckoo	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
93	*Surniculus lugubris*	Cuculidae	Square-tailed drongo-cuckoo	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
94	*Dicaeum cruentatum*	Dicaeidae	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
95	*Dicaeum trigonostigma*	Dicaeidae	Orange-bellied flowerpecker	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	Yes
96	*Dicrurus annectans*	Dicruridae	Crow-billed drongo	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
97	*Dicrurus leucophaeus*	Dicruridae	Ashy drongo	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
98	*Dicrurus paradiseus*	Dicruridae	Greater racket-tailed drongo	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	Yes
99	*Lonchura atricapilla*	Estrildidae	Chestnut munia	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
100	*Lonchura maja*	Estrildidae	White-headed munia	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
101	*Lonchura punctulata*	Estrildidae	Scaly-breasted munia	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
102	*Lonchura leucogastroides*	Estrildidae	Javan munia	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	No	Yes
103	*Falco peregrinus*	Falconidae	Peregrine falcon	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	Yes	Yes
104	*Glareola maldivarum*	Glareolidae	Oriental pratincole	Least Concern	Not Assessed	No	Uncommon	Passage migrant	Migrant	Yes	No	No
105	*Hemiprocnidae longipennis*	Hemiprocnidae	Grey-rumped treeswift	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
106	*Cecropis daurica*	Hirundinidae	Red-rumped swallow	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
107	*Hirundo rustica*	Hirundinidae	Barn swallow	Least Concern	Not Assessed	No	Abundant	Winter visitor	Migrant	Yes	No	Yes
108	*Hirundo tahitica*	Hirundinidae	Pacific swallow	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
109	*Lanius cristatus*	Laniidae	Brown shrike	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
110	*Lanius tigrinus*	Laniidae	Tiger shrike	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	Yes
111	*Lanius schach*	Laniidae	Long-tailed shrike	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
112	*Chlidonias hybrida*	Laridae	Whiskered tern	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
113	*Chlidonias leucopterus*	Laridae	White-winged tern	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
114	*Chroicocephalus ridibundus*	Laridae	Black-headed gull	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
115	*Sterna hirundo*	Laridae	Common tern	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
116	*Thalasseus bengalensis*	Laridae	Lesser crested tern	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
117	*Thalasseus bergii*	Laridae	Greater crested tern	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
118	*Sterna sumatrana*	Laridae	Black-naped tern	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
119	*Sternula albifrons*	Laridae	Little tern	Least Concern	Endangered	Yes	Common	Resident breeder	Native	Yes	No	No
120	*Garrulax canorus*	Leiothrichidae	Chinese hwamei	Least Concern	Not Assessed	No	Rare	Introduced resident breeder	Introduced	Yes	No	No
121	*Garrulax leucolophus*	Leiothrichidae	White-crested laughingthrush	Least Concern	Not Assessed	No	Common	Introduced resident breeder	Introduced	Yes	No	No
122	*Locustella certhiola*	Locustellidae	Pallas's grasshopper warbler	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
123	*Locustella lanceolata*	Locustellidae	Lanceolated warbler	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
124	*Psilopogon haemacephalus*	Megalaimidae	Coppersmith barbet	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
125	*Psilopogon lineatus*	Megalaimidae	Lineated barbet	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	Yes	Yes
126	*Merops philippinus*	Meropidae	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
127	*Merops viridis*	Meropidae	Blue-throated bee-eater	Least Concern	Not Assessed	No	Common	Migrant breeder	Native	Yes	Yes	Yes
128	*Terpsiphone incei*	Monarchidae	Amur paradise flycatcher	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	Yes
129	*Dendronanthus indicus*	Motacillidae	Forest wagtail	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
130	*Anthus rufulus*	Motacillidae	Paddyfield pipit	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
131	*Cyornis brunneatus*	Muscicapidae	Brown-chested jungle flycatcher	Vulnerable	Not Assessed	Yes	Uncommon	Winter visitor	Migrant	Yes	No	No
132	*Ficedula mugimaki*	Muscicapidae	Mugimaki flycatcher	Least Concern	Not Assessed	No	Uncommon	Passage migrant	Migrant	Yes	No	No
133	*Ficedula zanthopygia*	Muscicapidae	Yellow-rumped flycatcher	Least Concern	Not Assessed	No	Uncommon	Passage migrant	Migrant	Yes	No	Yes
134	*Larvivora cyane*	Muscicapidae	Siberian blue robin	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
135	*Muscicapa dauurica*	Muscicapidae	Asian brown flycatcher	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
136	*Muscicapa sibirica*	Muscicapidae	Dark-sided flycatcher	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
137	*Copsychus saularis*	Muscicapidae	Oriental magpie-robin	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
138	*Aethopyga siparaja*	Nectariniidae	Crimson sunbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
139	*Anthreptes malacensis*	Nectariniidae	Brown-throated sunbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
140	*Cinnyris jugularis*	Nectariniidae	Olive-backed sunbird	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
141	*Leptocoma calcostetha*	Nectariniidae	Copper-throated sunbird	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
142	*Oriolus chinensis*	Oriolidae	Black-naped oriole	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
143	*Pachycephala cinerea*	Pachycephalidae	Mangrove whistler	Least Concern	Not Assessed	No	Rare	Resident breeder	Native	Yes	No	No
144	*Pandion haliaetus*	Pandionidae	Western osprey	Least Concern	Not Assessed	No	Common	Non-breeding visitor	Migrant	Yes	No	No
145	*Passer montanus*	Passeridae	Eurasian tree sparrow	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
146	*Malacocincla abbotti*	Pellorneidae	Abbott's babbler	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
147	*Gallus gallus (domestic)*	Phasianidae	Domestic chicken	Not Assessed	Not Assessed	No	NA	Introduced	Introduced	Yes	Yes	Yes
148	*Pavo cristatus*	Phasianidae	Indian peafowl	Least Concern	Not Assessed	No	NA	Introduced	Introduced	Yes	Yes	Yes
149	*Excalfactoria chinensis*	Phasianidae	King quail	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
150	*Gallus gallus*	Phasianidae	Red junglefowl	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
151	*Phylloscopus borealis*	Phylloscopidae	Arctic warbler	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
152	*Phylloscopus coronatus*	Phylloscopidae	Eastern crowned warbler	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
153	*Phylloscopus inornatus*	Phylloscopidae	Yellow-browed warbler	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	Yes	Yes
154	*Chrysophlegma miniaceum*	Picidae	Banded woodpecker	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes

Birds

S/N	Scientific name	Family	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Threatened	Distribution/Rarity (singaporebirds.com)	Residence	Native status	Probable?	Recorded?	Recorded (migratory)?
155	*Dinopium javanense*	Picidae	Common flameback	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
156	*Micropternus brachyurus*	Picidae	Rufous woodpecker	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
157	*Picus vittatus*	Picidae	Laced woodpecker	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
158	*Yungipicus moluccensis*	Picidae	Sunda pygmy woodpecker	Least Concern	Not Assessed	No	Abundant	Resident breeder	Native	Yes	No	No
159	*Pitta sordida*	Pittidae	Hooded pitta	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
160	*Pitta megarhyncha*	Pittidae	Mangrove pitta	Near Threatened	Critically Endangered	Yes	Rare	Resident breeder	Native	Yes	No	No
161	*Pitta moluccensis*	Pittidae	Blue-winged pitta	Least Concern	Not Assessed	No	Uncommon	Migrant breeder	Migrant	Yes	Yes	Yes
162	*Psittacula alexandri*	Psittaculidae	Red-breasted parakeet	Near Threatened	Not Assessed	No	Common	Introduced resident breeder	Introduced	Yes	Yes	Yes
163	*Loriculus galgulus*	Psittaculidae	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
164	*Psittacula longicauda*	Psittaculidae	Long-tailed parakeet	Vulnerable	Not Assessed	Yes	Common	Resident breeder	Native	Yes	No	No
165	*Psittacula krameri*	Psittaculidae	Rose-ringed parakeet	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	Yes	Yes
166	*Trichoglossus haematodus*	Psittaculidae	Coconut lorikeet	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	Yes	Yes
167	*Pycnonotus jocosus*	Pycnonotidae	Red-whiskered bulbul	Least Concern	Not Assessed	No	Uncommon	Introduced resident breeder	Introduced	Yes	Yes	Yes
168	*Pycnonotus goiavier*	Pycnonotidae	Yellow-vented bulbul	Least Concern	Not Assessed	No	Abundant	Resident breeder	Native	Yes	Yes	Yes
169	*Pycnonotus plumosus*	Pycnonotidae	Olive-winged bulbul	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
170	*Pycnonotus zeylanicus*	Pycnonotidae	Straw-headed bulbul	Critically Endangered	Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
171	*Amaurornis phoenicurus*	Rallidae	White-breasted waterhen	Least Concern	Not Assessed	No	Common	Resident breeder	Migrant	Yes	Yes	Yes
172	*Rallina eurizonoides*	Rallidae	Slaty-legged crake	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
173	*Lewinia striata*	Rallidae	Slaty-breasted rail	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
174	*Rallina fasciata*	Rallidae	Red-legged crake	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
175	*Zapornia fusca*	Rallidae	Ruddy-breasted crake	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
176	*Rhipidura javanica*	Rhipiduridae	Malaysian pied fantail	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
177	*Actitis hypoleucos*	Scolopacidae	Common sandpiper	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	Yes
178	*Calidris ferruginea*	Scolopacidae	Curlew sandpiper	Near Threatened	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
179	*Calidris ruficollis*	Scolopacidae	Red-necked stint	Near Threatened	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
180	*Gallinago gallinago*	Scolopacidae	Common snipe	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
181	*Gallinago stenura*	Scolopacidae	Pin-tailed snipe	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
182	*Numenius phaeopus*	Scolopacidae	Eurasian whimbrel	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	No	No
183	*Otus sunia*	Strigidae	Oriental scops owl	Least Concern	Not Assessed	No	Rare	Winter visitor	Migrant	Yes	No	No
184	*Ketupa ketupu*	Strigidae	Buffy fish owl	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	No	No
185	*Otus lempiji*	Strigidae	Sunda scops owl	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
186	*Strix seloputo*	Strigidae	Spotted wood owl	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	Native	Yes	Yes	Yes
187	*Acridotheres javanicus*	Sturnidae	Javan myna	Least Concern	Not Assessed	No	Abundant	Introduced resident breeder	Introduced	Yes	Yes	Yes
188	*Agropsar sturninus*	Sturnidae	Daurian starling	Least Concern	Not Assessed	No	Common	Winter visitor	Migrant	Yes	Yes	Yes
189	*Acridotheres tristis*	Sturnidae	Common myna	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	No	No
190	*Aplonis panayensis*	Sturnidae	Asian glossy starling	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
191	*Gracula religiosa*	Sturnidae	Common hill myna	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	Yes	Yes
192	*Mixornis gularis*	Timaliidae	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
193	*Geokichla citrina*	Turdidae	Orange-headed thrush	Least Concern	Not Assessed	No	Uncommon	Winter visitor	Migrant	Yes	No	No
194	*Geokichla sibirica*	Turdidae	Siberian thrush	Least Concern	Not Assessed	No	Rare	Passage migrant	Migrant	Yes	No	No
195	*Turdus obscurus*	Turdidae	Eyebrowed thrush	Least Concern	Not Assessed	No	Uncommon	Passage migrant	Migrant	Yes	No	No
196	*Turnix suscitator*	Turnicidae	Barred buttonquail	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
197	*Tyto javanica*	Tytonidae	Eastern barn owl	Least Concern	Not Assessed	No	Uncommon	Resident breeder	Native	Yes	No	No
198	*Zosterops simplex*	Zosteropidae	Swinhoe's white-eye	Least Concern	Not Assessed	No	Common	Resident breeder	Native	Yes	Yes	Yes
-	*Aerodramus sp.*	Apodidae	Unidentified swiftlet	NA	NA	NA	NA	NA	NA	NA	Yes	No
-	*Alcedo sp.*	Alcedinidae	Unidentified kingfisher	NA	NA	NA	NA	NA	NA	NA	Yes	No
-	*Ardeola sp.*	Ardeidae	Unidentified pond heron	NA	NA	NA	NA	NA	NA	NA	Yes	No
-	*Lanius sp.*	Laniidae	Unidentified shrike	NA	NA	NA	NA	NA	NA	NA	Yes	No
-	*Merops sp.*	Meropidae	Unidentified bee-eater	NA	NA	NA	NA	NA	NA	NA	Yes	No
-	*Orthotomus sp.*	Cisticolidae	Unidentified tailorbird	NA	NA	NA	NA	NA	NA	NA	Yes	No

Birds

EIA (Camphora)	NSS (2008)	EIA & NSS	Nparks (2010)
Gerygone sulphurea	Bubulcus coromandus	*Haliaeetus leucogaster*	*Aplonis panayensis*
Accipiter gularis	Terpsiphone paradisi	*Haliastur indus*	*Eudynamys scolopaceus*
Pernis ptilorhynchus	Cacatua sulphurea	*Nisaetus cirrhatus*	*Oriolus chinensis*
Accipiter trivirgatus	*Haliaeetus leucogaster*	*Aegithina tiphia*	*Merops viridis*
Haliaeetus leucogaster	*Haliastur indus*	*Alcedo atthis*	*Haliastur indus*
Haliastur indus	*Nisaetus cirrhatus*	*Halcyon smyrnensis*	*Anthreptes malacensis*
Nisaetus cirrhatus	*Aegithina tiphia*	*Todiramphus chloris*	*Ardeola bacchus*
Aegithina tiphia	*Alcedo atthis*	*Egretta garzetta*	*Todiramphus chloris*
Alcedo atthis	*Halcyon smyrnensis*	*Butorides striata*	*Aegithina tiphia*
Halcyon smyrnensis	*Todiramphus chloris*	*Cacatua goffiniana*	*Acridotheres tristis*
Pelargopsis capensis	*Egretta garzetta*	*Caprimulgus macrurus*	*Actitis hypoleucos*
Todiramphus chloris	*Nycticorax nycticorax*	*Orthotomus atrogularis*	*Orthotomus sutorius*
Ardeola bacchus	*Ardea sumatrana*	*Orthotomus ruficeps*	*Orthotomus atrogularis*
Egretta garzetta	*Butorides striata*	*Orthotomus sutorius*	*Eurystomus orientalis*
Ixobrychus cinnamomeus	*Cacatua goffiniana*	*Spilopelia chinensis*	*Gerygone sulphurea*
Ardea cinerea	*Caprimulgus affinis*	*Treron vernans*	*Centropus sinensis*
Ardea purpurea	*Caprimulgus macrurus*	*Eurystomus orientalis*	*Dicrurus paradiseus*
Butorides striata	*Orthotomus atrogularis*	*Corvus splendens*	*Gracula religiosa*
Anthracoceros albirostris	*Orthotomus ruficeps*	*Corvus macrorhynchos*	*Collocalia brevirostris*
Cacatua goffiniana	*Orthotomus sutorius*	*Eudynamys scolopaceus*	*Zosterops japonicus*
Pericrocotus divaricatus	*Spilopelia chinensis*	*Centropus sinensis*	*Acridotheres javanicus*
Caprimulgus macrurus	*Treron vernans*	*Dicaeum cruentatum*	*Picus vittatus*
Vanellus indicus	*Eurystomus orientalis*	*Lonchura punctulata*	*Corvus macrorhynchos*
Orthotomus atrogularis	*Corvus splendens*	*Hirundo tahitica*	*Sternula albifrons*
Orthotomus ruficeps	*Corvus macrorhynchos*	*Lanius tigrinus*	*Cinnyris jugularis*
Orthotomus sutorius	*Eudynamys scolopaceus*	*Psilopogon haemacephalus*	*Pycnonotus plumosus*
Columba livia	*Centropus sinensis*	*Merops viridis*	*Zosterops simplex*
Chalcophaps indica	*Dicaeum cruentatum*	*Muscicapa dauurica*	*Hirundo tahitica*
Ducula bicolor	*Lonchura maja*	*Copsychus saularis*	*Geopelia striata*
Geopelia striata	*Lonchura punctulata*	*Aethopyga siparaja*	*Treron vernans*
Spilopelia chinensis	*Hirundo tahitica*	*Anthreptes malacensis*	*Mixornis gularis*
Treron curvirostra	*Lanius tigrinus*	*Cinnyris jugularis*	*Nectarinia sperata*
Treron vernans	*Sternula albifrons*	*Oriolus chinensis*	*Columba livia*
Eurystomus orientalis	*Psilopogon haemacephalus*	*Chrysophlegma miniaceum*	*Dicaeum cruentatum*
Corvus splendens	*Merops viridis*	*Dinopium javanense*	*Spilopelia chinensis*
Corvus macrorhynchos	*Cyornis brunneatus*	*Loriculus galgulus*	*Butorides striata*
Eudynamys scolopaceus	*Muscicapa dauurica*	*Psittacula krameri*	*Callocalia sp.*
Centropus sinensis	*Copsychus saularis*	*Pycnonotus goiavier*	*Haliaeetus leucogaster*
Chrysococcyx minutillus	*Aethopyga siparaja*	*Pycnonotus plumosus*	*Amaurornis phoenicurus*
Dicaeum cruentatum	*Anthreptes malacensis*	*Amaurornis phoenicurus*	*Garrulax leucolophus*
Dicaeum trigonostigma	*Cinnyris jugularis*	*Rhipidura javanica*	*Halcyon smyrnensis*
Dicrurus paradiseus	*Oriolus chinensis*	*Actitis hypoleucos*	*Pycnonotus goiavier*
Lonchura punctulata	*Chrysophlegma miniaceum*	*Acridotheres javanicus*	*Cisticola juncidis*
Lonchura leucogastroides	*Dinopium javanense*	*Agropsar sturninus*	Cacatua galerita
Falco peregrinus	*Yungipicus moluccensis*	*Aplonis panayensis*	
Hirundo rustica	*Loriculus galgulus*	*Gracula religiosa*	
Hirundo tahitica	*Psittacula krameri*		
Lanius cristatus	*Pycnonotus goiavier*		
Lanius tigrinus	*Pycnonotus plumosus*		
Psilopogon haemacephalus	*Amaurornis phoenicurus*		
Psilopogon lineatus	*Rhipidura javanica*		
Merops philippinus	*Actitis hypoleucos*		
Merops viridis	*Acridotheres javanicus*		
Terpsiphone incei	*Agropsar sturninus*		
Anthus rufulus	*Acridotheres tristis*		
Ficedula zanthopygia	*Aplonis panayensis*		
Larvivora cyane	*Gracula religiosa*		
Muscicapa dauurica			
Copsychus saularis			
Aethopyga siparaja			
Anthreptes malacensis			
Cinnyris jugularis			
Oriolus chinensis			
Passer montanus			
Gallus gallus (domestic)			
Pavo cristatus			
Gallus gallus			
Phylloscopus borealis			
Phylloscopus inornatus			
Chrysophlegma miniaceum			
Dinopium javanense			
Picus vittatus			
Pitta moluccensis			
Psittacula alexandri			
Loriculus galgulus			
Psittacula krameri			
Trichoglossus haematodus			
Pycnonotus jocosus			
Pycnonotus goiavier			
Pycnonotus plumosus			
Pycnonotus zeylanicus			
Amaurornis phoenicurus			
Rallina fasciata			
Rhipidura javanica			
Actitis hypoleucos			
Otus lempiji			
Strix seloputo			
Acridotheres javanicus			
Agropsar sturninus			
Aplonis panayensis			
Gracula religiosa			
Mixornis gularis			
Zosterops simplex			

EIA (Camphora)	Nparks (2010)	EIA & Nparks	NSS (2008)
Gerygone sulphurea	Aplonis panayensis	Aplonis panayensis	Bubulcus coromandus
Accipiter gularis	Eudynamys scolopaceus	Eudynamys scolopaceus	Terpsiphone paradisi
Pernis ptilorhynchus	Oriolus chinensis	Oriolus chinensis	Cacatua sulphurea
Accipiter trivirgatus	Merops viridis	Merops viridis	*Haliaeetus leucogaster*
Haliaeetus leucogaster	Haliastur indus	Haliastur indus	*Haliastur indus*
Haliastur indus	Anthreptes malacensis	Anthreptes malacensis	*Nisaetus cirrhatus*
Nisaetus cirrhatus	Ardeola bacchus	Ardeola bacchus	*Aegithina tiphia*
Aegithina tiphia	Todiramphus chloris	Todiramphus chloris	*Alcedo atthis*
Alcedo atthis	Aegithina tiphia	Aegithina tiphia	*Halcyon smyrnensis*
Halcyon smyrnensis	Acridotheres tristis	Actitis hypoleucos	*Todiramphus chloris*
Pelargopsis capensis	Actitis hypoleucos	Orthotomus sutorius	*Egretta garzetta*
Todiramphus chloris	Orthotomus sutorius	Orthotomus atrogularis	*Nycticorax nycticorax*
Ardeola bacchus	Orthotomus atrogularis	Eurystomus orientalis	*Ardea sumatrana*
Egretta garzetta	Eurystomus orientalis	Gerygone sulphurea	*Butorides striata*
Ixobrychus cinnamomeus	Gerygone sulphurea	Centropus sinensis	*Cacatua goffiniana*
Ardea cinerea	Centropus sinensis	Dicrurus paradiseus	*Caprimulgus affinis*
Ardea purpurea	Dicrurus paradiseus	Gracula religiosa	*Caprimulgus macrurus*
Butorides striata	Gracula religiosa	Acridotheres javanicus	*Orthotomus atrogularis*
Anthracoceros albirostris	Collocalia brevirostris	Picus vittatus	*Orthotomus ruficeps*
Cacatua goffiniana	Zosterops japonicus	Corvus macrorhynchos	*Eudynamys scolopaceus*
Pericrocotus divaricatus	Cinnyris jugularis	Acridotheres javanicus	*Spilopelia chinensis*
Caprimulgus macrurus	Picus vittatus	Pycnonotus plumosus	*Treron vernans*
Vanellus indicus	Corvus macrorhynchos	Zosterops simplex	*Eurystomus orientalis*
Orthotomus atrogularis	Sternula albifrons	Hirundo tahitica	*Corvus splendens*
Orthotomus ruficeps	Cinnyris jugularis	Geopelia striata	*Corvus macrorhynchos*
Orthotomus sutorius	Pycnonotus plumosus	Treron vernans	*Eudynamys scolopaceus*
Columba livia	Zosterops simplex	Mixornis gularis	*Centropus sinensis*
Chalcophaps indica	Hirundo tahitica	Columba livia	*Dicaeum cruentatum*
Ducula bicolor	Geopelia striata	Dicaeum cruentatum	*Lonchura maja*
Geopelia striata	Treron vernans	Spilopelia chinensis	*Lonchura punctulata*
Spilopelia chinensis	Mixornis gularis	Butorides striata	*Hirundo tahitica*
Treron curvirostra	Nectarinia sperata	Haliaeetus leucogaster	*Lanius tigrinus*
Treron vernans	Columba livia	Amaurornis phoenicurus	*Sternula albifrons*
Eurystomus orientalis	Dicaeum cruentatum	Halcyon smyrnensis	*Psilopogon haemacephalus*
Corvus splendens	Spilopelia chinensis	Pycnonotus goiavier	*Merops viridis*
Corvus macrorhynchos	Butorides striata	Psittacula krameri	*Cyornis brunneatus*
Eudynamys scolopaceus	Callocalia sp.	Lonchura punctulata	*Muscicapa dauurica*
Centropus sinensis	Haliaeetus leucogaster	Lonchura leucogastroides	*Copsychus saularis*
Chrysococcyx minutillus	Amaurornis phoenicurus	Dinopium javanense	*Aethopyga siparaja*
Dicaeum cruentatum	Garrulax leucolophus	Falco peregrinus	*Anthreptes malacensis*
Dicaeum trigonostigma	Halcyon smyrnensis	Hirundo rustica	*Cinnyris jugularis*
Dicrurus paradiseus	Pycnonotus goiavier	Hirundo tahitica	*Oriolus chinensis*
Lonchura punctulata	Cisticola juncidis	Lanius cristatus	*Chrysophlegma miniaceum*
Lonchura leucogastroides	Cacatua galerita	Lanius tigrinus	*Dinopium javanense*
Falco peregrinus		Psilopogon haemacephalus	*Yungipicus moluccensis*
Hirundo rustica		Psilopogon lineatus	*Loriculus galgulus*
Hirundo tahitica		Merops philippinus	*Psittacula krameri*
Lanius cristatus		Merops viridis	*Pycnonotus goiavier*
Lanius tigrinus		Terpsiphone incei	*Pycnonotus plumosus*
Psilopogon haemacephalus		Anthus rufulus	*Amaurornis phoenicurus*
Psilopogon lineatus		Ficedula zanthopygia	*Rhipidura javanica*
Merops philippinus		Larvivora cyane	*Actitis hypoleucos*
Merops viridis		Muscicapa dauurica	*Acridotheres javanicus*
Terpsiphone incei		Copsychus saularis	*Agropsar sturninus*
Anthus rufulus		Aethopyga siparaja	*Acridotheres tristis*
Ficedula zanthopygia		Anthreptes malacensis	*Aplonis panayensis*
Larvivora cyane		Cinnyris jugularis	*Gracula religiosa*
Muscicapa dauurica		Oriolus chinensis	
Copsychus saularis		Passer montanus	
Aethopyga siparaja		Gallus gallus (domestic)	
Anthreptes malacensis		Pavo cristatus	
Cinnyris jugularis		Gallus gallus	
Oriolus chinensis		Phylloscopus borealis	
Passer montanus		Phylloscopus inornatus	
Gallus gallus (domestic)		Chrysophlegma miniaceum	
Pavo cristatus		Dinopium javanense	
Gallus gallus		Picus vittatus	
Phylloscopus borealis		Pitta moluccensis	
Phylloscopus inornatus		Psittacula alexandri	
Chrysophlegma miniaceum		Loriculus galgulus	
Dinopium javanense		Psittacula krameri	
Picus vittatus		Trichoglossus haematodus	
Pitta moluccensis		Pycnonotus jocosus	
Psittacula alexandri		Pycnonotus goiavier	
Loriculus galgulus		Pycnonotus plumosus	
Psittacula krameri		Pycnonotus zeylanicus	
Trichoglossus haematodus		Amaurornis phoenicurus	
Pycnonotus jocosus		Rallina fasciata	
Pycnonotus goiavier		Rhipidura javanica	
Pycnonotus plumosus		Actitis hypoleucos	
Pycnonotus zeylanicus		Otus lempiji	
Amaurornis phoenicurus		Strix seloputo	
Rallina fasciata		Acridotheres javanicus	
Rhipidura javanica		Agropsar sturninus	
Actitis hypoleucos		Aplonis panayensis	
Otus lempiji		Gracula religiosa	
Strix seloputo		Mixornis gularis	
Acridotheres javanicus		Zosterops simplex	
Agropsar sturninus			
Aplonis panayensis			
Gracula religiosa			
Mixornis gularis			
Zosterops simplex			

Herpetofauna

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Distribution/ Abundance/Rarity	Native status	Probable?	Recorded?
1	*Duttaphrynus melanostictus*	Amphibian	Bufonidae	Asian toad	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
2	*Fejervarya cancrivora*	Amphibian	Dicroglossidae	Crab-eating frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
3	*Fejervarya limnocharis*	Amphibian	Dicroglossidae	Field frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
4	*Limnonectes blythii*	Amphibian	Dicroglossidae	Malayan giant frog	Near Threatened	Not Assessed	No	Widespread and Common	Native	Yes	No
5	*Hemidactylus brookii*	Reptile	Gekkonidae	Brooke's house gecko	Not Assessed	Not Assessed	No	Restricted and Rare	Non-native	Yes	Yes
6	*Kaloula pulchra*	Amphibian	Microhylidae	Banded bull frog	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	Yes
7	*Microhyla butleri*	Amphibian	Microhylidae	Painted chorus frog	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
8	*Microhyla heymonsi*	Amphibian	Microhylidae	Dark-sided chorus frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
9	*Microhyla mukhlesuri*	Amphibian	Microhylidae	East Asian ornate chorus frog	Least Concern	Not Assessed	No	Restricted and Rare	Non-native	Yes	Yes
10	*Hylarana erythraea*	Amphibian	Ranidae	Green paddy frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
11	*Sylvirana guentheri*	Amphibian	Ranidae	Guenther's frog	Least Concern	Not Assessed	No	Widespread but Uncommon	Non-native	Yes	No
12	*Polypedates leucomystax*	Amphibian	Rhacophoridae	Four-lined tree frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
13	*Eleutherodactylus planirostris*	Amphibian	Eleutherodactylidae	Greenhouse frog	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	Yes
14	*Acrochordus granulatus*	Reptile	Acrochordidae	Banded file snake	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
15	*Bronchocela cristatella*	Reptile	Agamidae	Green crested lizard	Not Assessed	Least Concern	No	Widespread but Uncommon	Native	Yes	Yes
16	*Calotes versicolor*	Reptile	Agamidae	Changeable lizard	Not Assessed	Not Assessed	No	Widespread and Common	Non-native	Yes	Yes
17	*Draco sumatranus*	Reptile	Agamidae	Sumatran flying dragon	Not Assessed	Not Assessed	No	Widespread and Common	Native	Yes	No
18	*Ahaetulla prasina*	Reptile	Colubridae (Ahaetulliinae)	Oriental whip snake	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
19	*Chrysopelea paradisi*	Reptile	Colubridae (Ahaetulliinae)	Paradise gliding snake	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
20	*Dendrelaphis caudolineatus*	Reptile	Colubridae (Ahaetulliinae)	Striped bronzeback	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
21	*Dendrelaphis pictus*	Reptile	Colubridae (Ahaetulliinae)	Painted bronzeback	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
22	*Coelognathus flavolineatus*	Reptile	Colubridae (Colubrinae)	Common Malayan racer	Least Concern	Endangered	Yes	Widespread but Rare	Native	Yes	No
23	*Lycodon capucinus*	Reptile	Colubridae (Colubrinae)	House wolf snake	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
24	*Oligodon octolineatus*	Reptile	Colubridae (Colubrinae)	Striped kukri snake	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
25	*Xenochrophis vittatus*	Reptile	Colubridae (Natricinae)	Striped keelback	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	No
26	*Aipysurus eydouxii*	Reptile	Elapidae	Beaded sea-snake	Least Concern	Not Assessed	No	NA	NA	Yes	No
27	*Calliophis intestinalis*	Reptile	Elapidae	Banded Malayan coral snake	Least Concern	Not Assessed	No	Widespread but Rare	Native	Yes	No
28	*Laticauda colubrina*	Reptile	Elapidae	Yellow-lipped sea krait	Least Concern	Endangered	Yes	Widespread but Uncommon	Native	Yes	No
29	*Naja sumatrana*	Reptile	Elapidae	Equatorial spitting cobra	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
30	*Trachemys decussata*	Reptile	Emydidae	Cuban slider	Not Assessed	Not Assessed	No	NA	NA	Yes	No
31	*Trachemys scripta*	Reptile	Emydidae	Red-eared slider	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	Yes
32	*Gehyra mutilata*	Reptile	Gekkonidae	Four-clawed gecko	Not Assessed	Not Assessed	No	Widespread and Common	Native	Yes	Yes
33	*Gekko monarchus*	Reptile	Gekkonidae	Spotted house gecko	Not Assessed	Not Assessed	No	Widespread and Common	Native	Yes	Yes
34	*Hemidactylus frenatus*	Reptile	Gekkonidae	Spiny-tailed house gecko	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
35	*Hemidactylus platyurus*	Reptile	Gekkonidae	Flat-tailed gecko	Not Assessed	Least Concern	No	Widespread and Common	Native	Yes	Yes
36	*Lepidodactylus lugubris*	Reptile	Gekkonidae	Mourning gecko	Not Assessed	Not Assessed	No	Widespread but Rare	Native	Yes	Yes
37	*Cuora amboinensis*	Reptile	Geomydidae	Malayan box terrapin	Vulnerable; CITES protected (Appendix II)	Not Assessed	Yes	Restricted but Common	Native	Yes	No
38	*Siebenrockiella crassicollis*	Reptile	Geomydidae	Black marsh terrapin	Vulnerable	Not Assessed	No	Widespread and Common	Native	Yes	No
39	*Cerberus schneiderii*	Reptile	Homalopsidae	Sunda dog-faced water snake	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
40	*Pareas margaritophorus*	Reptile	Pareidae	White-spotted slug snake	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	No
41	*Malayopython reticulatus*	Reptile	Pythonidae	Reticulated python	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	Yes
42	*Eutropis multifasciatus*	Reptile	Scincidae	Many-lined sun skink	Least concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
43	*Lygosoma bowringii*	Reptile	Scincidae	Garden supple skink	Not Assessed	Not Assessed	No	Widespread and Common	Native	Yes	No
44	*Indotyphlops braminus*	Reptile	Typhlopidae	Brahminy blind snake	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
45	*Varanus nebulosus*	Reptile	Varanidae	Clouded monitor	Not Assessed	Not Assessed	No	Restricted but Common	Native	Yes	No
46	*Varanus salvator*	Reptile	Varanidae	Malayan water monitor	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
47	*Xenopeltis unicolor*	Reptile	Xenopeltidae	Iridescent earth snake	Least Concern	Not Assessed	No	Widespread but Uncommon	Native	Yes	No
-	*Unidentified Scincidae*	Reptile	Scincidae	Unidentified Skink	NA	NA	NA	NA	NA	NA	Yes

Bats

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Threatened	Distribution/ Abundance/Rarity	Native status	Probable?	Recorded?
1	*Emballonura monticola*	Mammal (Bat)	Emballonuridae	Lesser sheath-tailed bat	Least Concern	Critically Endangered	Yes	Restricted and Rare	Native	Yes	No
2	*Saccolaimus saccolaimus*	Mammal (Bat)	Emballonuridae	Pouch-bearing bat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
3	*Taphozous longimanus*	Mammal (Bat)	Emballonuridae	Long-winged tomb bat	Least Concern	Not Assessed	No	NA	Native	Yes	No
4	*Taphozous melanopogon*	Mammal (Bat)	Emballonuridae	Black-bearded tomb bat	Least Concern	Endangered	Yes	Widespread but Rare	Native	Yes	No
5	*Megaderma spasma*	Mammal (Bat)	Megadermatidae	Malayan false vampire	Least Concern	Critically Endangered	Yes	Restricted and Rare	Native	Yes	No
6	*Cynopterus brachyotis*	Mammal (Bat)	Pteropodidae	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	Yes
7	*Eonycteris spelaea*	Mammal (Bat)	Pteropodidae	Cave nectar bat	Least Concern	Not Assessed	No	Widespread but Uncommon	Native	Yes	No
8	*Macroglossus minimus*	Mammal (Bat)	Pteropodidae	Common long-tongued nectar bat	Least Concern	Vulnerable	Yes	Restricted and Rare	Native	Yes	No
9	*Penthetor lucasi*	Mammal (Bat)	Pteropodidae	Dusky fruit bat	Least Concern	Endangered	Yes	Restricted and Rare	Native	Yes	No
10	*Pteropus vampyrus*	Mammal (Bat)	Pteropodidae	Large flying fox	Near Threatened	Not Assessed	No	NA	Visitor	Yes	No
11	*Rhinolophus lepidus*	Mammal (Bat)	Rhinolophidae	Glossy horseshoe bat	Least Concern	Not Assessed	No	Restricted but Common	Native	Yes	No
12	*Rhinolophus trifoliatus*	Mammal (Bat)	Rhinolophidae	Trefoil horseshoe bat	Least Concern	Critically Endangered	Yes	Restricted and Rare	Native	Yes	No
13	*Hypsugo macrotis*	Mammal (Bat)	Vespertilionidae	Big-eared pipistrelle	Data Deficient	Not Assessed	No	NA	Native	Yes	No
14	*Kerivoula hardwickii*	Mammal (Bat)	Vespertilionidae	Hardwicke's woolly bat	Least Concern	Critically Endangered	Yes	Restricted and Rare	Native	Yes	No
15	*Myotis horsfieldii*	Mammal (Bat)	Vespertilionidae	Horsfield's large-footed myotis	Least Concern	Least Concern	No	NA	NA	Yes	Yes
16	*Myotis muricola*	Mammal (Bat)	Vespertilionidae	Whiskered myotis	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
17	*Pipistrellus javanicus*	Mammal (Bat)	Vespertilionidae	Javan pipistrelle	Least Concern	Not Assessed	No	Widespread but Uncommon	Native	Yes	No
18	*Scotophilus kuhlii*	Mammal (Bat)	Vespertilionidae	Asiatic lesser yellow house bat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
19	*Tylonycteris fulvida*	Mammal (Bat)	Vespertilionidae	Lesser bamboo bat	Least Concern	Critically Endangered	Yes	Restricted and Rare	Native	Yes	No
20	*Tylonycteris malayana*	Mammal (Bat)	Vespertilionidae	Greater bamboo bat	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No

Non-volant Mammals

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Threatened	Distribution/ Abundance/Rarity	Native status	Probable?	Recorded?
1	*Canis lupus familiaris*	Mammal	Canidae	Feral dog	Not Assessed	Not Assessed	No	NA	Native	Yes	No
2	*Macaca fascicularis*	Mammal	Cercopithecidae	Long-tailed macaque	Vulnerable	Not Assessed	Yes	Widespread and Common	Native	Yes	Yes
3	*Felis catus*	Mammal	Felidae	Feral cat	Not Assessed	Not Assessed	No	NA	Non-native	Yes	Yes
4	*Mus castaneus*	Mammal	Muridae	House mouse	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	No
5	*Rattus exulans*	Mammal	Muridae	Polynesian rat	Least Concern	Not Assessed	No	Widespread but Uncommon	Native	Yes	No
6	*Rattus norvegicus*	Mammal	Muridae	Brown rat	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	No
7	*Rattus tanezumi*	Mammal	Muridae	Oriental house rat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
8	*Rattus tiomanicus*	Mammal	Muridae	Malaysian wood rat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
9	*Lutrogale perspicillata*	Mammal	Mustelidae	Smooth-coated otter	Vulnerable	Endangered	Yes	Widespread but Rare	Native	Yes	Yes
10	*Callosciurus notatus*	Mammal	Sciuridae	Plantain squirrel	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	Yes
11	*Suncus murinus*	Mammal	Soricidae	House shrew	Least Concern	Not Assessed	No	Widespread and Common	Native	Yes	Yes
12	*Sus scrofa*	Mammal	Suidae	Wild pig	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes
13	*Tupaia glis*	Mammal	Tupaiidae	Common treeshrew	Least Concern	Not Assessed	No	Widespread and Common	Non-native	Yes	Yes
14	*Paradoxurus musangus*	Mammal	Viverridae	Common palm civet	Least Concern	Least Concern	No	Widespread but Uncommon	Native	Yes	Yes
-	*Rattus sp.*	Mammal	Muridae	Unidentified rat	NA	NA	NA	NA	NA	NA	Yes

Fishes

S/N	Scientific name	Family	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Threatened	Probable?	Recorded?	Remarks
1	*Oryzias javanicus*	Adrianichthyidae	Javanese ricefish	Not Assessed	Not Listed	No	Yes	Yes	Mangrove
2	*Ambassis kopsii*	Ambassidae	Kops' glass perchlet	Not Assessed	Not Listed	No	Yes	Yes	Mix
3	*Ambassis vachellii*	Ambassidae	Vachell's glassfish	Least Concern	Not Listed	No	Yes	No	
4	*Anabas testudineus*	Anabantidae	Oriental climbing perch	Least Concern	Not Listed	No	Yes	No	
5	*Aplocheilus armatus*	Aplocheilidae	Whitespot	Least Concern	Not Listed	No	Yes	No	
6	*Cheilodipterus quinquelineatus*	Apogonidae	Five-lined cardinalfish	Not Assessed	Not Listed	No	Yes	No	
7	*Ostorhinchus endekataenia*	Apogonidae	Candystripe cardinalfish	Not Assessed	Not Listed	No	Yes	Yes	Marine
8	*Ostorhinchus fasciatus*	Apogonidae	Four-striped cardinalfish	Not Assessed	Not Listed	No	Yes	No	
9	*Ostorhinchus margaritophorus*	Apogonidae	Chequered cardinalfish	Not Assessed	Not Listed	No	Yes	Yes	Marine
10	*Sphaeramia orbicularis*	Apogonidae	NA	Not Assessed	Not Listed	No	Yes	No	
11	*Yarica hyalosoma*	Apogonidae	NA	Not Assessed	Not Listed	No	Yes	No	
12	*Atherinomorus duodecimalis*	Atherinidae	Tropical silverside	Least Concern	Not Listed	No	Yes	Yes	Mix
13	*Mystus gulio*	Bagridae	Estuarine catfish	Least Concern	Not Listed	No	Yes	No	
14	*Strongylura leiura*	Belonidae	NA	Not Assessed	Not Listed	No	Yes	No	
15	*Strongylura strongylura*	Belonidae	NA	Not Assessed	Not Listed	No	Yes	No	
16	*Omobranchus ferox*	Blennidae	Whitebar oyster blenny	Least Concern	Not Listed	No	Yes	No	
17	*Petroscirtes variabilis*	Blennidae	Variable fang blenny	Least Concern	Not Listed	No	Yes	No	
18	*Megalaspis cordyla*	Carangidae	Torpedo scad / chencharu	Least Concern	Not Listed	No	Yes	Yes	Marine
19	*Scomberoides commersonianus*	Carangidae	Talang queenfish	Not Assessed	Not Listed	No	Yes	No	
20	*Chelmon rostratus*	Chaetodontidae	Copperband butterflyfish	Least Concern	Not Listed	No	Yes	Yes	Marine
21	*Channa striata*	Channidae	Common snakehead/aruan	Least Concern	Not Listed	No	Yes	Yes	Freshwater
22	*Etroplus suratensis*	Cichlidae	Green chromide	Least Concern	Not Listed	No	Yes	No	
23	*Amphilophus citrinellus*	Cichlidae	Midas cichlid	Least Concern	Not Listed	No	Yes	Yes	Freshwater
24	*Oreochromis mossambicus × O. niloticus hybrid*	Cichlidae	NA	Vulnerable	Not Listed	No	Yes	Yes	Freshwater
25	*Anodontostoma chacunda*	Clupeidae	Shortnose gizzard shad / chacunda gizzard shad	Least Concern	Not Listed	No	Yes	No	
26	*Cynoglossus puncticeps*	Cynoglossidae	Speckled tongue-sole	Not Assessed	Not Listed	No	Yes	No	
27	*Paraplagusia bilineata*	Cynoglossidae	Doublelined tongue-sole	Not Assessed	Not Listed	No	Yes	No	
28	*Brevitrygon walga*	Dasyatidae	Mangrove whipray	Near Threatened	Not Listed	No	Yes	No	
29	*Himantura uarnak*	Dasyatidae	Honeycomb whipray	Vulnerable	Not Listed	Yes	Yes	No	
30	*Neotrygon kuhlii*	Dasyatidae	Blue-spotted stingray	Not Assessed	Not Listed	No	Yes	No	
31	*Taeniura lymma*	Dasyatidae	NA	Near Threatened	Not Listed	No	Yes	No	
32	*Drepane punctata*	Drepaneidae	Spotted sicklefish	Not Assessed	Not Listed	No	Yes	No	
33	*Butis butis*	Eleotridae	Crimson-tipped gudgeon	Least Concern	Not Listed	No	Yes	No	
34	*Ophiocara porocephala*	Eleotridae	Snakehead gudgeon	Least Concern	Not Listed	No	Yes	No	
35	*Oxyeleotris marmorata*	Eleotrididae	Marbled gudgeon	Least Concern	Not Listed	No	Yes	No	
36	*Gerres erythrourus*	Gerreidae	Deepbody mojarra / silverbiddy	Least Concern	Not Listed	No	Yes	Yes	Mix
37	*Gerres filamentosus*	Gerreidae	Whipfin mojarra	Least Concern	Not Listed	No	Yes	Yes	Marine
38	*Gerres oyena*	Gerridae	Common mojarra	Least Concern	Not Listed	No	Yes	No	
39	*Acentrogobius caninus*	Gobiidae	Green-shouldered goby	Least Concern	Not Listed	No	Yes	No	
40	*Acentrogobius gracilis*	Gobiidae	Slender amoya	Not Assessed	Not Listed	No	Yes	No	
41	*Acentrogobius janthinopterus*	Gobiidae	Robust mangrove goby / green-spotted goby	Not Assessed	Not Listed	No	Yes	No	
42	*Acentrogobius nebulosus*	Gobiidae	Shadow goby	Least Concern	Not Listed	No	Yes	Yes	Mix
43	*Acentrogobius viridipunctatus*	Gobiidae	Papillose goby	Not Assessed	Not Listed	No	Yes	No	
44	*Amblygobius stethophthalmus*	Gobiidae	Head-stripe goby	Not Assessed	Not Listed	No	Yes	No	
45	*Bathygobius fuscus*	Gobiidae	Common frillfin goby	Least Concern	Not Listed	No	Yes	Yes	Marine
46	*Brachygobius kabiliensis*	Gobiidae	Bumblebee goby	Not Assessed	Not Listed	No	Yes	No	
47	*Calamiana illota*	Gobiidae	Dirty-face brackish goby	Least Concern	Not Listed	No	Yes	No	
48	*Calamiana variegata*	Gobiidae	Stripe-face brackish goby	Least Concern	Not Listed	No	Yes	No	
49	*Cryptocentrus leptocephalus*	Gobiidae	Pink-speckled shrimp-goby	Not Assessed	Not Listed	No	Yes	No	
50	*Cryptocentrus maudae*	Gobiidae	Saddled shrimp-goby	Least Concern	Not Listed	No	Yes	No	
51	*Drombus triangularis*	Gobiidae	Brown shore goby	Not Assessed	Not Listed	No	Yes	Yes	Mix
52	*Istigobius goldmanni*	Gobiidae	Black-spotted lagoon-goby	Not Assessed	Not Listed	No	Yes	Yes	Marine
53	*Mugilogobius fasciatus*	Gobiidae	Broad-barred mangrove goby	Data Deficient	Not Listed	No	Yes	No	
54	*Mugilogobius tigrinus*	Gobiidae	Narrow-barred mangrove goby	Not Assessed	Not Listed	No	Yes	No	
55	*Periophthalmodon schlosseri*	Gobiidae	Giant mudskipper	Not Assessed	Not Listed	No	Yes	No	
56	*Periophthalmus argentilineatus*	Gobiidae	Silver-lined mudskipper	Not Assessed	Not Listed	No	Yes	No	
57	*Periophthalmus gracilis*	Gobiidae	Slender mudskipper	Not Assessed	Not Listed	No	Yes	Yes	Mangrove
58	*Periophthalmus novemradiatus*	Gobiidae	Dusky-gilled mudskipper	Not Assessed	Not Listed	No	Yes	No	
59	*Periophthalmus walailakae*	Gobiidae	Yellow-spotted mudskipper	Not Assessed	Not Listed	No	Yes	Yes	Mangrove
60	*Psammogobius biocellatus*	Gobiidae	NA	Least Concern	Not Listed	No	Yes	No	
61	*Pseudogobius avicennia*	Gobiidae	Avicennia fat-nose goby	Not Assessed	Not Listed	No	Yes	No	
62	*Pseudogobius javanicus*	Gobiidae	Java fat-nose goby	Not Assessed	Not Listed	No	Yes	Yes	Mix
63	*Pseudogobius melanostictus*	Gobiidae	Black-spotted fat-nose goby	Not Assessed	Not Listed	No	Yes	No	
64	*Rhinogobius giurinus*	Gobiidae	Barcheek goby	Least Concern	Not Listed	No	Yes	No	
65	*Stigmatogobius sadanundio*	Gobiidae	Grey knight-goby	Not Assessed	Not Listed	No	Yes	No	
66	*Plectorhinchus gibbosus*	Haemulidae	Brown sweetlips / harry hotlips	Least Concern	Not Listed	No	Yes	No	
67	*Hyporhamphus quoyi*	Hemiraphidae	Quoy's halfbeak	Not Assessed	Not Listed	No	Yes	Yes	Mix
68	*Hemiramphidae sp.*	Heriramphidae	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Listed	No	Yes	Yes	Mix
69	*Hemiramphus far*	Heriramphidae	Black-barred halfbeak	Not Assessed	Not Listed	No	Yes	No	
70	*Hyporhamphus limbatus*	Heriramphidae	Congaturi halfbeak	Least Concern	Not Listed	No	Yes	No	
71	*Choerodon oligacanthus*	Labridae	Singapore's tuskfish	Least Concern	Not Listed	No	Yes	Yes	Marine
72	*Halichoeres purpurescens*	Labridae	Silty wrasse	Least Concern	Not Listed	No	Yes	No	
73	*Halichoeres bicolor*	Labridae	Brown-stripe wrasse	Least Concern	Not Listed	No	Yes	No	
74	*Lates calcarifer*	Latidae	Seabass	Not Assessed	Not Listed	No	Yes	No	
75	*Gazza minuta*	Leiognathidae	Toothpony	Least Concern	Not Listed	No	Yes	No	
76	*Leiognathus equulus*	Leiognathidae	Common ponyfish	Least Concern	Not Listed	No	Yes	No	
77	*Secutor hanedai*	Leiognathidae	Haneda's pugnose ponyfish	Least Concern	Not Listed	No	Yes	No	
78	*Pterygoplichthys disjunctivus*	Loricariidae	Vermiculated sailfin sucker catfish	Not Assessed	Not Listed	No	Yes	Yes	Freshwater
79	*Megalops cyprinoides*	Megalopidae	Indo-pacific tarpon	Data Deficient	Not Listed	No	No	Yes	Mix
80	*Acreichthys tomentosus*	Monacanthidae	Seagrass filefish	Least Concern	Not Listed	No	Yes	Yes	Marine
81	*Monacanthus chinensis*	Monacanthidae	Fan-bellied filefish	Least Concern	Not Listed	No	Yes	No	
82	*Pseudomonacanthus macrurus*	Monacanthidae	NA	Not Assessed	Not Listed	No	Yes	No	
83	*Ellochelon vaigiensis*	Mugilidae	Squaretail mullet	Least Concern	Not Listed	No	Yes	Yes	Mix
84	*Upeneus sulphureus*	Mullidae	Sulphur goatfish	Least Concern	Not Listed	No	Yes	No	
85	*Upeneus tragula*	Mullidae	NA	Least Concern	Not Listed	No	Yes	No	
86	*Gymnothorax tile*	Muraenidae	Estuarine moray	Not Assessed	Not Listed	No	Yes	No	
87	*Pisodonophis cancrivorus*	Ophichthidae	Burrowing snake-eel	Not Assessed	Not Listed	No	Yes	No	
88	*Muraenichthys sp.*	Ophichthidae	Worm eel	Not Assessed	Not Listed	No	Yes	No	
89	*Lactoria cornuta*	Ostraciidae	Longhorn cowfish	Not Assessed	Not Listed	No	Yes	Yes	Marine
90	*Pseudorhombus arsius*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
91	*Pseudorhombus javanicus*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
92	*Pseudorhombus malayanus*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
93	*Pseudorhombus neglectus*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
94	*Pseudorhombus oligodon*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
95	*Pseudorhombus polyspilos*	Paralichthyidae	NA	Not Assessed	Not Listed	No	Yes	No	
96	*Parapercis xanthozona*	Pinguipedidae	Yellow-barred sandperch	Least Concern	Not Listed	No	Yes	No	
97	*Platycephalus indicus*	Platycephalidae	NA	Data Deficient	Not Listed	No	Yes	No	
98	*Paraplotosus albilabris*	Plotosidae	White-lipped eeltail catfish	Not Assessed	Not Listed	No	Yes	No	
99	*Plotosus canius*	Plotosidae	NA	Not Assessed	Not Listed	No	Yes	Yes	Marine
100	*Plotosus lineatus*	Plotosidae	Striped eeltail catfish	Not Assessed	Not Listed	No	Yes	Yes	Marine
101	*Poecilia reticulata*	Poeciliidae	Guppy	Least Concern	Not Listed	No	Yes	Yes	Mangrove
102	*Abudefduf bengalensis*	Pomacentridae	Bengal sergeant	Least Concern	Not Listed	No	Yes	No	
103	*Abudefduf sexfasciatus*	Pomacentridae	Scissors-tail sergeant	Least Concern	Not Listed	No	Yes	No	
104	*Amphiprion frenatus*	Pomacentridae	Tomato anemonefish	Least Concern	Vulnerable	Yes	Yes	No	
105	*Amphiprion clarkii*	Pomacentridae	NA	Not Assessed	Vulnerable	Yes	Yes	No	
106	*Amphiprion ocellaris*	Pomacentridae	False clown anemonefish	Not Assessed	Vulnerable	Yes	Yes	No	
107	*Dischistodus fasciatus*	Pomacentridae	Yellow-banded damsel	Not Assessed	Not Listed	No	Yes	No	
108	*Dischistodus prosopotaenia*	Pomacentridae	Honey-head damsel	Not Assessed	Not Listed	No	Yes	Yes	Marine
109	*Ilisha elongata*	Pristigastridae	Elongate ilisha shad	Least Concern	Not Listed	No	Yes	No	
110	*Psettodes erumei*	Psettodidae	Indian halibut	Not Assessed	Not Listed	No	Yes	No	
111	*Siganus canaliculatus*	Siganidae	White-spotted rabbitfish	Least Concern	Not Listed	No	Yes	Yes	Marine
112	*Siganus javus*	Siganidae	Streaked rabbitfish	NA	NA	NA	Yes	Yes	Marine
113	*Sillaginidae sp.*	Sillaginidae	NA	Least Concern	Not Listed	No	Yes	Yes	Marine
114	*Brachirus orientalis*	Soleidae	Oriental sole	Not Assessed	Not Listed	No	Yes	No	
115	*Solea ovata*	Soleidae	Ovate sole	Least Concern	Not Listed	No	Yes	No	
116	*Zebrias zebra*	Soleidae	Zebra sole	Not Assessed	Not Listed	No	Yes	No	
117	*Pardachirus pavoninus*	Soleidae	Peacock sole	Least Concern	Not Listed	No	Yes	No	
118	*Monopterus albus*	Synbranchidae	Sunda swamp-eel	Least Concern	Not Listed	No	Yes	Yes	Freshwater
119	*Ophisternon bengalense*	Synbranchidae	Mangrove swamp eel	Least Concern	Not Listed	No	Yes	No	
120	*Hippichthys cyanospilos*	Syngnathidae	Blue-speckled pipefish	Least Concern	Not Listed	No	Yes	No	
121	*Ichthyocampus carce*	Syngnathidae	Freshwater pipefish / mangrove pipefish	Least Concern	Not Listed	No	Yes	No	
122	*Syngnathoides biaculeatus*	Syngnathidae	NA	Least Concern	Not Listed	No	Yes	No	
123	*Hippocampus kuda*	Syngnathidae	Estuarine seahorse	Vulnerable	Vulnerable	Yes	Yes	Yes	Marine
124	*Pelates quadrilineatus*	Terapontidae	Tumpeter perch	Not Assessed	Not Listed	No	Yes	Yes	Marine
125	*Terapon jarbua*	Terapontidae	NA	Least Concern	Not Listed	No	Yes	Yes	Marine
126	*Terapon theraps*	Terapontidae	NA	Least Concern	Not Listed	No	Yes	No	
127	*Tetraodon nigroviridis*	Tetraodonitdae	Spotted green puffer	Not Assessed	Not Listed	No	Yes	No	
128	*Paracentropogon longispinis*	Tetrarogidae	Long-spined waspfish / longspine scorpionfish	Not Assessed	Not Listed	No	Yes	Yes	Marine
129	*Toxotes chatareus*	Toxotidae	Spotted archerfish	Not Assessed	Not Listed	No	Yes	No	
130	*Toxotes jaculatrix*	Toxotidae	Banded archerfish	Least Concern	Not Listed	No	Yes	No	
131	*Zenarchopterus buffonis*	Zenarchopteridae	NA	Not Assessed	Not Listed	No	Yes	Yes	Mix

Molluscs

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Probable?	Recorded?	Remarks
1	*Acar plicata*	Bivalve	Arcidae	NA	Not Assessed	Not Listed	No	Yes	No	
2	*Anadara antiquata*	Bivalve	Arcidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
3	*Barbatia amygdalumtostum*	Bivalve	Arcidae	NA	Not Assessed	Not Listed	No	Yes	No	
4	*Barbatia sp.*	Bivalve	Arcidae	NA	NA	NA	No	Yes	Yes	
5	*Tegillarca granosa*	Bivalve	Arcidae	Blood cockle	Not Assessed	Not Listed	No	Yes	No	
6	*Fragum unedo*	Bivalve	Cardiidae	Strawberry cockle	Not Assessed	Not Listed	No	Yes	Yes	
7	*Vasticardium flavum*	Bivalve	Cardiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
8	*Vasticardium pectiniforme*	Bivalve	Cardiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
9	*Corbula ovalina*	Bivalve	Corbulidae	NA	Not Assessed	Not Listed	No	Yes	No	
10	*Geloina coaxans*	Bivalve	Cyrenidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
11	*Geloina expansa*	Bivalve	Cyrenidae	Giant mud clam, lokan	Not Assessed	Not Listed	No	Yes	Yes	
12	*Isognomon ephippium*	Bivalve	Isognomonidae	Mangrove saddle oyster	Not Assessed	Not Listed	No	Yes	No	
13	*Isognomon isognomum*	Bivalve	Isognomonidae	NA	Not Assessed	Not Listed	No	Yes	No	
14	*Isognomon legumen*	Bivalve	Isognomonidae	NA	Not Assessed	Not Listed	No	Yes	No	
15	*Isognomon sp.*	Bivalve	Isognomonidae	NA	NA	NA	No	Yes	Yes	
16	*Anodontia edentula*	Bivalve	Lucinidae	NA	Not Assessed	Not Listed	No	Yes	No	
17	*Austriella corrugata*	Bivalve	Lucinidae	Corrugated lucine	Not Assessed	Not Listed	No	Yes	No	
18	*Caecella horsfieldi*	Bivalve	Lucinidae	NA	Not Assessed	Not Listed	No	Yes	No	
19	*Pegophysema philippiana*	Bivalve	Lucinidae	NA	Not Assessed	Not Listed	No	Yes	No	
20	*Lutraria rhynchaena*	Bivalve	Mactridae	NA	Not Assessed	Not Listed	No	Yes	No	
21	*Mactra grandis*	Bivalve	Mactridae	Plain mactra	Not Assessed	Not Listed	No	Yes	No	
22	*Mactridae sp.*	Bivalve	Mactridae	NA	NA	NA	No	Yes	Yes	
23	*Vulsella vulsella*	Bivalve	Malleidae	Sponge finger	Not Assessed	Not Listed	No	Yes	No	
24	*Leiosolenus malaccanus*	Bivalve	Mytilidae	NA	Not Assessed	Not Listed	No	Yes	No	
25	*Modiolus sp.*	Bivalve	Mytilidae	NA	NA	NA	No	Yes	Yes	Usually require in-depth analysis (would be challenging to id to species level accurately just by the shell). Same for the family Isognomonidae as well (used to be part of Ostreidae).
26	*Ostreidae sp.*	Bivalve	Ostreidae	NA	NA	NA	No	Yes	Yes	Usually require in-depth analysis (would be challenging to id to species level accurately just by the shell). Same for the family Isognomonidae as well (used to be part of Ostreidae).
27	*Decatopecten radula*	Bivalve	Pectinidae	Scallop	Not Assessed	Not Listed	No	Yes	No	
28	*Atrina pectinata*	Bivalve	Pinnidae	Fan shell	Not Assessed	Not Listed	No	Yes	Yes	
29	*Pinna bicolor*	Bivalve	Pinnidae	Two-colloured fan shell	Not Assessed	Vulnerable	Yes	Yes	No	
30	*Placuna ephippium*	Bivalve	Placunidae	Saddle oyster	Not Assessed	Not Listed	No	Yes	No	
31	*Placuna placenta*	Bivalve	Placunidae	Windowpane oyster	Not Assessed	Not Listed	No	Yes	No	
32	*Plicatula australis*	Bivalve	Plicatulidae	Southern kitten paw	Not Assessed	Not Listed	No	Yes	No	
33	*Psamobilidae sp.*	Bivalve	Psamobiidae	NA	NA	NA	No	Yes	Yes	Psamobiidae isnt a well recognised family in SG (not uncommon for SG because gastropods and bivalves are quite under studied here unfortunately).
34	*Semele carnicolor*	Bivalve	Semelidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
35	*Solen sp.*	Bivalve	Solenidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
36	*Macalia bruguieri*	Bivalve	Tellinidae	NA	Not Assessed	Not Listed	No	Yes	No	
37	*Scutarcopagia linguafelis*	Bivalve	Tellinidae	Cat's tongue tellin	Not Assessed	Not Listed	No	Yes	No	
38	*Tellinella cruciata*	Bivalve	Tellinidae	NA	Not Assessed	Not Listed	No	Yes	No	
39	*Anomalodiscus squamosus*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
40	*cf. Meretrix sp.*	Bivalve	Veneridae	NA	NA	NA	No	Yes	Yes	
41	*Circe scripta*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
42	*Circe tumefacta*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	No	
43	*Circe undatina*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
44	*Gafrarium dispar*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
45	*Gafrarium divaricatum*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
46	*Gafrarium pectinatum*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
47	*Gafrarium pectinatum & tumidum synomised*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	Taxonomically, they'll be considered as 1 species. But perhaps few years down the road, if people research on them and find more evidence of them being 2 separate species, then it'll be separated again.
48	*Globivenus toreuma*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
49	*Marcia hiantina*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	No	
50	*Marcia japonica*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	No	
51	*Tapes literatus*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
52	*Venerupis aspera*	Bivalve	Veneridae	NA	Not Assessed	Not Listed	No	Yes	Yes	
53	*Idiosepius sp.*	Cephalopod	Idiosepiidae	Pygmy squid	Not Assessed	Not Listed	No	Yes	No	
54	*Sepioteuthis lessoniana*	Cephalopod	Loliginidae	Bigfin reef squid, oval squid	Not Assessed	Not Listed	No	Yes	Yes	
55	*Octopodidae sp.*	Cephalopod	Octopodidae	Octopus	Not Assessed	Not Listed	No	Yes	No	
56	*Subulinidae sp.*	Gastropoda	Achatinidae	NA	NA	NA	No	No	Yes	No similar species found. Noteworthy due to restricted habitat freshwater habitats.
57	*Phyllaplysia sp.*	Gastropoda	Aplysiidae	Seagrass sea hare	Not Assessed	Not Listed	No	Yes	No	
58	*Sphaerassiminea miniata*	Gastropoda	Assimineidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
59	*Batillaria zonalis*	Gastropoda	Batillariidae	Zoned horned shell	Not Assessed	Not Listed	No	Yes	No	
60	*Bornella stellifer*	Gastropoda	Bornellidae	Starry bornella nudibranch	Not Assessed	Not Listed	No	Yes	Yes	
61	*Engina armillata*	Gastropoda	Buccinidae	NA	Not Assessed	Not Listed	No	Yes	No	
62	*Pollia fumosa*	Gastropoda	Buccinidae	Smoky goblet	Not Assessed	Not Listed	No	Yes	No	
63	*Cerithium coralium*	Gastropoda	Cerithiidae	NA	Least Concern	Not Listed	No	Yes	Yes	
64	*Cerithium torresi*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	No	
65	*Cerithium traillii*	Gastropoda	Cerithiidae	Traill's cerith	Not Assessed	Endangered	Yes	Yes	No	
66	*Cerithium zonatum*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
67	*Clypeomorus batillariaeformis*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	No	
68	*Clypeomorus bifasciata*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
69	*Clypeomorus pellucida*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
70	*Rhinoclavis aspera*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	No	
71	*Rhinoclavis sinensis*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	No	
72	*Rhinoclavis vertagus*	Gastropoda	Cerithiidae	NA	Not Assessed	Not Listed	No	Yes	No	
73	*Euchelus asper*	Gastropoda	Chilodontaidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
74	*Euplica scripta*	Gastropoda	Columbellidae	Lettered dove shell	Not Assessed	Not Listed	No	Yes	Yes	
75	*Parametaria epamella*	Gastropoda	Columbellidae	Cone-shaped dove shell	Not Assessed	Not Listed	No	Yes	No	
76	*Pardalinops testudinaria*	Gastropoda	Columbellidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
77	*Pictocolumbella ocellata*	Gastropoda	Columbellidae	Lightning dove shell	Not Assessed	Not Listed	No	Yes	Yes	
78	*Pseudanachis basendowi*	Gastropoda	Columbellidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
79	*Vexillum gruneri*	Gastropoda	Costellariidae	NA	Not Assessed	Not Listed	NA	Yes	No	
80	*Cypraea errones*	Gastropoda	Cypraeidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
81	*Ectogavena quadrimaculata*	Gastropoda	Cypraeidae	NA	Not Assessed	Not Listed	No	Yes	No	
82	*Erronea cylindrica*	Gastropoda	Cypraeidae	NA	Not Assessed	Not Listed	No	Yes	No	
83	*Erronea errones*	Gastropoda	Cypraeidae	Wandering cowrie	Not Assessed	Not Listed	No	Yes	No	
84	*Erronea onyx*	Gastropoda	Cypraeidae	Onyx cowrie	Not Assessed	Not Listed	No	Yes	Yes	
85	*Erronea ovum*	Gastropoda	Cypraeidae	Egg cowrie	Not Assessed	Not Listed	No	Yes	Yes	
86	*Mauritia arabica*	Gastropoda	Cypraeidae	NA	Not Assessed	Vulnerable	Yes	Yes	Yes	
87	*Tayuva lilacina*	Gastropoda	Discodoridae	NA	NA	NA	NA	Yes	Yes	
88	*Cassidula aurisfelis*	Gastropoda	Ellobiidae	NA	Least Concern	Not Listed	No	Yes	Yes	
89	*Cassidula nucleus*	Gastropoda	Ellobiidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
90	*Cassidula nucleus*	Gastropoda	Ellobiidae	Banded mangrove ear snail	Not Assessed	Not Listed	NA	Yes	No	
91	*Cassidula sowerbyana*	Gastropoda	Ellobiidae	NA	Not Assessed	Not Listed	No	Yes	No	
92	*Ellobium aurisjudae*	Gastropoda	Ellobiidae	NA	Least Concern	Not Listed	No	Yes	No	
93	*Laemodonta punctatostriata*	Gastropoda	Ellobiidae	NA	Not Assessed	Not Listed	No	Yes	No	
94	*Laemodonta siamensis*	Gastropoda	Ellobiidae	NA	Not Assessed	Not Listed	No	Yes	No	
95	*Melampus pulchellus*	Gastropoda	Ellobiidae	NA	Not Assessed	Not Listed	No	Yes	No	
96	*Elysia ornata*	Gastropoda	Elysiidae	Ornate elysia / Ornate leaf slug	Not Assessed	Not Listed	No	Yes	Yes	
97	*Epitonium sp.*	Gastropoda	Epitoniidae	NA	NA	NA	No	Yes	Yes	
98	*Costasiella paweli*	Gastropoda	Limapontiidae	NA	Not Assessed	Not Listed	No	Yes	No	
99	*Echinolittorina malaccana*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	No	
100	*Echinolittorina melanacme*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	No	
101	*Littoraria ardouiniana*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	No	
102	*Littoraria articulata*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
103	*Littoraria carinifera*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
104	*Littoraria conica*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
105	*Littoraria intermedia*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
106	*Littoraria lutea*	Gastropoda	Littorinidae	Littoral	Not Assessed	Not Listed	No	Yes	Yes	
107	*Littoraria melanostoma*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
108	*Littoraria pallescens*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
109	*Littoraria strigata*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	No	
110	*Littoraria vespacea*	Gastropoda	Littorinidae	NA	Not Assessed	Not Listed	No	Yes	No	
111	*Volegalea cochlidium*	Gastropoda	Melongenidae	Spiral melongena	Not Assessed	Not Listed	No	Yes	Yes	
112	*Mitra proscissa*	Gastropoda	Mitridae	NA	Not Assessed	Not Listed	No	Yes	No	
113	*Pseudonebularia proscissa*	Gastropoda	Mitridae	NA	Not Assessed	Not Listed	No	Yes	No	
114	*Pterygia dactylus*	Gastropoda	Mitridae	NA	Not Assessed	Not Listed	No	Yes	No	
115	*Chicoreus capucinus*	Gastropoda	Muricidae	Mangrove murex	Not Assessed	Not Listed	No	Yes	Yes	
116	*Drupella margariticola*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
117	*Drupella rugosa*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
118	*Ergalatax contracta*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	No	
119	*Indothais cf. javanica*	Gastropoda	Muricidae	NA	NA	NA	No	Yes	Yes	
120	*Indothais gradata*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	No	
121	*Mancinella echinata*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
122	*Morula fusca*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	No	
123	*Morula musiva*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	No	
124	*Murex trapa*	Gastropoda	Muricidae	NA	Not Assessed	Vulnerable	Yes	Yes	Yes	Dead specimen; likely to have drifted from somewhere else. However, species is expected.
125	*Orania bimucronata*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
126	*Orania cf. bimucronata*	Gastropoda	Muricidae	NA	NA	NA	No	Yes	Yes	
127	*Reishia bituberculata*	Gastropoda	Muricidae	Bituberculate rock shell	Not Assessed	Not Listed	No	Yes	Yes	
128	*Reishia clavigera*	Gastropoda	Muricidae	NA	Least Concern	Not Listed	No	Yes	No	
129	*Reishia jubilaea*	Gastropoda	Muricidae	NA	Least Concern	Not Listed	No	Yes	No	
130	*Semicinula fusca*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
131	*Semicinula municoides*	Gastropoda	Muricidae	NA	Not Assessed	Not Listed	No	Yes	No	
132	*Nassarius crenoliratus*	Gastropoda	Nassariidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
133	*Nassarius echinatus*	Gastropoda	Nassariidae	Prickly whelk	Not Assessed	Not Listed	No	Yes	Yes	
134	*Nassarius jacksonianus*	Gastropoda	Nassariidae	Mud whelk	Not Assessed	Not Listed	No	Yes	No	
135	*Nassarius limnaeiformis*	Gastropoda	Nassariidae	NA	Not Assessed	Not Listed	No	Yes	No	
136	*Nassarius livescens*	Gastropoda	Nassariidae	Common whelk	Not Assessed	Not Listed	No	Yes	Yes	
137	*Nassarius nodifer*	Gastropoda	Nassariidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
138	*Nassarius olivaceus*	Gastropoda	Nassariidae	Olive whelk	Not Assessed	Not Listed	No	Yes	No	
139	*Nassarius pullus*	Gastropoda	Nassariidae	Dog whelk	Not Assessed	Not Listed	No	Yes	No	
140	*Reticunassa paupera*	Gastropoda	Nassariidae	NA	Not Assessed	Not Listed	No	Yes	No	
141	*Natica gualteriana*	Gastropoda	Naticidae	NA	Not Assessed	Not Listed	No	Yes	No	
142	*Naticarius zonalis*	Gastropoda	Naticidae	Pink moon snail	Not Assessed	Not Listed	No	Yes	No	
143	*Naticidae sp.*	Gastropoda	Naticidae	NA	NA	NA	No	Yes	Yes	
144	*Notocochlis tigrina*	Gastropoda	Naticidae	Tiger moon snail	Not Assessed	Not Listed	No	Yes	No	
145	*Polinices mammilla*	Gastropoda	Naticidae	Oval moon snail	Not Assessed	Not Listed	No	Yes	No	
146	*Polinices peselephanti*	Gastropoda	Naticidae	NA	Not Assessed	Not Listed	No	Yes	No	
147	*Tanea lineata*	Gastropoda	Naticidae	Lined moon snail	Not Assessed	Not Listed	No	Yes	No	
148	*Clithon faba*	Gastropoda	Neritidae	NA	Least Concern	Not Listed	No	Yes	No	
149	*Clithon oualaniensis*	Gastropoda	Neritidae	NA	Least Concern	Vulnerable	Yes	Yes	Yes	
150	*Nerita albicilla*	Gastropoda	Neritidae	Blotched nerite	Not Assessed	Not Listed	No	Yes	No	
151	*Nerita balteata*	Gastropoda	Neritidae	Lined nerite	Least Concern	Not Listed	No	Yes	Yes	
152	*Nerita chamaeleon*	Gastropoda	Neritidae	Chameleon nerite	Not Assessed	Not Listed	No	Yes	Yes	
153	*Nerita histrio*	Gastropoda	Neritidae	Scaled nerite	Not Assessed	Not Listed	No	Yes	Yes	
154	*Nerita lineata*	Gastropoda	Neritidae	Common nerite	Not Assessed	Not Listed	No	Yes	No	
155	*Nerita planospira*	Gastropoda	Neritidae	Flat-spire nerite	Not Assessed	Vulnerable	Yes	Yes	Yes	
156	*Nerita polita*	Gastropoda	Neritidae	Polished nerite	Not Assessed	Not Listed	No	Yes	No	
157	*Nerita undata*	Gastropoda	Neritidae	Waved nerite	Not Assessed	Not Listed	No	Yes	Yes	
158	*Neritina cornucopia*	Gastropoda	Neritidae	Black-mouth nerite	Not Assessed	Not Listed	No	Yes	Yes	
159	*Onchidium sp.*	Gastropoda	Onchidium	NA	NA	NA	No	Yes	Yes	Hard to ID morphologically, so all species will be only identified to family.
160	*Diminovula alabaster*	Gastropoda	Ovulidae	NA	Not Assessed	Not Listed	No	Yes	Yes	

Molluscs

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Probable?	Recorded?	Remarks
161	*Ovulidae sp.*	Gastropoda	Ovulidae	NA	NA	NA	No	Yes	Yes	False cowrie; interesting find! Usually found attached to sea fans and soft corals.
162	*Planaxis sulcatus*	Gastropoda	Planaxidae	Planaxis snail	Not Assessed	Not Listed	No	Yes	No	
163	*Cerithidea djadjarensis*	Gastropoda	Potamididae	NA	Not Assessed	Not Listed	No	Yes	No	
164	*Cerithidea obtusa*	Gastropoda	Potamididae	Chut-chut	Not Assessed	Not Listed	No	Yes	Yes	
165	*Cerithidea quoyii*	Gastropoda	Potamididae	Quadrate horn shell	Not Assessed	Not Listed	No	Yes	No	
166	*Pirenella alata*	Gastropoda	Potamididae	NA	Not Assessed	Not Listed	No	Yes	No	
167	*Pirenella cingulata*	Gastropoda	Potamididae	Girdled horn snail	Not Assessed	Not Listed	No	Yes	No	
168	*Pirenella microptera*	Gastropoda	Potamididae	NA	Not Assessed	Not Listed	No	Yes	Yes	
169	*Telescopium telescopium*	Gastropoda	Potamididae	Telescope snail	Least Concern	Not Listed	No	Yes	No	
170	*Terebralia sulcata*	Gastropoda	Potamididae	Mud creeper	Not Assessed	Not Listed	No	Yes	Yes	
171	*Otopleura auriscati*	Gastropoda	Pyramidellidae	Cat's ear otopleura	Not Assessed	Not Listed	No	Yes	No	
172	*Gyrineum natator*	Gastropoda	Ranellidae	Tuberculate gyre-triton	Not Assessed	Not Listed	No	Yes	Yes	
173	*Canarium urceus*	Gastropoda	Strombidae	Black-lipped conch	Not Assessed	Vulnerable	Yes	Yes	Yes	
174	*Strombus turturella*	Gastropoda	Strombidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
175	*Chrysostoma paradoxum*	Gastropoda	Trochidae	NA	Not Assessed	Not Listed	No	Yes	No	
176	*Euchelus asper*	Gastropoda	Trochidae	NA	Not Assessed	Not Listed	No	Yes	No	
177	*Euchelus atratus*	Gastropoda	Trochidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
178	*Monodonta labio*	Gastropoda	Trochidae	Maculated top shell	Not Assessed	Not Listed	No	Yes	Yes	
179	*Trochus maculatus*	Gastropoda	Trochidae	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	
180	*Trochus niloticus*	Gastropoda	Trochidae	NA	Not Assessed	Vulnerable	Yes	Yes	No	
181	*Umbonium vestiarium*	Gastropoda	Trochidae	Button snail	Not Assessed	Vulnerable	Yes	Yes	Yes	
182	*Astralium calcar*	Gastropoda	Turbinidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
183	*Turbo bruneus*	Gastropoda	Turbinidae	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	
184	*Turbo intercostalis*	Gastropoda	Turbinidae	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	
185	*Cymbiola nobilis*	Gastropoda	Volutidae	Noble volute	Not Assessed	Vulnerable	Yes	Yes	No	
186	*Acanthopleura gemmata*	Polyplacophora	Chitonidae	Jewelled chiton	Not Assessed	Endangered	Yes	Yes	Yes	
-	*Anadara sp.*	Bivalve	Arcidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
-	*Cardiidae sp.*	Bivalve	Cardiidae	NA	NA	NA	No	Yes	Yes	
-	*Geloina sp.*	Bivalve	Cyrenidae	NA	NA	NA	No	Yes	Yes	
-	*Tellinidae sp.*	Bivalve	Tellinidae	NA	NA	NA	No	Yes	Yes	
-	*Gafrarium sp.*	Bivalve	Veneridae	NA	NA	NA	No	Yes	Yes	
-	*Veneridae sp.*	Bivalve	Veneridae	NA	NA	NA	No	Yes	Yes	
-	*Cerithium sp.*	Gastropoda	Cerithiidae	NA	NA	NA	No	Yes	Yes	
-	*Clypeomorus cf. bifasciata*	Gastropoda	Cerithiidae	NA	NA	NA	No	Yes	Yes	
-	*Clypeomorus sp.*	Gastropoda	Cerithiidae	NA	NA	NA	No	Yes	Yes	
-	*Corbulidae sp.*	Gastropoda	Columbellidae	NA	NA	NA	No	Yes	Yes	
-	*Vexillum sp.*	Gastropoda	Costellariidae	NA	NA	NA	No	Yes	Yes	
-	*Ellobium cf. aurisjudae*	Gastropoda	Ellobiidae	NA	NA	NA	NA	Yes	Yes	Possible to be Ellobium scheepmakeri (locally VU).
-	*Littoraria sp.*	Gastropoda	Littorinidae	NA	NA	NA	No	Yes	Yes	
-	*cf. Drupella margariticola*	Gastropoda	Muricidae	NA	NA	NA	NA	Yes	Yes	
-	*Muricidae sp.*	Gastropoda	Muricidae	NA	NA	NA	No	Yes	Yes	
-	*Orania sp.*	Gastropoda	Muricidae	NA	NA	NA	No	Yes	Yes	
-	*Nassarius sp.*	Gastropoda	Nassariidae	NA	NA	NA	No	Yes	Yes	
-	*Polinices sp.*	Gastropoda	Naticidae	NA	NA	NA	No	Yes	Yes	
-	*Pirenella sp.*	Gastropoda	Potamididae	NA	NA	NA	No	Yes	Yes	
-	*Potamididae sp.*	Gastropoda	Potamididae	NA	NA	NA	No	Yes	Yes	
-	*Strombidae sp.*	Gastropoda	Strombidae	NA	NA	NA	No	Yes	Yes	Present of Canarium urceus and Lambis lambis (both locally VU).
-	*Trochidae sp.*	Gastropoda	Trochidae	NA	NA	NA	No	Yes	Yes	Trochus niloticus is locally VU.

Crustaceans Horseshoe Crabs

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Probable?	Recorded?	Remarks
1	*Coenobita violascens*	Anomura (Hermit crabs & others)	Coenobitidae	Land hermit crab	Not Assessed	Vulnerable	Yes	Yes	Yes	
2	*Clibanarius infraspinatus*	Anomura (Hermit crabs & others)	Diogenidae	Orange striped hermit crab	Not Assessed	Not Listed	No	Yes	Yes	
3	*Clibanarius longitarsus*	Anomura (Hermit crabs & others)	Diogenidae	Blue striped hermit crab	Not Assessed	Not Listed	No	Yes	No	
4	*Diogenes sp.*	Anomura (Hermit crabs & others)	Diogenidae	Tidal hermit crab	Not Assessed	Not Listed	No	Yes	Yes	Hard to ID morphologically with the limited information, so all species will be only identified to family.
5	*Petrolisthes kranjiensis*	Anomura (Hermit crabs & others)	Porcellanidae	NA	Not Assessed	Not Listed	No	Yes	No	
6	*Baruna minuta*	Brachyura (True crabs)	Camptandriidae	Mouthface crab	Not Assessed	Not Listed	No	Yes	No	
7	*Baruna trigranulum*	Brachyura (True crabs)	Camptandriidae	NA	Not Assessed	Not Listed	No	Yes	No	
8	*Neodorippe callida*	Brachyura (True crabs)	Dorippidae	Leaf-porter crab	Not Assessed	Not Listed	No	Yes	No	
9	*Scopimera sp.*	Brachyura (True crabs)	Dotillidae	Sand bubbler crab	Not Assessed	Not Listed	No	Yes	Yes	
10	*Ilyoplax longicarpus*	Brachyura (True crabs)	Dotillidae	NA	Not Assessed	Not Listed	No	Yes	No	
11	*Cryptodromia pileifera*	Brachyura (True crabs)	Dromiidae	Sponge crab	Not Assessed	Not Listed	No	Yes	No	
12	*Eriphia ferox*	Brachyura (True crabs)	Eriphidae	Ferocious reef crab	Not Assessed	Vulnerable	Yes	Yes	Yes	
13	*Metopograpsus latifrons*	Brachyura (True crabs)	Grapsidae	NA	Not Assessed	Not Listed	No	Yes	No	
14	*Metopograpsus quadridentatus*	Brachyura (True crabs)	Grapsidae	NA	Not Assessed	Not Listed	No	Yes	No	
15	*Metopograpsus messor*	Brachyura (True crabs)	Grapsidae	NA	Not Assessed	Not Listed	No	Yes	No	
16	*Metopograpsus oceanicus*	Brachyura (True crabs)	Grapsidae	NA	Not Assessed	Not Listed	No	Yes	No	
17	*Ashtoret lunaris*	Brachyura (True crabs)	Matutidae	Yellow moon crab	Not Assessed	Not Listed	No	Yes	Yes	
18	*Myomenippe hardwickii*	Brachyura (True crabs)	Menippidae	Thunder crab	Not Assessed	Not Listed	No	Yes	Yes	
19	*Ocypode ceratophthalmus*	Brachyura (True crabs)	Ocypodidae	Horn-eyed ghost crab	Not Assessed	Not Listed	No	Yes	Yes	
20	*Gelasimus tetragonon*	Brachyura (True crabs)	Ocypodidae	Tetragonal fiddler crab	Not Assessed	Not Listed	No	Yes	Yes	
21	*Gelasimus vocans*	Brachyura (True crabs)	Ocypodidae	Orange fiddler crab	Not Assessed	Not Listed	No	Yes	Yes	
22	*Ozius guttatus*	Brachyura (True crabs)	Oziidae	Spotted-belly forceps crab	Not Assessed	Not Listed	No	Yes	Yes	
23	*Pilumnus vespertilio*	Brachyura (True crabs)	Pilumnidae	Common hairy crab	Not Assessed	Not Listed	No	Yes	Yes	
24	*Benthopanope eucratoides*	Brachyura (True crabs)	Pilumnidae	NA	Not Assessed	Not Listed	No	Yes	No	
25	*Heteropanope sp.*	Brachyura (True crabs)	Pilumnidae	NA	NA	NA	No	Yes	Yes	
26	*Thalamita danae*	Brachyura (True crabs)	Portunidae	Blue swimming crab	Not Assessed	Not Listed	No	Yes	Yes	
27	*Thalamita prymna*	Brachyura (True crabs)	Portunidae	Blue-spined swimming crab	Not Assessed	Not Listed	No	Yes	No	
28	*Portunus pelagicus*	Brachyura (True crabs)	Portunidae	Flower crab	Not Assessed	Not Listed	No	Yes	Yes	
29	*Thalamita sima*	Brachyura (True crabs)	Portunidae	Four-lobed swimming crab	Not Assessed	Not Listed	No	Yes	No	
30	*Scylla paramamosain*	Brachyura (True crabs)	Portunidae	Green mud crab	Not Assessed	Not Listed	No	Yes	No	
31	*Scylla olivacea*	Brachyura (True crabs)	Portunidae	Orange mud crab	Not Assessed	Not Listed	No	Yes	Yes	
32	*Thalamita crenata*	Brachyura (True crabs)	Portunidae	Powder blue-clawed swimming crab	Not Assessed	Not Listed	No	Yes	Yes	
33	*Scylla tranquebarica*	Brachyura (True crabs)	Portunidae	Purple mud crab	Not Assessed	Not Listed	No	Yes	Yes	
34	*Thalamita spinimana*	Brachyura (True crabs)	Portunidae	Red swimming crab	Not Assessed	Not Listed	No	Yes	No	
35	*Portunus cf. pelagicus*	Brachyura (True crabs)	Portunidae	Flower crab	NA	NA	No	Yes	Yes	
36	*Selatium brockii*	Brachyura (True crabs)	Sesarmidae	Mangrove tree-dwelling crab	Not Assessed	Not Listed	No	Yes	No	
37	*Episesarma singaporense*	Brachyura (True crabs)	Sesarmidae	Singapore tree climbing crab	Not Assessed	Not Listed	No	Yes	No	
38	*Episesarma versicolor*	Brachyura (True crabs)	Sesarmidae	Violet tree climbing crab	Not Assessed	Not Listed	No	Yes	No	
39	*Nanosesarma sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
40	*Clistocoeloma sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
41	*Neosesarma sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
42	*Parasesarma tutilimanum*	Brachyura (True crabs)	Sesarmidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
43	*Perisesarma sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
44	*Sesarmidae sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
45	*Metaplax elegans*	Brachyura (True crabs)	Varunidae	NA	Not Assessed	Not Listed	No	Yes	Yes	
46	*Lophozozymus pictor*	Brachyura (True crabs)	Xanthidae	Mosaic crab	Not Assessed	Endangered	Yes	Yes	No	
47	*Atergatis floridus*	Brachyura (True crabs)	Xanthidae	NA	Not Assessed	Vulnerable	Yes	Yes	No	
48	*Alpheus euphrosyne*	Caridea (Caridean shrimp)	Alpheidae	NA	Not Assessed	Not Listed	No	Yes	No	
49	*Alpheus microrhynchus*	Caridea (Caridean shrimp)	Alpheidae	NA	Not Assessed	Not Listed	No	Yes	No	
50	*Alpheus rapax*	Caridea (Caridean shrimp)	Alpheidae	NA	Not Assessed	Not Listed	No	Yes	No	
51	*Athanas japonicus*	Caridea (Caridean shrimp)	Alpheidae	NA	Not Assessed	Vulnerable	Yes	Yes	No	
52	*Athanas polymorphus*	Caridea (Caridean shrimp)	Alpheidae	NA	Not Assessed	Vulnerable	Yes	Yes	No	
53	*Palaemon sp.*	Caridea (Caridean shrimp)	Palaemonidae	Glass shrimp	NA	NA	No	Yes	Yes	
54	*Ancylocaris brevicarpalis*	Caridea (Caridean shrimp)	Palaemonidae	Peacock-tail anemone shrimp	Not Assessed	Not Listed	No	Yes	No	
55	*Periclimenes sp.*	Caridea (Caridean shrimp)	Palaemonidae	Little red-nosed shrimp	NA	NA	No	Yes	No	
56	*Penaeidae so.*	Caridea (Caridean shrimp)	Penaeidae	Blue-tailed penaeid prawn	NA	NA	No	Yes	Yes	
57	*Nikoides sibogae*	Caridea (Caridean shrimp)	Processidae	NA	Not Assessed	Not Listed	No	Yes	No	
59	*Thalassina sp.*	Gebiidea (Mud lobsters & mud shrimp)	Thalassinidae	Mud lobster	NA	Vulnerable	Yes	Yes	No	All mud lobster listed as Vulnerable.
60	*Tachypleus gigas*	Horseshoe Crab	Limulidae	Coastal horseshoe crab	Data deficient	Endangered	Yes	Yes	No	
61	*Carcinoscorpius rotundicauda*	Horseshoe Crab	Limulidae	Mangrove horseshoe crab	Data deficient	Vulnerable	Yes	Yes	Yes	
62	*Petrolisthes sp.*	Anomura (Hermit crabs & others)	Porcellanidae	NA	NA	NA	No	Yes	Yes	
63	*Camptandriidae sp.*	Brachyura (True crabs)	Camptandriidae	NA	NA	NA	No	Yes	Yes	
64	*Dromiidae sp.*	Brachyura (True crabs)	Dromiidae	NA	NA	NA	No	Yes	Yes	
65	*Metopograpsus sp.*	Brachyura (True crabs)	Grapsidae	Purple climbing crab	NA	NA	No	Yes	Yes	
66	*Portunus sp.*	Brachyura (True crabs)	Portunidae	NA	NA	NA	No	Yes	Yes	
67	*Varunidae sp.*	Brachyura (True crabs)	Varunidae	NA	NA	NA	No	Yes	Yes	
68	*Xanthidae sp.*	Brachyura (True crabs)	Xanthidae	NA	NA	NA	No	Yes	Yes	Hard to ID morphologically with the limited information, so all species will be only identified to family. Some Leptodius sp. (possibly L. exaratus) // Macromedaeus sp. // Pilodius sp.
69	*Alpheidae sp.*	Caridea (Caridean shrimp)	Alpheidae	Many-banded snapping shrimp	NA	NA	No	Yes	Yes	
-	*Dotilla sp.*	Brachyura (True crabs)	Dotillidae	NA	Not Assessed	Not Listed	No	Yes	No	
-	*Ocypodidae sp.*	Brachyura (True crabs)	Ocypodidae	Fiddler crab sp.	NA	NA	No	Yes	Yes	
-	*Scylla sp.*	Brachyura (True crabs)	Portunidae	NA	NA	NA	No	Yes	Yes	
-	*Thalamita sp.*	Brachyura (True crabs)	Portunidae	NA	NA	NA	No	Yes	Yes	
-	*Parasesarma sp.*	Brachyura (True crabs)	Sesarmidae	NA	NA	NA	No	Yes	Yes	
-	*Metaplax sp.*	Brachyura (True crabs)	Varunidae	NA	NA	NA	No	Yes	Yes	

Others

S/N	Scientific name	Taxa	Family	Common name	Global status (IUCN/CITES)	Local status	Threatened	Probable?	Recorded?	Remarks
1	*Actiniaria sp.*	Cnidarian	-	NA	NA	NA	No	Yes	Yes	Yes
2	*Oulastrea crispata*	Cnidarian	Oulastreidae	Zebra coral	Least Concern	Not Listed	No	Yes	Yes	
3	*Phymanthus sp.*	Cnidarian	Phymantidae	Frilly anemone	Not Assessed	Not Listed	No	Yes	Yes	Hard to ID morphologically with the limited information, so all species will be only identified to family. Do note that there might be more than one species recorded.
4	*Stichodactyla haddoni*	Cnidarian	Stichodactylidae	Haddon's carpet anemone	Not Assessed	Least Concern	No	Yes	Yes	
5	*Clypeasteroida sp.*	Echinoderm	-	Sand dollar sp.	NA	NA	No	Yes	Yes	Another species, not *Jacksonaster depressum* .
6	*Cryptasterina sp.*	Echinoderm	Archasteridae	Cryptic sea star	NA	NA	No	Yes	Yes	
7	*Aquilonastra coronata*	Echinoderm	Asterinidae	Crown sea star / rock star	Not Assessed	Not Listed	No	Yes	Yes	
8	*Stellaster childrenii*	Echinoderm	Goniasteridae	Galloping sea star	NA	NA	No	Yes	Yes	
9	*Jacksonaster depressum*	Echinoderm	Laganidae	Thick-edged sand dollar	Not Assessed	Vulnerable	Yes	Yes	Yes	Dead specimen; likely to have drifted from somewhere else. However, species is expected.
10	*Ophiotrichidae sp.*	Echinoderm	Ophiotrichidae	Brittle star sp.	NA	NA	No	Yes	Yes	
11	*Afrocucumis africana*	Echinoderm	Sclerodactylidae	Little African sea cucumber	Not Assessed	Not Listed	No	Yes	Yes	
12	*Nemertea sp.*	Nemertea	-	Ribbon worm sp.	NA	NA	No	Yes	Yes	
13	*Acotylea sp.*	Platyhelminthes	-	NA	NA	NA	No	Yes	Yes	
14	*Pseudoceros concinnus*	Platyhelminthes	Pseudocerotidae	Elegant lined flatworm	Not Assessed	Vulnerable	Yes	Yes	Yes	
15	*Pseudoceros indicus*	Platyhelminthes	Pseudocerotidae	Blue-dotted flatworm	Not Assessed	Vulnerable	Yes	Yes	Yes	
16	*Pseudoceros prudhoei*	Platyhelminthes	Pseudocerotidae	Silver-lining flatworm	Not Assessed	Not Listed	No	Yes	Yes	
17	*Polychaete sp.*	Polychaete	-	NA	NA	NA	No	Yes	Yes	
18	*Eurythoe complanata*	Polychaete	Amphinomidae	Reef bristleworm	Not Assessed	Not Listed	No	Yes	Yes	
19	*Polynoidae sp.*	Polychaete	*Polynoidae*	NA	NA	NA	No	Yes	Yes	
20	*Sabellidae sp.*	Polychaete	Sabellidae	NA	NA	NA	No	Yes	Yes	
21	*Sipuncula sp.*	Sipuncula	-	Peanut worm sp.	NA	NA	No	Yes	Yes	
-	*Platyhelminthes sp.*	Platyhelminthes	-	NA	NA	NA	No	Yes	Yes	

Appendix J
Faunal Survey Data

Delivering a better world

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
9/5/2021	-	-	CT	-	1.27053	103.81113	CT07	9:00:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0101.AVI	Incidental	-
9/5/2021	-	-	CT	-	1.27053	103.81113	CT07	15:25:26	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0102.AVI	Incidental	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	9:07:32	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0247.AVI	Incidental	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	12:26:34	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0248.AVI	Incidental	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	13:22:24	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0249.AVI	Incidental	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	20:43:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0250.AVI	Targeted	-
9/5/2021	-	-	CT	-	1.27053	103.81113	CT07	2:39:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0104.AVI	Targeted	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	6:17:02	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0251.AVI	Targeted	-
9/5/2021	-	-	CT	-	1.27171	103.80536	CT05	6:18:40	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0252.AVI	Targeted	-
8/5/2021	-	-	CT	-	1.27171	103.80536	CT05	8:47:40	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0242.AVI	Incidental	-
8/5/2021	-	-	CT	-	1.27171	103.80536	CT05	4:50:58	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0245.AVI	Targeted	-
8/5/2021	-	-	CT	-	1.27053	103.81113	CT07	3:52:02	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0100.AVI	Targeted	-
7/5/2021	-	-	CT	-	1.26545	103.80801	CT03	3:13:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0061.AVI	Targeted	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	6:17:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0098.AVI	Targeted	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	17:44:30	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0096.AVI	Targeted	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	6:54:26	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0099.AVI	Targeted	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	10:41:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0094.AVI	Incidental	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	10:42:36	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0095.AVI	Incidental	-
7/5/2021	-	-	CT	-	1.27053	103.81113	CT07	6:16:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0097.AVI	Targeted	-
6/5/2021	-	-	CT	-	1.27053	103.81113	CT07	21:33:28	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0092.AVI	Incidental	-
6/5/2021	-	-	CT	-	1.27053	103.81113	CT07	20:14:14	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0090.AVI	Targeted	-
6/5/2021	-	-	CT	-	1.27053	103.81113	CT07	1:16:24	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
5/5/2021	-	-	CT	-	1.26545	103.80801	CT03	13:09:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
5/5/2021	-	-	CT	-	1.27053	103.81113	CT07	11:13:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0086.AVI	Targeted	-
5/5/2021	-	-	CT	-	1.27053	103.81113	CT07	5:02:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0087.AVI	Targeted	-
4/5/2021	-	-	CT	-	1.26545	103.80801	CT03	14:54:56	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
4/5/2021	-	-	CT	-	1.26545	103.80801	CT03	20:43:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
4/5/2021	-	-	CT	-	1.27053	103.81113	CT07	11:37:54	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0085.AVI	Targeted	-
4/5/2021	-	-	CT	-	1.27171	103.80536	CT05	0:42:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0237.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.26545	103.80801	CT03	8:14:04	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.26545	103.80801	CT03	8:14:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0055.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.26545	103.80801	CT03	10:53:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0056.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.26545	103.80801	CT03	10:54:02	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0057.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	10:54:56	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	13:02:00	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0080.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	10:57:40	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0079.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	14:33:48	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0081.AVI	Incidental	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	15:29:06	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0082.AVI	Incidental	-
3/5/2021	-	-	CT	-	1.27171	103.80536	CT05	20:02:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0235.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	2:38:46	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
3/5/2021	-	-	CT	-	1.27053	103.81113	CT07	6:02:30	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
2/5/2021	-	-	CT	-	1.26545	103.80801	CT03	7:20:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0053.AVI	Targeted	-
2/5/2021	-	-	CT	-	1.26903	103.80488	CT08	17:08:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
2/5/2021	-	-	CT	-	1.27053	103.80536	CT05	0:25:18	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0229.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26545	103.80801	CT03	7:39:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0052.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26545	103.80801	CT03	5:22:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0049.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26545	103.80801	CT03	5:25:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0050.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26545	103.80801	CT03	5:25:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0051.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26903	103.80488	CT08	8:22:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0013.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26903	103.80488	CT08	9:22:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0014.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.26903	103.80488	CT08	11:08:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0015.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.26903	103.80488	CT08	19:37:22	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0016.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	7:33:32	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0076.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	8:57:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0072.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	14:57:30	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0073.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	14:58:00	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0074.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	7:46:22	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0077.AVI	Incidental	-
1/5/2021	-	-	CT	-	1.27171	103.80536	CT05	5:39:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0225.AVI	Targeted	-
1/5/2021	-	-	CT	-	1.27053	103.81113	CT07	21:00:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0075.AVI	Targeted	-
30/4/2021	-	-	CT	-	1.26903	103.80488	CT08	9:09:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
30/4/2021	-	-	CT	-	1.27053	103.81113	CT07	17:51:00	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0071.AVI	Targeted	-
30/4/2021	-	-	CT	-	1.27053	103.81113	CT07	13:59:08	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0070.AVI	Incidental	-
30/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:12:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0223.AVI	Targeted	-
30/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:28:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0224.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	22:18:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0066.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	2:23:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0067.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	2:25:04	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0069.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	13:24:40	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0062.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27171	103.80536	CT05	18:49:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0219.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27171	103.80536	CT05	19:12:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0221.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	19:27:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0063.AVI	Targeted	-
29/4/2021	-	-	CT	-	1.27053	103.81113	CT07	22:17:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0065.AVI	Targeted	-
28/4/2021	-	-	CT	-	1.27053	103.81113	CT07	2:17:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0059.AVI	Targeted	-
28/4/2021	-	-	CT	-	1.27053	103.81113	CT07	6:29:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0060.AVI	Targeted	-
28/4/2021	-	-	CT	-	1.27053	103.81113	CT07	8:59:36	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0058.AVI	Incidental	-
28/4/2021	-	-	CT	-	1.27171	103.80536	CT05	16:58:00	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0212.AVI	Targeted	-
28/4/2021	-	-	CT	-	1.27053	103.81113	CT07	6:29:48	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0061.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.26903	103.80488	CT08	6:36:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0011.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27053	103.81113	CT07	5:23:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	14:02:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0198.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	1:13:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0201.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:41:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0202.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:41:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0203.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:41:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0204.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:42:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0205.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:42:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0206.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:42:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0207.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:43:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0208.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	15:53:46	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0199.AVI	Incidental	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	19:10:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0200.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:43:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0209.AVI	Targeted	-
27/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:44:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0210.AVI	Targeted	-
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	12:31:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0053.AVI	Incidental	-
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	18:42:56	Bird	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen	IMG_0054.AVI	Incidental	-
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	3:27:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0055.AVI	Targeted	-
26/4/2021	-	-	CT	-	1.27171	103.80536	CT05	7:34:40	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0196.AVI	Incidental	-
26/4/2021	-	-	CT	-	1.27171	103.80536	CT05	7:47:24	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0197.AVI	Incidental	-
26/4/2021	-	-	CT	-	1.27171	103.80536	CT05	29:25:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0194.AVI	Targeted	-
26/4/2021	-	-	CT	-	1.27171	103.80536	CT05	2:18:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0195.AVI	Targeted	-
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	12:30:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0051.AVI	Incidental	-
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	12:30:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	6	Seen	IMG_0050.AVI	Incidental	-
2-Feb-21	-	-	Terrestrial	SH_2818	1.26849	103.81206	-	956	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen	SH_5985-5997	Incidental (flora)	
26/4/2021	-	-	CT	-	1.27053	103.81113	CT07	12:31:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	6	Seen	IMG_0052.AVI	Incidental	-
2-Feb-21	-	-	Terrestrial	SH_2818	1.26849	103.81206	-	957	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	5	Seen	SH_5985-5997	Incidental (flora)	
3-Feb-21	-	-	Terrestrial	SH_2927	1.264660964	103.805182	-	1045	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen	SH_6022	Incidental (flora)	
4-Feb-21	1	T1	Terrestrial	XT985	1.262778975	103.805307	-	906	Butterfly	*Nacaduba kurava nemana*	Transparent sixline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Resident	1	Seen	CT6420	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4070	1.262996988	103.805328	-	854	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4069	1.263262024	103.805264	-	852	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4068	1.263437038	103.805235	-	851	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT986	1.263619009	103.805123	-	910	Reptile	*Lepidodactylus lugubris*	Mourning gecko	Not Assessed	Not Assessed	No	Native	1	Seen	CT6422	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4067	1.263645999	103.805158	-	850	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4066	1.263846997	103.805154	-	849	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4066	1.263846997	103.805154	-	849	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4066	1.263847	103.805154	-	849	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4066	1.263847	103.805154	-	849	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4065	1.264013965	103.804778	-	848	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	6416	Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
4-Feb-21	1	T1	Terrestrial	XT987	1.264059981	103.804725	-	915	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	XT987	1.264059981	103.804725	-	915	Butterfly	*Hasora chromus chromus*	Common banded awl	Not Assessed	Not Assessed	No	Resident	1	Seen	CT6424	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4064	1.264068028	103.804483	-	846	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4064	1.264068028	103.804483	-	846	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4063	1.264317976	103.80439	-	845	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4062	1.264556022	103.804457	-	844	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4061	1.265019039	103.804468	-	842	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4061	1.265019039	103.804468	-	842	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	-	-	Terrestrial	CM	1.265245	103.806203	-	1000	Bird	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Introduced	1	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	XT988	1.265542991	103.804341	-	922	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	CH4060	1.265576016	103.804381	-	840	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4059	1.265585991	103.804292	-	839	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4058	1.265637036	103.804293	-	837	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4057	1.265646005	103.80438	-	832	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4057	1.265646005	103.80438	-	832	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	XT989	1.265891008	103.804262	-	925	Butterfly	*Lycaeninae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	CT6428	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4056	1.266024029	103.804367	-	828	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4056	1.266024029	103.804367	-	828	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT990	1.266333992	103.804098	-	931	Butterfly	*Jamides bochus nabonassar*	Dark caerulean	Not Assessed	Not Assessed	No	Resident	1	Seen	CT6431	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4054	1.266347989	103.804352	-	825	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	6413	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4053	1.266474975	103.804227	-	823	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4052	1.266587041	103.804057	-	821	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT991	1.266727019	103.804044	-	933	Butterfly	*Jamides bochus nabonassar*	Dark caerulean	Not Assessed	Not Assessed	No	Resident	1	Seen	CT6434	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4051	1.26673297	103.804007	-	820	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4051	1.26673297	103.804007	-	820	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4050	1.26683699	103.803944	-	819	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	XT992	1.266849982	103.803895	-	939	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT992	1.266849982	103.803895	-	939	Butterfly	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Resident	1	Seen	CT6438	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4049	1.267041005	103.803702	-	818	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4048	1.267102025	103.803663	-	817	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4048	1.267102025	103.803663	-	817	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4047	1.267185006	103.803512	-	816	Bird	*Centropus sinensis*	Greater coucal	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	XT994	1.267194981	103.803309	-	946	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267695967	103.802933	-	808	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.26759	103.802933	-	812	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267696	103.802933	-	811	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267696	103.802933	-	811	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267696	103.802933	-	809	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267696	103.802933	-	811	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	806	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	805	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	806	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	805	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	804	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	804	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	804	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808033	103.802848	-	804	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4043	1.267858995	103.802834	-	803	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25/4/2021	-	-	CT	-	1.27053	103.81113	CT07	23:37:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0048.AVI	Targeted	-
4-Feb-21	1	T1	Terrestrial	CH4042	1.268054964	103.802683	-	801	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	XT996	1.268114978	103.802452	-	952	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT996	1.268114978	103.802452	-	952	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4041	1.268431982	103.802316	-	759	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4041	1.268431982	103.802316	-	759	Bird	*Picus vittatus*	Laced woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4039	1.268893993	103.801858	-	752	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4038	1.268927017	103.801872	-	750	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4037	1.269057021	103.801741	-	748	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4037	1.269057021	103.801741	-	748	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4036	1.269258019	103.80178	-	745	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4035	1.269364972	103.801792	-	743	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4035	1.269364972	103.801792	-	743	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4033	1.269698991	103.80177	-	739	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4033	1.269698991	103.80177	-	739	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4032	1.269854978	103.801726	-	738	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4032	1.269854978	103.801726	-	738	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Feb-21	-	-	Terrestrial	CM_4056	1.265245	103.806203	-	1150	Bird	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Introduced	1	Seen	CM_P1160208-9	Incidental (fiora)	
4-Feb-21	1	T1	Terrestrial	CH4031	1.270343978	103.801727	-	736	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4031	1.270344	103.801727	-	736	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4030	1.270636003	103.801731	-	735	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4029	1.271107988	103.801797	-	733	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4027	1.27147696	103.8022	-	732	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4071	1.26249902	103.8053	-	856	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4069	1.263262024	103.805264	-	852	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4060	1.265576016	103.804381	-	840	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4056	1.266024029	103.804367	-	828	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4050	1.26683699	103.803944	-	819	Bird	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Winter visitor	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4049	1.267041005	103.803702	-	818	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT993	1.267088028	103.803609	-	940	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	2	Seen	CT6442	Targeted	
4-Feb-21	1	T1	Terrestrial	XT993	1.267088028	103.803609	-	940	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	2	Seen	CT6441	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4046	1.267377036	103.803234	-	815	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4046	1.267377036	103.803234	-	815	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT995	1.267462028	103.803012	-	948	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	805	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808	103.802848	-	805	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4044	1.267808033	103.802848	-	804	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4042	1.268054964	103.802683	-	801	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4040	1.268746974	103.802094	-	758	Bird	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	CH4040	1.268747	103.802094	-	758	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	CH4035	1.269325	103.801792	-	743	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4034	1.269560019	103.801764	-	740	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4031	1.270343978	103.801727	-	736	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4031	1.270344	103.801727	-	736	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4030	1.270636003	103.801731	-	735	Bird	*Columba livia*	Rock dove	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4028	1.271159034	103.801816	-	733	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4027	1.27147696	103.8022	-	732	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT990	1.266333992	103.804098	-	928	Odonate	*Ceriagrion cerinorubellum*	Ornate coraltail	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4054	1.266347989	103.804352	-	825	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT994	1.267194981	103.803309	-	946	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4045	1.267695967	103.802933	-	809	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	3	Seen	4312	Targeted	
4-Feb-21	1	T1	Terrestrial	CH4040	1.268746974	103.802094	-	758	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	XT995	1.267462028	103.803012	-	948	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	4	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT997	1.27081898	103.801678	-	1000	Bird	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Incidental	
4-Feb-21	1	T1	Terrestrial	XT991	1.266727019	103.804044	-	933	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	9	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT993	1.267088028	103.803609	-	940	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	9	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	XT993	1.267088028	103.803609	-	940	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	11	Seen		Targeted	
4-Feb-21	1	T1	Terrestrial	CH4055	1.266377997	103.804335	-	826	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
5-Feb-21	1	T1	Terrestrial	VS393	1.266487967	103.804105	-	2111	Amphibian	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
5-Feb-21	1	T1	Terrestrial	VS392	1.266755015	103.803937	-	2108	Butterfly	*Eurema hecabe contubernalis*	Common grass yellow	Not Assessed	Not Assessed	No	Resident	1	Seen	JT2086	Incidental	
5-Feb-21	1	T1	Terrestrial	VS391	1.267861007	103.80279	-	2055	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25/4/2021	-	-	CT	-	1.27053	103.81113	CT07	17:06:08	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0047.AVI	Incidental	-
25/4/2021	-	-	CT	-	1.27171	103.80536	CT05	22:51:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0190.AVI	Targeted	-
5-Feb-21	1	T1	Terrestrial	VS390	1.268038033	103.8026	-	2052	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Feb-21	1	T1	Terrestrial	VS390	1.268038033	103.8026	-	2051	Bird	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Yes	Resident breeder	1	Heard		Targeted	
25/4/2021	-	-	CT	-	1.27171	103.80536	CT05	4:07:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0191.AVI	Targeted	-
25/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:32:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0192.AVI	Targeted	-
5-Feb-21	1	T1	Terrestrial	VS389	1.269609975	103.801751	-	2039	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
5-Feb-21	1	T1	Terrestrial	VS392	1.266755015	103.803937	-	2108	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	5	Heard		Targeted	
25/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:38:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0193.AVI	Targeted	-
25/4/2021	-	-	CT	-	1.27171	103.80536	CT05	22:48:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0189.AVI	Targeted	-
25/4/2021	-	-	CT	-	1.27053	103.81113	CT07	23:38:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0049.AVI	Targeted	-
24/4/2021	-	-	CT	-	1.26903	103.80488	CT08	20:51:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0009.AVI	Targeted	-
24/4/2021	-	-	CT	-	1.27053	103.81113	CT07	4:48:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0045.AVI	Targeted	-
7-Feb-21	1	T2	Terrestrial	CH4129	1.264891969	103.808646	-	907	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4130	1.264962042	103.809028	-	908	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4138	1.265000012	103.809112	-	931	Bird	*Psittacula krameri*	Rose-ringed parakeet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Incidental	
7-Feb-21	1	T2	Terrestrial	CH4126	1.265099002	103.807722	-	904	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4126	1.265099002	103.807722	-	904	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4127	1.265161028	103.807985	-	904	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4131	1.265261024	103.809663	-	910	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4137	1.265329001	103.809835	-	925	Butterfly	*Anthene lycaenina miya*	Pointed ciliate blue	Not Assessed	Not Assessed	No	Resident	1	Seen	6531	Targeted	
7-Feb-21	1	T2	Terrestrial	CH4132	1.265469985	103.809939	-	911	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4132	1.265469985	103.809939	-	911	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4132	1.26547	103.809939	-	911	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4125	1.265597977	103.807157	-	902	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4133	1.265620021	103.810037	-	912	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4139	1.265666038	103.806883	-	939	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Incidental	
7-Feb-21	1	T2	Terrestrial	CH4140	1.265669977	103.806852	-	941	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Incidental	
7-Feb-21	1	T2	Terrestrial	CH4140	1.265669977	103.806852	-	941	Odonate	*Macrodiplax cora*	Coastal glider	Least Concern	Least Concern	No	Native	1	Seen	6534	Targeted	
7-Feb-21	1	T2	Terrestrial	CH4124	1.265683975	103.806915	-	859	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4124	1.265683975	103.806915	-	901	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4124	1.265684	103.806915	-	901	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4123	1.265693028	103.8089	-	858	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4134	1.265904	103.809929	-	913	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4121	1.265960997	103.80651	-	855	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4120	1.266006008	103.806464	-	854	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4119	1.266088989	103.806384	-	854	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4116	1.266553011	103.806073	-	847	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen	6525	Targeted	
7-Feb-21	1	T2	Terrestrial	CH4115	1.266564997	103.806074	-	844	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4114	1.266602967	103.805924	-	843	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4142	1.266612019	103.806094	-	958	Bird	*Phylloscopus inornatus*	Yellow-browed warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen	6540	Incidental	
7-Feb-21	1	T2	Terrestrial	CH4112	1.266812012	103.805717	-	841	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4136	1.266888035	103.80912	-	916	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4136	1.266888035	103.80912	-	916	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4111	1.266938997	103.805613	-	835	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4111	1.266969997	103.805613	-	836	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4111	1.266939	103.805613	-	839	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4110	1.267130021	103.805429	-	832	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4109	1.267247032	103.805315	-	831	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4108	1.267345017	103.805269	-	829	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4143	1.267752997	103.805077	-	1005	Butterfly	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4106	1.267691	103.804878	-	826	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4106	1.267691022	103.804878	-	826	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen	6511	Incidental	
7-Feb-21	1	T2	Terrestrial	CH4106	1.267691022	103.804878	-	826	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4105	1.267775987	103.804854	-	825	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4104	1.267936	103.804678	-	824	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4104	1.267936025	103.804678	-	824	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4104	1.267936025	103.804678	-	824	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4102	1.267952034	103.80462	-	821	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	6510	Targeted	
7-Feb-21	1	T2	Terrestrial	CH4102	1.267952034	103.80462	-	821	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
24/4/2021	-	-	CT	-	1.27053	103.81113	CT07	6:58:12	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0046.AVI	Targeted	-
23/4/2021	-	-	CT	-	1.26545	103.80801	CT03	15:39:32	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
7-Feb-21	1	T2	Terrestrial	CH4103	1.268081032	103.804517	-	823	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4103	1.268080032	103.804517	-	823	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4101	1.268136017	103.804501	-	819	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4100	1.268202988	103.804423	-	817	Bird	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4097	1.268240958	103.804447	-	813	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4097	1.268240958	103.804447	-	813	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4144	1.26826996	103.804483	-	1009	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Incidental	
7-Feb-21	1	T2	Terrestrial	CH4099	1.268322	103.804527	-	816	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4099	1.268322	103.804527	-	816	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4099	1.268322011	103.804527	-	816	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4099	1.268322011	103.804527	-	815	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4098	1.268335	103.804549	-	814	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4098	1.268335	103.804549	-	814	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4096	1.26835403	103.804299	-	811	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4096	1.26835403	103.804299	-	812	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4095	1.268453021	103.804222	-	811	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4095	1.268453021	103.804222	-	811	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4094	1.268826015	103.803859	-	807	Bird	*Aethopyga siparaja*	Crimson sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen	6505	Targeted	
7-Feb-21	1	T2	Terrestrial	CH4093	1.268830039	103.803814	-	802	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4092	1.268916037	103.803767	-	802	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4091	1.268948978	103.803663	-	801	Bird	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4088	1.269303029	103.803362	-	757	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4088	1.269303029	103.803362	-	757	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4087	1.269404031	103.803271	-	756	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4087	1.269404031	103.803271	-	756	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4086	1.269446025	103.803261	-	756	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4085	1.269607963	103.803134	-	754	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4084	1.26966102	103.803072	-	754	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4084	1.26966102	103.803072	-	754	Bird	*Corvus macrorhynchos*	Large-billed crow	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4083	1.269818014	103.802975	-	752	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4083	1.269818014	103.802975	-	752	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4082	1.26985196	103.802941	-	752	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4081	1.269893032	103.802947	-	751	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4081	1.269893032	103.802947	-	751	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4080	1.269975007	103.802866	-	750	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4080	1.269975007	103.802866	-	750	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4079	1.270208023	103.8028	-	749	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4078	1.270728959	103.802699	-	747	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841	103.802724	-	746	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841	103.802724	-	745	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841	103.802724	-	746	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841	103.802724	-	746	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841025	103.802724	-	744	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4077	1.270841025	103.802724	-	744	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4076	1.270944038	103.802735	-	744	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4075	1.27126297	103.802698	-	742	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4075	1.27126297	103.802698	-	742	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4074	1.27136196	103.802733	-	742	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4074	1.27136196	103.802733	-	742	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4145	1.271808967	103.803004	-	1026	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4146	1.271994961	103.802995	-	1028	Bird	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Incidental	
7-Feb-21	1	T2	Terrestrial	CH4072	1.27225698	103.802985	-	739	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4072	1.27225698	103.802985	-	736	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4072	1.272257	103.802985	-	739	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4128	1.265099002	103.808118	-	905	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4137	1.265329001	103.809835	-	925	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4132	1.26547	103.809939	-	911	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4133	1.26562	103.810037	-	912	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4133	1.265620021	103.810037	-	912	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4124	1.265684	103.806915	-	901	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
7-Feb-21	1	T2	Terrestrial	CH4141	1.266176999	103.806326	-	945	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	2	Heard		Incidental	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)	
7-Feb-21	1	T2	Terrestrial	CH4135	1.266323011	103.809584	-	914	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4116	1.266553011	103.806073	-	847	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4115	1.266564997	103.806074	-	844	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4114	1.266602967	103.805924	-	843	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4113	1.26673297	103.805831	-	841	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4112	1.266812012	103.805717	-	841	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4107	1.267546015	103.805059	-	828	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4105	1.26775697	103.804854	-	825	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4101	1.268136017	103.804501	-	819	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	6509	Targeted		
7-Feb-21	1	T2	Terrestrial	CH4098	1.268335003	103.804549	-	814	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4096	1.26835403	103.804299	-	811	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4095	1.268453	103.804222	-	811	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4094	1.268826	103.803859	-	807	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4094	1.268826015	103.803859	-	807	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4093	1.268830039	103.803814	-	802	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4092	1.268916037	103.803767	-	802	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4090	1.268989965	103.803613	-	800	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	6504	Targeted		
7-Feb-21	1	T2	Terrestrial	CH4089	1.269256007	103.803387	-	757	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4073	1.27164904	103.802914	-	740	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4140	1.26567	103.806852	-	941	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	3	Seen		Incidental		
7-Feb-21	1	T2	Terrestrial	CH4117	1.266429964	103.806066	-	849	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4132	1.26547	103.809939	-	912	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4090	1.268989965	103.803613	-	800	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4098	1.268335003	103.804549	-	814	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4122	1.265668971	103.80682	-	857	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	6	Seen		Targeted		
7-Feb-21	1	T2	Terrestrial	CH4139	1.265666038	103.806883	-	939	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	7	Seen		Incidental		
7-Feb-21	1	T2	Terrestrial	CH4128	1.265099002	103.808118	-	905	Bird	*Pericrocotus divaricatus*	Ashy minivet	Least Concern	Not Assessed	No	Winter visitor	10	Seen		Targeted		
8-Feb-21	-	-	Terrestrial	SH_3024	1.266231984	103.809164	-	940	Reptile	***Malayopython reticulatus***	Reticulated python	Least Concern	Not Assessed	No	Native	1	Seen		Incidental (flora)		
23/4/2021	-	-	CT	-	1.26545	103.80801	CT03	16:10:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0046.AVI	Targeted	-	
23/4/2021	-	-	CT	-	1.26903	103.80488	CT08	18:52:34	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0008.AVI	Incidental	-	
23/4/2021	-	-	CT	-	1.27053	103.81113	CT07	4:06:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0044.AVI	Targeted	-	
23/4/2021	-	-	CT	-	1.27053	103.81113	CT07	15:20:40	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0041.AVI	Incidental	-	
23/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:20:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0187.AVI	Targeted	-	
23/4/2021	-	-	CT	-	1.27053	103.81113	CT07	4:02:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0042.AVI	Targeted	-	
9-Feb-21	-	-	Terrestrial	SH_3093	1.266026041	103.808488	-	1024	Butterfly	***Erionota thrax thrax***	Banana skipper	Not Assessed	Not Assessed	No	Resident	1	Seen	SH_6083-85	Incidental (flora)		
23/4/2021	-	-	CT	-	1.27053	103.81113	CT07	4:05:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0043.AVI	Targeted	-	
10-Feb-21	1	T2	Terrestrial	SS1555	1.265667966	103.806917	-	2039	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1550	1.265896037	103.810305	-	1952	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1557	1.266231984	103.806273	-	2050	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1558	1.26641999	103.806152	-	2054	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
22/4/2021	-	-	CT	-	1.26545	103.80801	CT03	11:46:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-	
22/4/2021	-	-	CT	-	1.27053	103.81113	CT07	21:47:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0035.AVI	Targeted	-	
10-Feb-21	1	T2	Terrestrial	SS1559	1.266607996	103.805987	-	2059	Reptile	*Lepidodactylus lugubris*	Mourning gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1560	1.266880428	103.805725	-	2104	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1561	1.26701301	103.805474	-	2106	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1563	1.267849021	103.804792	-	2116	Amphibian	*Fejervarya cancrivora*	Crab-eating frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
22/4/2021	-	-	CT	-	1.27053	103.81113	CT07	0:32:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0036.AVI	Targeted	-	
22/4/2021	-	-	CT	-	1.27053	103.81113	CT07	1:25:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0038.AVI	Targeted	-	
10-Feb-21	1	T2	Terrestrial	SS1564	1.26796796	103.804641	-	2118	Amphibian	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1565	1.268199971	103.804496	-	2120	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1566	1.268246993	103.804395	-	2126	Amphibian	*Fejervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1566	1.268246993	103.804395	-	2126	Fish	*Goby sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Incidental		
10-Feb-21	1	T2	Terrestrial	SS1566	1.268246993	103.804395	-	2126	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
22/4/2021	-	-	CT	-	1.27053	103.81113	CT07	7:17:36	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0040.AVI	Incidental	-	
10-Feb-21	1	T2	Terrestrial	SS1568	1.270256974	103.802767	-	2143	Amphibian	*Kaloula pulchra*	Banded bull frog	Least Concern	Not Assessed	No	Non-native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1568	1.270256974	103.802767	-	2143	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1555	1.265667966	103.806917	-	2039	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1556	1.265910035	103.806567	-	2044	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	2	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1567	1.269379975	103.80331	-	2137	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	2	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1568	1.270256974	103.802767	-	2143	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	2	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1568	1.270256974	103.802767	-	2143	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1563	1.267849021	103.804792	-	2116	Amphibian	*Fejervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	5	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1565	1.268199971	103.804496	-	2120	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	5	Heard		Targeted		
10-Feb-21	1	T2	Terrestrial	SS1566	1.268246993	103.804395	-	2126	Fish	*Poecilia reticulata*	Guppy	Not Assessed	Not Assessed	No	Non-native	7	Seen		Incidental		
10-Feb-21	1	T2	Terrestrial	SS1554	1.265614992	103.807095	-	2036	Fish	*Zeriarchopterus buffonis*	Stripe-nose halfbeak	Not Assessed	Not Assessed	No	Native	20	Seen		Incidental		
10-Feb-21	1	T2	Terrestrial	SS1566	1.268246993	103.804395	-	2126	Amphibian	*Microhyla mukhlesuri*	East Asian ornate chorus frog	Least Concern	Not Assessed	No	Non-native	30	Heard		Targeted		
21/4/2021	-	-	CT	-	1.27053	103.81113	CT07	15:51:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0032.AVI	Targeted	-	
21/4/2021	-	-	CT	-	1.27053	103.81113	CT07	3:15:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Targeted	-	
21/4/2021	-	-	CT	-	1.27053	103.81113	CT07	8:47:24	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Incidental	-	
21/4/2021	-	-	CT	-	1.27053	103.81113	CT07	15:28:32	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0031.AVI	Incidental	-	
21/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:10:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0184.AVI	Targeted	-	
21/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:41:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0186.AVI	Targeted	-	
21/4/2021	-	-	CT	-	1.27053	103.81113	CT07	22:54:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0033.AVI	Targeted	-	
21/4/2021	-	-	CT	-	1.27171	103.80536	CT05	23:31:04	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0185.AVI	Targeted	-	
20/4/2021	-	-	CT	-	1.27053	103.81113	CT07	11:40:10	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-	
20/4/2021	-	-	CT	-	1.27053	103.81113	CT07	17:11:26	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Targeted	-	
20/4/2021	-	-	CT	-	1.27053	103.81113	CT07	7:01:10	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Targeted	-	
20/4/2021	-	-	CT	-	1.27053	103.81113	CT07	18:42:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Incidental	-	
19/4/2021	-	-	CT	-	1.26545	103.80801	CT03	23:09:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0041.AVI	Targeted	-	
19/4/2021	-	-	CT	-	1.26903	103.80488	CT08	15:24:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	14:14:42	Bird	*Orthotomus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0178.AVI	Incidental	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:01:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0179.AVI	Targeted	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:01:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0180.AVI	Targeted	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	2:55:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0181.AVI	Targeted	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	2:55:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0182.AVI	Targeted	-	
19/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:44:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0183.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:23:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.26545	103.80801	CT03	12:10:26	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Incidental	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:42:20	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0172.AVI	Incidental	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	22:01:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0173.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:08:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0174.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:08:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0175.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:08:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0176.AVI	Targeted	-	
18/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:09:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0177.AVI	Targeted	-	
17/4/2021	-	-	CT	-	1.27171	103.80536	CT05	23:01:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0170.AVI	Targeted	-	
17/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:41:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0171.AVI	Targeted	-	
17/4/2021	-	-	CT	-	1.27171	103.80536	CT05	21:53:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0169.AVI	Targeted	-	
17/4/2021	-	-	CT	-	1.27053	103.81113	CT07	22:26:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	-	
16/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:01:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0036.AVI	Targeted	-	
16/4/2021	-	-	CT	-	1.26545	103.80801	CT03	9:24:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Incidental	-	
16/4/2021	-	-	CT	-	1.27171	103.80536	CT05	8:35:46	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0166.AVI	Incidental	-	
16/4/2021	-	-	CT	-	1.27171	103.80536	CT05	15:40:28	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0167.AVI	Incidental	-	
16/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:36:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0168.AVI	Targeted	-	
15/4/2021	-	-	CT	-	1.26545	103.80801	CT03	4:40:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Targeted	-	
15/4/2021	-	-	CT	-	1.26545	103.80801	CT03	13:12:58	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0033.AVI	Incidental	-	
15/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:26:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0163.AVI	Targeted	-	
15/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:15:18	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0165.AVI	Targeted	-	
14/4/2021	-	-	CT	-	1.26545	103.80801	CT03	4:21:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0032.AVI	Targeted	-	
14/4/2021	-	-	CT	-	1.26545	103.80801	CT03	23:20:52	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0031.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27053	103.81113	CT07	9:24:00	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Targeted	-	
14/4/2021	-	-	CT	-	1.27053	103.81113	CT07	14:13:18	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0023.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:11:22	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0126.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:34:42	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0128.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:41:16	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0129.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:51:00	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0130.AVI	Incidental	-	
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:52:04	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0131.AVI	Incidental	-	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:58:16	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0132.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:09:20	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0133.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:50:22	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0134.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:50:46	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0135.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:51:06	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0136.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:52:10	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0137.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:52:40	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0138.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:56:44	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0139.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:58:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0140.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:02:10	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0141.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:09:42	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0143.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:10:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0144.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:11:48	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0145.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:17:34	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0146.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:20:54	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0147.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:26:56	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0148.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:31:34	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0149.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:21:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0150.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:21:36	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0151.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:51:26	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0152.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:57:10	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0153.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:13:50	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0154.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:08:26	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0142.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	17:24:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0155.AVI	Incidental	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:00:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0156.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:08:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0158.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:09:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0159.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:10:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0161.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:00:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0157.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:09:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0160.AVI	Targeted	-
14/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:11:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0162.AVI	Targeted	-
13/4/2021	-	-	CT	-	1.26545	103.80801	CT03	12:20:22	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Targeted	-
13/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:33:56	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0120.AVI	Incidental	-
13/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:08:24	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0122.AVI	Incidental	-
13/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:08:56	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0123.AVI	Incidental	-
13/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:42:26	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0124.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.26545	103.80801	CT03	23:56:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0023.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.26545	103.80801	CT03	5:07:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0027.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.26545	103.80801	CT03	2:47:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.26545	103.80801	CT03	4:20:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.26545	103.80801	CT03	4:21:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27053	103.81113	CT07	3:32:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0019.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27053	103.81113	CT07	3:38:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0021.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27053	103.81113	CT07	14:58:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0018.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27135	103.80305	CT01	12:50:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0008.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:20:22	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0110.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:24:16	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0111.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:27:30	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0106.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:28:32	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0107.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:34:30	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0108.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:35:08	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0109.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	12:45:34	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0112.AVI	Incidental	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:35:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0119.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	19:05:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0113.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:28:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0117.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:30:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0118.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	4:31:42	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0114.AVI	Targeted	-
12/4/2021	-	-	CT	-	1.27171	103.80536	CT05	4:32:12	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0115.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:18:56	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0022.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.26903	103.80488	CT08	14:10:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0003.AVI	Incidental	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:27:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0094.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:22:22	Bird	*Orthotomus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0093.AVI	Incidental	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:14:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0097.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:34:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0103.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:50:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0105.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	19:27:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0095.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:13:20	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0096.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:16:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0098.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:25:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0099.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:00:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0100.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:01:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0101.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:10:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0102.AVI	Targeted	-
11/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:44:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0104.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.26545	103.80801	CT03	16:50:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0019.AVI	Incidental	-
10/4/2021	-	-	CT	-	1.26545	103.80801	CT03	4:32:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0020.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.26545	103.80801	CT03	5:24:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0021.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.26545	103.80801	CT03	9:47:02	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Incidental	-
10/4/2021	-	-	CT	-	1.27135	103.80305	CT01	13:31:48	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0007.AVI	Incidental	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:33:18	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0085.AVI	Incidental	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:33:40	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0086.AVI	Incidental	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	0:17:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0089.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:20:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0090.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:51:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0091.AVI	Targeted	-
10/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:48:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0092.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.26545	103.80801	CT03	2:56:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0016.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27053	103.81113	CT07	21:53:38	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0015.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27053	103.81113	CT07	21:54:00	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27053	103.81113	CT07	8:42:26	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0014.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:28:00	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0076.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:28:56	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0077.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	13:29:36	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0078.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	9:39:04	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0069.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:31:30	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0070.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:48:52	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0071.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:06:04	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0072.AVI	Incidental	-
22-Feb-21	-	-	-	-	1.263636	103.805472	-	932	Fish	*Hippocampus kuda*	Estuarine seahorse / spotted seahorse	Vulnerable	Vulnerable	Yes	Native	1	Seen	-	Incidental	-
23-Feb-21	-	-	Intertidal	-	1.265049968	103.80945	-	-	Crustacean	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Yes	NA	1	Seen	-	Incidental	-
23-Feb-21	1	-	Seine netting	-	1.265145019	103.807826	SN_05	1226	Fish	*Hypoatherina tsuyi*	Quoy's halfbeak	Not Assessed	Not Assessed	No	NA	1	Seen	SS158-163	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:38:30	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0073.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:39:34	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0074.AVI	Incidental	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:40:02	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0075.AVI	Incidental	-
23-Feb-21	1	-	Seine netting	-	1.265562692	103.8074496	SN_06	1250	Fish	*Ambassis kopsii*	Kops' glass perchlet	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
23-Feb-21	1	-	Seine netting	-	1.265620692	103.8074496	SN_06	1250	Fish	*Gerres erythrourus*	Deepbody mojarra / silverbiddy	Least Concern	Not Assessed	No	NA	1	Seen	SS167-171	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	23:35:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0079.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	2:52:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0080.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:06:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0081.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:07:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0083.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:07:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0084.AVI	Targeted	-
9/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:06:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0082.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	18:19:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0009.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:40:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0010.AVI	Targeted	-
23-Feb-21	-	-	Terrestrial	SH_3311	1.272021029	103.802849	-	930	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen	SH_6246-7	Incidental (flora)	
23-Feb-21	-	-	Terrestrial	SH_3312	1.271535968	103.802763	-	1015	Butterfly	*Abisara saturata kausambioides*	Malayan plum judy	Not Assessed	Not Assessed	No	Resident	1	Seen	SH_6285-8	Incidental (flora)	
23-Feb-21	-	-	Terrestrial	SH_3313	1.270923	103.802711	-	1040	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	CM_727-9	Incidental (flora)	
23-Feb-21	1	-	Seine netting	-	1.265061032	103.80908	SN_02	1130	Fish	*Ambassis kopsii*	Kops' glass perchlet	Not Assessed	Not Assessed	No	Native	10	Seen	SS139-151	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:40:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0011.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
24-Feb-21	-	-	Terrestrial	SH_3314	1.265830994	103.80668	-	1230	Butterfly	***Rapala pheretima sequeira***	Copper flash	Not Assessed	Not Assessed	No	Resident	1	Seen	SH_6343-6359	Incidental (flora)	
24-Feb-21	-	-	Terrestrial	SH_3355	1.266667005	103.806197	-	1430	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	2	Seen	-	Incidental (flora)	
25-Feb-21	1	T4	Intertidal	RS170	1.264750985	103.808765	SN_04	1500-1900	Cnidarian	*Stichodactyla haddoni*	Haddon's carpet anmone	Not Assessed	Not Assessed	No	NA	1	Seen	SS443-448	Incidental	-
25-Feb-21	1	T4	Intertidal	RS171	1.264875038	103.808808	SN_04	1500-1900	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Anadara antiquata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Anadara sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250412	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Camptandriidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250373	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cardiidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250415	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	1	Seen	P2250359	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250364	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250409	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250325	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250351	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250353	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250383	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250387	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250357	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Echinoderm	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	No	NA	1	Seen	P2250414	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250431	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250343	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250355	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250379	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250392	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250429	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Muricidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250421	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250398	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P2250332	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P2250390	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Onchidium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250361	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Onchidium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250432	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250378	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250433	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Pirenella sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250376	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Portunus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250375	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Reishia bituberculatis*	Bituberculate rock shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250434	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250341	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250404	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250349	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250400	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Tapes literatus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250371	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	P2250443	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Venerupis aspera*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250327	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Barbatia sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250264	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cardiidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250237	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithidea obtusa*	Chut-chut	Not Assessed	Not Assessed	No	NA	1	Seen	P2250275	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	1	Seen	P2250191	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250193	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250183	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Circe scripta*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250270	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Circe undatina*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250274	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Assessed	No	NA	1	Seen	P2250260	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Clypeomorus bifasciata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250240	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250250	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Drupella margariticola*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250268	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250267	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Gafrarium dispar*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250198	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250196	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Gafrarium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250210	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250189	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250234	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250181	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2250296	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Naticidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250281	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Onchidium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250202	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Echinoderm	*Ophiotrichidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250195	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Orania sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250294	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Pirenella sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250239	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Pirenella sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250262	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Pirenella sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250298	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Volegalea cochlidium*	Spiral melongena	Not Assessed	Not Assessed	No	NA	1	Seen	P2250279	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Scopimera sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2250288	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250179	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250237	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250236	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Solen sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Strombus turturella*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2250277	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	P2250284	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Turbo intercostalis*	Turban snail	Not Assessed	Not Assessed	No	NA	1	Seen	P2250176	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	5:52:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0013.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	6:11:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:50:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
25-Feb-21	-	-	Terrestrial	CM_244	1.268205	103.80414	-	1525	Bird	*Pelargopsis capensis*	Stork-billed kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	EK_1535-1540	Incidental (flora)	
25-Feb-21	-	-	Terrestrial	CM_244	1.268205	103.804614	-	936	Bird	*Pelargopsis capensis*	Stork-billed kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	EK_1536-1540	Incidental (flora)	
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	2	Seen	P2250323	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P2250417	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	2	Seen	P2250369	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Ocypodidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P2250389	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	2	Seen	P2250366	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	2	Seen	P2250394	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P2250403	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P2250225	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Circe undatina*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	2	Seen	P2250175	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Volegalea cochlidium*	Spiral melongena	Not Assessed	Not Assessed	No	NA	2	Seen	P2250290	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Trochus maculatus*	Turban snail	Not Assessed	Not Assessed	No	NA	2	Seen	P2250178	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Umbonium vestiarium*	#N/A	Not Assessed	Vulnerable	Yes	#N/A	2	Seen	-	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Nerita chamaeleon*	Chameleon nerite	Not Assessed	Not Assessed	No	NA	3	Seen	P2250329	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	3	Seen	P2250206	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	3	Seen	P2250242	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P2250211	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P2250247	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P2250203	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	6	Seen	P2250419	Targeted	-
25-Feb-21	1	T4	Intertidal	RS169	1.264977967	103.808349	SN_04	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	10	Seen	P2250396	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	14	Seen	P2250225	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	18	Seen	P2250302	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	35	Seen	P2250260	Targeted	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Naticidae eggs*	#N/A	#N/A	#N/A	#N/A	#N/A	NA	Seen	P2250316	Incidental	-
25-Feb-21	1	T5	Intertidal	RS168	1.26516304	103.807887	SN_05	1500-1900	Mollusc	*Volegalea cochlidium eggs*	#N/A	#N/A	#N/A	#N/A	#N/A	NA	Seen	P2250317	Incidental	-
26-Feb-21	1	T1	Terrestrial	VS439	1.264944021	103.808995	SN_01	1656	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	1	Seen	-	Incidental	-
26-Feb-21	1	T1	Terrestrial	VS439	1.264944021	103.808995	SN_01	1656	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	1	Seen	-	Incidental	-
8/4/2021	-	-	CT	-	1.26545	103.80801	CT03	16:29:20	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0008.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.26903	103.80488	CT08	9:25:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0002.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27053	103.81113	CT07	13:00:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0010.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
8/4/2021	-	-	CT	-	1.27053	103.81113	CT07	12:34:34	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0009.AVI	Incidental	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Actiniaria sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260459	Incidental	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Anomalodiscus squamosus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260533	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	1	Seen	P2260508	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260540	Targeted	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen		Incidental	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*cf. Drupella margaritícola*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260494	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*cf. Meretrix sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260531	Targeted	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Circe scripta*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Circe undatina*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Clypeomorus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260527	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260473	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Euchelus atratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260551	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2260454	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2260524	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2260554	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260533	Targeted	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Globivenus toreuma*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Nassarius crenoliratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260473	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Nassarius echinatus*	Prickly whelk	Not Assessed	Not Assessed	No	NA	1	Seen		Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Nassarius livescens*	Common whelk	Not Assessed	Not Assessed	No	NA	1	Seen	P2260456	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Nassarius livescens*	Common whelk	Not Assessed	Not Assessed	No	NA	1	Seen	P2260512	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260468	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260534	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260542	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260535	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Pardalinops testudinaria*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260515	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Crustacean	*Petrolisthes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260484	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P2260515	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260498	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Polinices sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260535	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Crustacean	*Portunus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260463	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen		Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260506	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P2260556	Targeted	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Vasticardium flavum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
26-Feb-21	1	T1, T2, T3	Intertidal	-	-	-	-	1500-1900	Mollusc	*Vasticardium pectiniforme*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Veneridae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260533	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Vexillum sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P2260506	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Mollusc	*Nassarius livescens*	Common whelk	Not Assessed	Not Assessed	No	NA	2	Seen	P2260545	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P2260451	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Pardalinops testudinaria*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P2260492	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P2260495	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Umbonium vestiarium*	#N/A	Not Assessed	Vulnerable	Yes	#N/A	2	Seen	P2260467	Targeted	-
26-Feb-21	1	T3	Intertidal	-	-	-	SN_03	1500-1900	Mollusc	*Pardalinops testudinaria*	NA	Not Assessed	Not Assessed	No	NA	3	Seen	P2260453	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	3	Seen	P2260488	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Clypeomorus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	P2260519	Targeted	-
26-Feb-21	1	T2	Intertidal	-	-	-	SN_02	1500-1900	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	10	Seen	P2260490	Targeted	-
26-Feb-21	1	T1	Intertidal	-	-	-	SN_01	1500-1900	Cnidarian	*Oulastrea crispata*	#N/A	#N/A	#N/A	#N/A	#N/A	NA	Seen	P2260549	Incidental	-
8/4/2021	-	-	CT	-	1.27053	103.81113	CT07	2:28:56	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0011.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27053	103.81113	CT07	2:29:18	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27135	103.80305	CT01	22:13:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0004.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27135	103.80305	CT01	22:14:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0005.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27135	103.80305	CT01	22:16:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0006.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:11:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0015.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:12:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0016.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:15:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0022.AVI	Incidental	-
1-Mar-21	1	T1	Terrestrial	VS456	1.262965975	103.805389	-	1954	Reptile	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS456	1.262965975	103.805389	-	1954	Reptile	*Gehyra mutilata*	Four-clawed gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS455	1.263316004	103.805305	-	1957	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS457	1.264243964	103.804604	-	2003	Bird	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Introduced	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS458	1.265562018	103.804399	-	2012	Reptile	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS459	1.26570099	103.80435	-	2014	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS460	1.266375985	103.804285	-	2020	Amphibian	*Fejervarya cancrivora*	Crab-eating frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
1-Mar-21	1	T1	Terrestrial	VS461	1.26645796	103.804174	-	2024	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:16:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0023.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:16:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0024.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:17:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0025.AVI	Incidental	-
1-Mar-21	1	T1	Terrestrial	VS463	1.266557034	103.804	-	2030	Fish	*Monopterus albus*	Sunda swamp-eel	Least Concern	Not Assessed	No	Native	1	Seen		Incidental	-
1-Mar-21	1	T1	Terrestrial	VS462	1.266559968	103.804073	-	2027	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:17:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0026.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:18:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0027.AVI	Incidental	-
1-Mar-21	1	T1	Terrestrial	VS464	1.268155966	103.802583	-	2041	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:19:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0028.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:26:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0038.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:26:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0039.AVI	Incidental	-
1-Mar-21	1	T1	Terrestrial	VS465	1.269516014	103.801758	-	2050	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:27:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0040.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:28:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0041.AVI	Incidental	-
1-Mar-21	-	-	Terrestrial	SH_3486	1.268164	103.807512	-	940	Odonate	*Gynacantha sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SH 6417	Incidental (flora)	
1-Mar-21	-	-	Terrestrial	SH_3502	1.267699	103.807022	-	1040	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen	-	Incidental (flora)	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:35:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0042.AVI	Incidental	-
1-Mar-21	1	T1	Terrestrial	VS461	1.26645796	103.804174	-	2025	Amphibian	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Native	2	Heard		Targeted	
1-Mar-21	1	T1	Terrestrial	VS463	1.266557034	103.804	-	2030	Fish	*Channa striata*	Common snakehead/aruan	Least Concern	Not Assessed	No	Native	2	Seen		Incidental	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:35:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0043.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:35:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0044.AVI	Incidental	-
2-Mar-21	1	T1-4	Intertidal	HB2423	1.26466197	103.808649	-	2124	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2417	1.264676973	103.808916	-	2101	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2429	1.264691977	103.808255	-	2143	Polychaete	*Sabellidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2414	1.264705975	103.808944	-	2049	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2415	1.26474604	103.808881	-	2052	Fish	*Bathygobius fuscus*	Common frillfin goby	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2430	1.264761966	103.808151	-	2148	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2430	1.264761966	103.808151	-	2148	Cnidarian	*Phymanthus sp.*	Frilly anemone	NA	NA	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2420	1.264804965	103.808913	-	2109	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2420	1.264804965	103.808913	-	2109	Fish	*Unidentified Fish*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	666	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2409	1.264829021	103.809163	-	2035	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen	619	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2421	1.264852993	103.808855	-	2113	Crustacean	*Palaemon sp.*	Glass shrimp	Not Assessed	Not Assessed	No	NA	1	Seen	669	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2421	1.264852993	103.808855	-	2113	Crustacean	*Palaemon sp.*	Glass shrimp	Not Assessed	Not Assessed	No	NA	1	Seen	673	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2406	1.26487596	103.809286	-	2022	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2405	1.264890041	103.809329	-	2017	Fish	*Acreichthys tomentosus*	Seagrass filefish	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2405	1.264890041	103.809329	-	2017	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2405	1.264890041	103.809329	-	2025	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2431	1.264912002	103.807983	-	2155	Crustacean	*Eriphia ferox*	#N/A	Not Assessed	Vulnerable	Yes	#N/A	1	Seen	682	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2431	1.264912002	103.807983	-	2155	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2427	1.264918037	103.808489	-	2138	Crustacean	*Scylla tranquebarica*	Purple mud crab	Not Assessed	Not Assessed	No	NA	1	Seen	677	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2403	1.264919965	103.809483	-	2009	Fish	*Ambassis kopsi*	Kops' glass perchlet	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2412	1.264943015	103.809087	-	2044	Mollusc	*Diminovula alabaster*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2412	1.264943015	103.809087	-	2044	Mollusc	*Elysia ornata*	Ornate elysia, ornate leaf slug	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2412	1.264943015	103.809087	-	2044	Fish	*Ostorhinchus endekataenia*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2412	1.264943015	103.809087	-	2044	Platyhelminthes	*Pseudoceros indicus*	Blue-dotted flatworm	Not Assessed	Vulnerable	Yes	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2437	1.264953995	103.808871	-	2214	Crustacean	*Scylla sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2438	1.264984002	103.809329	-	2220	Fish	*Unidentified Eel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2411	1.264985008	103.809102	-	2039	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	622	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2411	1.264985008	103.809102	-	2039	Fish	*Unidentified Fish*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2408	1.264991965	103.809202	-	2026	Crustacean	*Portunus cf. pelagicus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2436	1.264992971	103.808299	-	2209	Crustacean	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
2-Mar-21	1	T1-4	Intertidal	HB2436	1.264992971	103.808299	-	2209	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2410	1.265015015	103.809134	-	2036	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2410	1.265015015	103.809134	-	2036	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	617	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2435	1.265091961	103.808048	-	2207	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2434	1.265137978	103.807837	-	2204	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2434	1.265137978	103.807837	-	2201	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2434	1.265137978	103.807837	-	2201	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:37:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0045.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:38:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0046.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:39:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0047.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:40:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0048.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:41:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0049.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:41:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0050.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	15:04:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0057.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	1:50:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0063.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	1:53:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0064.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	1:55:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0065.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:35:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0066.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:36:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0067.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:50:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0068.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	1:50:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0062.AVI	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:13:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0019.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:13:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0020.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:15:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0021.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:19:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0029.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:21:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0033.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:22:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0034.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:23:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0035.AVI	Incidental	-
2-Mar-21	1	T1-4	Intertidal	HB2423	1.26466197	103.808649	-	2124	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2423	1.26466197	103.808649	-	2124	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2425	1.264680997	103.808292	-	2132	Crustacean	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2413	1.264699018	103.808991	-	2048	Fish	*Strongylura sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2415	1.26474604	103.808881	-	2052	Fish	*Ambassis kopsii*	Kops' glass perchlet	Not Assessed	Not Assessed	No	Native	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2415	1.26474604	103.808881	-	2052	Crustacean	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2419	1.264813012	103.808925	-	2109	Crustacean	*Ocypode ceratophthalmus*	Horn-eyed ghost crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2404	1.264921976	103.809402	-	2014	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	2	Seen	604	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2402	1.264962964	103.809582	-	2003	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	2	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2426	1.264823992	103.808324	-	2138	Crustacean	*Metaplax sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	680	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2412	1.264943015	103.809087	-	2044	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2408	1.264991965	103.809202	-	2026	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	3	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2432	1.265040999	103.807931	-	2159	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2423	1.26466197	103.808649	-	2125	Crustacean	*Palaemon sp.*	Glass shrimp	Not Assessed	Not Assessed	No	NA	4	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2424	1.264687032	103.808544	-	2127	Fish	*Sillaginidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2433	1.265117023	103.807895	-	2200	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2434	1.265137978	103.807837	-	2201	Fish	*Ellochelon vaigiensis*	Squaretail mullet	Least Concern	Not Assessed	No	Native	5	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2428	1.26477303	103.808302	-	2140	Crustacean	*Gelasimus vocans*	#N/A	#N/A	#N/A	#N/A	#N/A	6	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2415	1.26474604	103.808881	-	2052	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	7	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2420	1.264804965	103.808913	-	2109	Fish	*Ellochelon vaigiensis*	Squaretail mullet	Least Concern	Not Assessed	No	Native	10	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2408	1.264991965	103.809202	-	2026	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	10	Seen	613	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2439	1.265067989	103.809782	-	1955	Fish	*Toxotes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	20	Seen	-	Targeted	-
2-Mar-21	1	T1-4	Intertidal	HB2422	1.264791973	103.808828	-	2116	Polychaete	*Eurythoe complanata*	#N/A	#N/A	#N/A	#N/A	#N/A	No	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG401	1.264671022	103.808155	-	2058	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG396	1.264680997	103.808294	-	2045	Flora	*Spyridia filamentosa*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	SS719	Targeted	-
3-Mar-21	1	T4	Intertidal	SG395	1.264686026	103.808285	-	2039	Crustacean	*Myomenippe hardwickii*	Thunder crab	Not Assessed	Not Assessed	No	NA	1	Seen	SS712	Targeted	-
3-Mar-21	1	T4	Intertidal	SG395	1.264686026	103.808285	-	2039	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS717	Targeted	-
3-Mar-21	1	T4	Intertidal	SG395	1.264686026	103.808285	-	2039	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG402	1.264687032	103.808094	-	2100	Fish	*Toxotes jaculatrix*	Banded archerfish	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG398	1.264693988	103.808321	-	2047	Crustacean	*Portunus cf. pelagicus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS724	Targeted	-
3-Mar-21	1	T4	Intertidal	SG398	1.264693988	103.808321	-	2047	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	SS723	Targeted	-
3-Mar-21	1	T4	Intertidal	SG394	1.264713015	103.808296	-	2037	Polychaete	*Polynoidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS708	Targeted	-
3-Mar-21	1	T4	Intertidal	SG394	1.264713015	103.808296	-	2037	Crustacean	*Unidentified Crab*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS707	Targeted	-
3-Mar-21	1	T4	Intertidal	SG390	1.264741011	103.808227	-	2032	Nemertea	*Nemertea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS702	Targeted	-
3-Mar-21	1	T4	Intertidal	SG393	1.264746962	103.808293	-	2034	Crustacean	*Gelasimus vocans*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG392	1.264760038	103.808287	-	2034	Crustacean	*Unidentified Crab*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG404	1.264774036	103.807988	-	2106	Mollusc	*Murex trapa*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS726	Targeted	-
3-Mar-21	1	T5	Intertidal	SG404	1.264774036	103.807988	-	2106	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG405	1.264797002	103.80801	-	2108	Crustacean	*Alpheidae sp. (Many-banded Snapping Shrimp)*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG391	1.264809994	103.808305	-	2033	Cnidarian	*Phymanthus sp.*	Frilly anemone	NA	NA	No	NA	1	Seen	SS704	Targeted	-
3-Mar-21	1	T5	Intertidal	SG406	1.264850982	103.807946	-	2111	Mollusc	*Erronea ovum*	Egg cowrie	Not Assessed	Not Assessed	No	NA	1	Seen	SS733	Targeted	-
3-Mar-21	1	T5	Intertidal	SG406	1.264850982	103.807946	-	2111	Crustacean	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	SS736	Targeted	-
3-Mar-21	1	T4	Intertidal	SG387	1.264873026	103.8028	-	2026	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS690	Targeted	-
3-Mar-21	1	T5	Intertidal	SG407	1.264885012	103.8079	-	2114	Mollusc	*Atrina pectinata*	Fan shell	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG408	1.264896998	103.807885	-	2115	Fish	*Abudefduf sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS741	Targeted	-
3-Mar-21	1	T5	Intertidal	SG408	1.264896998	103.807885	-	2115	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG409	1.264934977	103.807888	-	2117	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS745	Targeted	-
3-Mar-21	1	T5	Intertidal	SG423	1.264931029	103.809095	-	2210	Crustacean	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	SS777	Incidental	-
3-Mar-21	1	T4	Intertidal	SG386	1.26493304	103.808242	-	2024	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS688	Targeted	-
3-Mar-21	1	T5	Intertidal	SG410	1.264961036	103.807802	-	2120	Fish	*Ambassis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG410	1.264961036	103.807802	-	2120	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG411	1.264992971	103.807806	-	2121	Fish	*Unidentified Eel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS469	1.265013004	103.809139	-	2035	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG412	1.265034964	103.807802	-	2122	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	SS748	Targeted	-
3-Mar-21	1	T5	Intertidal	SG412	1.265034964	103.807802	-	2122	Mollusc	*Erronea ovum*	Egg cowrie	Not Assessed	Not Assessed	No	NA	1	Seen	SS746	Targeted	-
3-Mar-21	1	T5	Intertidal	SG413	1.26506296	103.807766	-	2124	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG413	1.26506296	103.807766	-	2124	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG413	1.26506296	103.807766	-	2124	Crustacean	*Portunus cf. pelagicus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG413	1.26506296	103.807766	-	2124	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG415	1.265083998	103.807707	-	2127	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG415	1.265083998	103.807707	-	2127	Mollusc	*Erronea ovum*	Egg cowrie	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG416	1.265097996	103.807693	-	2129	Crustacean	*Heteropanope sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	SS752	Targeted	-
3-Mar-21	1	T5	Intertidal	SG418	1.265197992	103.807649	-	2135	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG418	1.265197992	103.807649	-	2135	Crustacean	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	SS759	Targeted	-
3-Mar-21	1	T5	Intertidal	SG417	1.265220973	103.807652	-	2131	Mollusc	*Erronea onyx*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS757	Targeted	-
3-Mar-21	1	T5	Intertidal	SG419	1.26531601	103.807685	-	2137	Crustacean	*Portunus cf. pelagicus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS468	1.265360015	103.809774	-	2027	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG420	1.265367977	103.807673	-	2129	Fish	*Acentrogobius nebulosus*	Shadow goby	Least Concern	Not Assessed	No	NA	1	Seen	P3030767	Targeted	-
3-Mar-21	1	T5	Intertidal	SG420	1.265367977	103.807673	-	2129	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG420	1.265367977	103.807673	-	2129	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:24:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0036.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:24:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0037.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS471	1.265552966	103.807178	-	2052	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen	-	Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:41:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0051.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS472	1.265607029	103.807124	-	2055	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen	JL7821	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS472	1.265607029	103.807124	-	2056	Bird	*Egretta garzetta*	Little egret	Least Concern	Not Assessed	No	Winter visitor	1	Seen	JL7823	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS472	1.265607029	103.807124	-	2103	Mammal	*Paradoxurus musanqus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	JL7827-7830	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS473	1.265983963	103.806436	-	2108	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS473	1.265983963	103.806436	-	2108	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS467	1.266010031	103.810008	-	2022	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS474	1.266194014	103.806299	-	2110	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS466	1.266265009	103.809867	-	2020	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:42:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0052.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	14:37:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0053.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	14:37:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0054.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS475	1.266631968	103.806049	-	2115	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS476	1.266653007	103.805899	-	2116	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	-
3-Mar-21	1	T2	Terrestrial	VS477	1.267075036	103.805479	-	2120	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
3-Mar-21	1	T2	Terrestrial	VS477	1.267075036	103.805479	-	2120	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
3-Mar-21	1	T2	Terrestrial	VS478	1.267232029	103.805337	-	2122	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen	JL7834	Targeted	
3-Mar-21	1	T2	Terrestrial	VS478	1.267232029	103.805337	-	2122	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS479	1.267469991	103.805117	-	2127	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	15:03:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0055.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	16:13:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0058.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS480	1.268358976	103.804443	-	2138	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS481	1.26875896	103.803923	-	2142	Bird	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS481	1.26875896	103.803923	-	2146	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	JL7835	Targeted	
3-Mar-21	1	T2	Terrestrial	VS481	1.26875896	103.803923	-	2142	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS482	1.268932968	103.803706	-	2148	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	16:29:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0059.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	16:29:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0060.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS483	1.269307975	103.803353	-	2152	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
3-Mar-21	1	T2	Terrestrial	VS483	1.269307975	103.803353	-	2153	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS483	1.269307975	103.803353	-	2152	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:12:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0017.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS484	1.269895965	103.80296	-	2156	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:13:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0018.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:19:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0030.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:20:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0031.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS485	1.271145958	103.802786	-	2205	Reptile	*Lepidodactylus lugubris*	Mourning gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
3-Mar-21	-	-	Terrestrial	SH_3659	1.270209029	103.802847	-	856	Bird	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Yes	Resident breeder	1	Heard	-	Incidental (flora)	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:20:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0032.AVI	Incidental	-
3-Mar-21	1	T2	Terrestrial	VS486	1.271386016	103.802707	-	2208	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS486	1.271386016	103.802707	-	2208	Reptile	*Hemidactylus platyurus*	Flat-tailed gecko	Not Assessed	Not Assessed	No	Native	1	Seen	JL7836	Targeted	
3-Mar-21	1	T2	Terrestrial	VS487	1.271721041	103.80306	-	2213	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
3-Mar-21	1	T2	Terrestrial	VS488	1.271997979	103.803019	-	2215	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	1	Seen	JL7840	Targeted	
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	15:03:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0056.AVI	Incidental	-
8/4/2021	-	-	CT	-	1.27171	103.80536	CT05	18:24:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0061.AVI	Incidental	-
3-Mar-21	1	T4	Intertidal	SG400	1.264651995	103.808269	-	2055	Fish	*Ellochelon vaigiensis*	Squaretail mullet	Least Concern	Not Assessed	No	Native	2	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG399	1.264668005	103.808248	-	2053	Mollusc	*Trochus maculatus*	Turban snail	Not Assessed	Not Assessed	No	NA	2	Seen	P3030725	Targeted	-
3-Mar-21	1	T4	Intertidal	SG398	1.264693988	103.808321	-	2047	Echinoderm	*Clypeasteroida sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG403	1.26474604	103.808042	-	2104	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
3-Mar-21	1	T4	Intertidal	SG391	1.264809994	103.808305	-	2033	Crustacean	*Gelasimus vocans*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	SS7045	Targeted	-
3-Mar-21	1	T5	Intertidal	SG421	1.264926	103.808313	-	2147	Crustacean	*Palaemon sp.*	Glass shrimp	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG414	1.265064972	103.807695	-	2126	Fish	*Ambassis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG420	1.265367977	103.807673	-	2129	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG420	1.265367977	103.807673	-	2129	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Targeted	-
7/4/2021	-	-	CT	-	1.26558	103.8042	CT12	10:26:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0309.AVI	Incidental	-
3-Mar-21	1	T4	Intertidal	SG389	1.264786022	103.808242	-	2030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	SS699	Targeted	-
3-Mar-21	1	T4	Intertidal	SG388	1.264827009	103.808235	-	2028	Crustacean	*Ocypodidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	SS693	Targeted	-
3-Mar-21	1	T5	Intertidal	SG421	1.264926	103.808313	-	2147	Fish	*Bathygobius fuscus*	Common triffin goby	Least Concern	Not Assessed	No	Native	3	Seen	-	Targeted	-
3-Mar-21	1	T2	Terrestrial	VS470	1.265083998	103.808195	-	2046	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
3-Mar-21	-	-	Terrestrial	SH_3650	1.269850032	103.802983	-	850	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	6	Seen	SH_6454-6455	Incidental (flora)	
3-Mar-21	1	T4	Intertidal	SG397	1.264707986	103.808344	-	2045	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	20	Seen	-	Targeted	-
3-Mar-21	1	T5	Intertidal	SG422	1.264809994	103.808929	-	2207	Fish	*Plotosus lineatus*	Striped eeltail catfish	Not Assessed	Not Assessed	No	Native	20	Seen	SS774	Incidental	-
7/4/2021	-	-	CT	-	1.26558	103.8042	CT12	10:27:44	Bird	*Unidentified Rallidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0310.AVI	Incidental	-
7/4/2021	-	-	CT	-	1.26935	103.80166	CT10	11:38:36	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0058.AVI	Incidental	-
7/4/2021	-	-	CT	-	1.26935	103.80166	CT10	11:34:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0056.AVI	Targeted	-
7/4/2021	-	-	CT	-	1.26935	103.80166	CT10	11:35:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0057.AVI	Targeted	-
4-Mar-21	-	-	Terrestrial	unknown	1.272064	103.802898	-	700	Butterfly	***Amathusia phidippus phidippus***	Palm king	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental (flora)	
7/4/2021	-	-	CT	-	1.26935	103.80166	CT10	11:38:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:14:26	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0008.AVI	Incidental	-
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:33:50	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0009.AVI	Incidental	-
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:36:10	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0010.AVI	Incidental	-
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:36:42	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Incidental	-
4-Mar-21	-	-	Terrestrial	SH_3764	1.271855989	103.802963	-	924	Butterfly	***Arhopala sp.***	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SH_6574-83	Incidental (flora)	
4-Mar-21	-	-	Intertidal	SH_3765	1.271811984	103.802904	-	-	HC	*Carcinoscorpius rotundicauda*	NA	Data Deficient	Vulnerable	Yes	Native	1	Seen	SH_6589-92	Incidental (flora)	-
4-Mar-21	-	-	Intertidal	SH_3766	1.271657003	103.80295	-	-	HC	*Carcinoscorpius rotundicauda*	NA	Data Deficient	Vulnerable	Yes	Native	1	Seen	SH_6584	Incidental (flora)	-
4-Mar-21	-	-	Terrestrial	SH_3780	1.270490997	103.802966	-	-	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	1	Seen		Incidental (flora)	
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Cardidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Circe scripta*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040805	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Corbulidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040918	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040918	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040927	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*cf. Drupella margaritcola*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040965	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Euchelus atratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040875	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3040931	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040805	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040866	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040884	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040960	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium pectinatum & tumidum synomised*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040797	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040832	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040858	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Mactridae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Mancinella echinata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040866	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3040794	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3040877	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040836	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Nassarius crenoliratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040919	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Nassarius sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040944	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Nassarius livescens*	Common whelk	Not Assessed	Not Assessed	No	NA	1	Seen	P3040954	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Nassarius sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Naticidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040960	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Nerita chamaeleon*	Chameleon nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3040814	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3040792	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Orania bimucronata*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040965	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Orania cf. bimucronata*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Pardalinops testudinaria*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040946	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3040786	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Portunus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040923	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Volegalea cochlidium*	Spiral melongena	Not Assessed	Not Assessed	No	NA	1	Seen	P3040980	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Reishia bituberculata*	Bituberculate rock shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3040873	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040866	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040884	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040867	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Strombus turturella*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040959	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	P3040800	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Trochus maculatus*	Turban snail	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Turbo intercostalis*	Turban snail	Not Assessed	Not Assessed	No	NA	1	Seen	P3040884	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Umbonium vestiarium*	#N/A	Not Assessed	Vulnerable	Yes	#N/A	1	Seen	P3040921	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Venerupis aspera*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3040960	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Vexillum sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3040844	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	NA	NA	#N/A	#N/A	#N/A	#N/A	#N/A	1	-	-	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Circe scripta*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040843	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Corbulidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040941	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Diogenes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040941	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Drupella margaritticola*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040854	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Gafrarium dispar*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040941	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040848	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040890	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040967	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040856	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Nassarius crenoliratus*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040937	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040885	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040972	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3040806	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Trochidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3040843	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	3	Seen	P3040909	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	3	Seen	P3040948	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	3	Seen	P3040879	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3040850	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Onchidium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3040805	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	3	Seen	P3040941	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	4	Seen	P3040869	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P3040935	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium pectinatum & tumidum synomised*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	P3040843	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	4	Seen	P3040816	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	5	Seen	P3040790	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	5	Seen	P3040843	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	5	Seen	P3040871	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	6	Seen	P3040897	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	6	Seen	P3040942	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	6	Seen	P3040901	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Turbo intercostalis*	Turban snail	Not Assessed	Not Assessed	No	NA	6	Seen	P3040828	Targeted	-
4-Mar-21	2	T3	Intertidal	-	-	-	SN_03	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	7	Seen	P3040961	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Clypeomorus bifasciata*	NA	Not Assessed	Not Assessed	No	NA	8	Seen	P3040846	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	11	Seen	P3040808	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	17	Seen	P3040780	Targeted	-
4-Mar-21	2	T5	Intertidal	-	-	-	SN_05	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	28	Seen	P3040812	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1174	1.264734976	103.804485	-	1007	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental	
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	3:27:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0012.AVI	Targeted	-
7/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:35:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Targeted	-
6/4/2021	-	-	CT	-	1.26545	103.80801	CT03	1:20:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0005.AVI	Targeted	-
6/4/2021	-	-	CT	-	1.26545	103.80801	CT03	1:22:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0006.AVI	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1173	1.265713982	103.804271	-	1001	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
5-Mar-21	2	T1	Terrestrial	XT1172	1.26635503	103.804034	-	948	Odonate	*Orthetrum chrysis*	Spine-tufted skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
5-Mar-21	2	T1	Terrestrial	XT1172	1.26635503	103.804034	-	948	Odonate	*Orthetrum testaceum*	Scarlet skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
5-Mar-21	2	T1	Terrestrial	XT1172	1.26635503	103.804034	-	948	Odonate	*Unidentified Odonata moult*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	XT545-546	Targeted	
5-Mar-21	2	T1	Terrestrial	XT1172	1.26635503	103.804034	-	948	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	XT543-544	Incidental	
5-Mar-21	2	T1	Terrestrial	XT1171	1.266391994	103.804161	-	943	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
5-Mar-21	2	T1	Terrestrial	XT1171	1.266391994	103.804161	-	943	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	1	Seen		Incidental	
6/4/2021	-	-	CT	-	1.26558	103.8042	CT12	5:50:14	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0308.AVI	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1170	1.266523004	103.80395	-	939	Bird	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Introduced	1	Seen	XT539-542	Incidental	
5-Mar-21	2	T1	Terrestrial	XT1167	1.26736002	103.803054	-	932	Odonate	*Agrionoptera insignis*	Grenadier	Least Concern	Least Concern	No	Native	1	Seen	XT537-538	Targeted	
6/4/2021	-	-	CT	-	1.26646	103.80936	CT09	8:46:04	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0099.AVI	Targeted	-
6/4/2021	-	-	CT	-	1.26935	103.80166	CT10	11:09:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0055.AVI	Targeted	-
6/4/2021	-	-	CT	-	1.27171	103.80536	CT05	5:40:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0007.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.26545	103.80801	CT03	9:56:14	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0101.AVI	Incidental	-
5/4/2021	-	-	CT	-	1.26558	103.8042	CT12	8:49:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0305.AVI	Incidental	-
5/4/2021	-	-	CT	-	1.26558	103.8042	CT12	9:10:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0307.AVI	Incidental	-
5/4/2021	-	-	CT	-	1.26558	103.8042	CT12	9:00:48	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0306.AVI	Incidental	-
5/4/2021	-	-	CT	-	1.26646	103.80936	CT09	3:50:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0098.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.26747	103.803	CT11	3:58:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0086.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.26796	103.80523	CT02	11:34:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0076.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.26796	103.80523	CT02	12:55:46	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.26796	103.80523	CT02	12:59:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0079.AVI	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Anadara antiquata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Canarium urceus*	NA	Not Assessed	Vulnerable	Yes	NA	1	Seen	P3051055	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Canarium urceus*	NA	Not Assessed	Vulnerable	Yes	NA	1	Seen	P3051070	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cardiidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051037	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	1	Seen	P3051081	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	1	Seen	P3051043	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Cerithium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051047	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051092	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Clypeomorus bifasciata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051098	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Corbulidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051051	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Euchelus atratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051218	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051049	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051132	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051188	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Gafrarium dispar*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051051	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Gafrarium divaricatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051036	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051039	Targeted	-
5-Mar-21	2	T1, T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Gyrineum natator*	Tuberculate gyre-triton	Not Assessed	Not Assessed	No	NA	1	Seen	P3050997	Incidental	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051037	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051158	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051031	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051214	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Drupella margariticola*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051148	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Nassarius crenoliratus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051084	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Nassarius echinatus*	Prickly whelk	Not Assessed	Not Assessed	No	NA	1	Seen	P3051089	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Nassarius nodifer*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051063	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3051049	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3051051	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3051179	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Nerita undata*	Waved nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3051053	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051053	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051047	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051160	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Ovulidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051110	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Pardalinops testudinaria*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051058	Targeted	-
5-Mar-21	2	T1, T2	Intertidal	-	-	-	SN_02	0700-1030	Cnidarian	*Phymanthus sp.*	Frilly anemone	NA	NA	No	NA	1	Seen	P3051001	Incidental	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051101	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3051182	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Pirenella microptera*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051077	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Platyhelminthes	*Platyhelminthes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051029	Incidental	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Polychaete	*Polynoidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051019	Incidental	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051049	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Semele carnicolor*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051037	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3051129	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051117	Targeted	-
5-Mar-21	2	T1, T2	Intertidal	-	-	-	SN_02	0700-1030	Echinoderm	*Stellaster childreni*	Galloping sea star	Not Assessed	Not Assessed	No	NA	1	Seen	P3051006	Incidental	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Strombidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051049	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Tellina cruciata*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Tellinidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051043	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Unidentified Crab*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051144	Targeted	-
5-Mar-21	2	T2	Intertidal	-	-	-	SN_02	0700-1030	Mollusc	*Unidentified Mollusc*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051074	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Unidentified Mollusc*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051037	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Unidentified Mollusc*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3051191	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Venerupis aspera*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1173	1.265713982	103.804271	-	1001	Odonate	*Orthetrum chrysis*	Spine-tufted skimmer	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Gafrarium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051051	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Indothais cf. javanica*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051204	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Nassarius crenoliratus*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3051066	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	2	Seen	P3051120	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	2	Seen	P3051212	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051112	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051141	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051196	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3051011	Incidental	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Semele carnicolor.*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3051051	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1172	1.26635503	103.804034	-	948	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
5-Mar-21	2	T1	Terrestrial	XT1171	1.266391994	103.804161	-	943	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium zonatum*	NA	Not Assessed	Not Assessed	No	NA	3	Seen	P3051165	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3051033	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3051196	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	4	Seen	P3051207	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Assessed	No	NA	4	Seen	P3051210	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	5	Seen	P3051185	Targeted	-
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	6	Seen	P3051051	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	6	Seen	P3051193	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	8	Seen	P3051104	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	8	Seen	P3051123	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1168	1.267163968	103.803456	-	934	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	9	Seen		Targeted	
5-Mar-21	2	T1	Intertidal	-	-	-	SN_01	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	10	Seen	P3051061	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	10	Seen	P3051155	Targeted	-
5-Mar-21	2	T4	Intertidal	-	-	-	SN_04	0700-1030	Mollusc	*Cerithium coralium*	NA	Least Concern	Not Assessed	No	NA	11	Seen	P3051152	Targeted	-
5-Mar-21	2	T1	Terrestrial	XT1169	1.266789967	103.803804	-	937	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	16	Seen		Targeted	
5/4/2021	-	-	CT	-	1.26903	103.80488	CT08	6:53:34	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0001.AVI	Targeted	-
6-Mar-21	1	T2	Terrestrial	VS501	1.265514996	103.81012	-	1003	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
5/4/2021	-	-	CT	-	1.26953	103.80608	CT06	13:52:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0006.AVI	Targeted	-
5/4/2021	-	-	CT	-	1.27135	103.80305	CT01	18:52:22	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0003.AVI	Incidental	-
6-Mar-21	1	T2	Terrestrial	VS504	1.265913974	103.806541	-	1034	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental	
6-Mar-21	1	T2	Terrestrial	VS503	1.266199965	103.809768	-	1011	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
6-Mar-21	1	T2	Terrestrial	VS503	1.266199965	103.809768	-	1010	Butterfly	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
6-Mar-21	1	T2	Terrestrial	VS499	1.266348995	103.806131	-	933	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
5/4/2021	-	-	CT	-	1.27171	103.80536	CT05	21:17:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0004.AVI	Targeted	-
6-Mar-21	1	T2	Terrestrial	VS498	1.266788961	103.805736	-	927	Butterfly	*Unidentified Lepidoptera*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
5/4/2021	-	-	CT	-	1.27171	103.80536	CT05	21:16:10	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0003.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.26545	103.80801	CT03	3:28:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0100.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.26545	103.80801	CT03	0:47:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0099.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.26545	103.80801	CT03	13:00:58	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0098.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	10:55:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0299.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	10:56:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0300.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	10:59:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0301.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	11:01:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0302.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	11:10:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0303.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26558	103.8042	CT12	16:25:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0304.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26747	103.803	CT11	11:39:14	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0080.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26747	103.803	CT11	12:01:30	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0081.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26747	103.803	CT11	13:39:22	Bird	*Centropus sinensis*	Greater coucal	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0082.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26747	103.803	CT11	18:47:28	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0083.AVI	Incidental	-
4/4/2021	-	-	CT	-	1.26747	103.803	CT11	20:38:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0084.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.27135	103.80305	CT01	19:48:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0074.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.27135	103.80305	CT01	5:00:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0075.AVI	Targeted	-
4/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:58:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0120.AVI	Targeted	-
6-Mar-21	1	T2	Terrestrial	VS505	1.269381987	103.803135	-	1050	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental	
6-Mar-21	1	T2	Terrestrial	VS505	1.269381987	103.803135	-	1050	Butterfly	*Jamides sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Incidental	
4/4/2021	-	-	CT	-	1.26916	103.80663	CT04	7:02:32	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	4	Seen	IMG_0118.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26558	103.8042	CT12	12:40:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0296.AVI	Incidental	-
3/4/2021	-	-	CT	-	1.26558	103.8042	CT12	16:46:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0297.AVI	Incidental	-
3/4/2021	-	-	CT	-	1.26558	103.8042	CT12	18:40:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0298.AVI	Incidental	-
6-Mar-21	1	T2	Terrestrial	VS506	1.271543009	103.802719	-	1055	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental	
3/4/2021	-	-	CT	-	1.26646	103.80936	CT09	14:09:12	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0095.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26646	103.80936	CT09	14:36:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0097.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26796	103.80523	CT02	12:45:48	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0226.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26796	103.80523	CT02	12:48:12	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0227.AVI	Targeted	-
6-Mar-21	1	T2	Terrestrial	VS500	1.265413994	103.81	-	1001	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
6-Mar-21	1	T2	Terrestrial	VS502	1.265651034	103.810091	-	1004	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
3/4/2021	-	-	CT	-	1.26903	103.80488	CT08	11:19:48	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0046.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26916	103.80663	CT04	12:06:24	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0114.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.26935	103.80166	CT10	13:39:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
3/4/2021	-	-	CT	-	1.27135	103.80305	CT01	13:21:06	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0072.AVI	Incidental	-
3/4/2021	-	-	CT	-	1.27135	103.80305	CT01	16:11:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0073.AVI	Incidental	-
3/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:22:10	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0119.AVI	Incidental	-
2/4/2021	-	-	CT	-	1.26545	103.80801	CT03	20:53:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0096.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26545	103.80801	CT03	0:22:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0097.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26646	103.80936	CT09	18:47:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26646	103.80936	CT09	21:26:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0094.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26903	103.80488	CT08	14:54:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0043.AVI	Targeted	-
8-Mar-21	2	-	Seine netting	-	1.26505	103.80945	SN_01	1900	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
8-Mar-21	2	-	Seine netting	-	1.26515	103.80783	SN_05	1750	Fish	*Hyporhamphus quoyi*	Quoy's halfbeak	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
8-Mar-21	-	-	Intertidal	-	1.265165	103.807601	SN_08	1730	Crustacean	*Gelasimus tetragonon*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
2/4/2021	-	-	CT	-	1.26903	103.80488	CT08	17:35:12	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26903	103.80488	CT08	17:35:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26916	103.80663	CT04	9:43:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0108.AVI	Targeted	-
8-Mar-21	2	-	Seine netting	-	1.26561	103.80745	SN_06	1730	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-
2/4/2021	-	-	CT	-	1.26916	103.80663	CT04	13:07:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0109.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.26916	103.80663	CT04	13:08:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0110.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.27171	103.80536	CT05	11:04:30	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0117.AVI	Incidental	-
2/4/2021	-	-	CT	-	1.27171	103.80536	CT05	10:40:40	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0116.AVI	Incidental	-
2/4/2021	-	-	CT	-	1.27171	103.80536	CT05	8:24:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0114.AVI	Incidental	-
2/4/2021	-	-	CT	-	1.27171	103.80536	CT05	6:01:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0118.AVI	Targeted	-
2/4/2021	-	-	CT	-	1.27171	103.80536	CT05	8:25:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0115.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26545	103.80801	CT03	14:22:12	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0092.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26545	103.80801	CT03	2:33:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0095.AVI	Targeted	-
8-Mar-21	-	-	Intertidal	SS1859	1.264949966	103.808789	-	1210	Mollusc	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Yes	NA	4	Seen	-	Incidental	-
8-Mar-21	2	-	Seine netting	-	1.26515	103.80783	SN_05	1750	Fish	*Gerres filamentosus*	#N/A	#N/A	#N/A	#N/A	#N/A	6	Seen	-	Targeted	-
8-Mar-21	-	-	Terrestrial	SH_3833	1.2688	103.808605	-	950	Bird	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Assessed	No	Resident breeder	10	Seen	YY_863-864	Incidental (flora)	
8-Mar-21	2	-	Seine netting	-	1.26505	103.80945	SN_01	1900	Fish	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Assessed	No	NA	50	Seen	-	Targeted	-
9-Mar-21	2	T2	Terrestrial	XT1178	1.264937986	103.809094	-	729	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1178	1.264937986	103.809094	-	729	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1178	1.264937986	103.809094	-	729	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1179	1.264948966	103.808846	-	731	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1180	1.264977967	103.808309	-	735	Fish	*Ray sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Incidental	
9-Mar-21	2	T2	Terrestrial	XT1181	1.265143007	103.80802	-	737	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1181	1.265143007	103.80802	-	737	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1182	1.265146025	103.807801	-	738	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1182	1.265146025	103.807801	-	738	Bird	*Pycnonotus jocosus*	Red-whiskered bulbul	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1177	1.265163962	103.809853	-	724	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1177	1.265163962	103.809853	-	724	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
1/4/2021	-	-	CT	-	1.26545	103.80801	CT03	19:32:46	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26545	103.80801	CT03	19:33:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0094.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:17:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0277.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:17:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0278.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:17:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0279.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:18:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0280.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:18:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0281.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:18:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0282.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:19:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0283.AVI	Incidental	-
9-Mar-21	2	T2	Terrestrial	XT1185	1.265680036	103.806908	-	745	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1185	1.265680036	103.806908	-	745	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Bird	*Corvus macrorhynchos*	Large-billed crow	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1189	1.266363999	103.806119	-	759	Bird	*Corvus splendens*	House crow	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1189	1.266363999	103.806119	-	759	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1189	1.266363999	103.806119	-	759	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0284.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0285.AVI	Incidental	-
9-Mar-21	2	T2	Terrestrial	XT1190	1.266461983	103.806075	-	802	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1190	1.266461983	103.806075	-	802	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1191	1.266600033	103.806036	-	803	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1191	1.266600033	103.806036	-	803	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1191	1.266600033	103.806036	-	803	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1192	1.266631968	103.805937	-	807	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1192	1.266631968	103.805937	-	807	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1175	1.266997	103.80928	-	715	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1175	1.266997	103.80928	-	715	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1175	1.266997	103.80928	-	715	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1193	1.266998006	103.805561	-	812	Bird	*Chrysophlegma miniaceum*	Banded woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1193	1.266998006	103.805561	-	812	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:23:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0288.AVI	Incidental	-
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Bird	*Gracula religiosa*	Common hill myna	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0289.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:25:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0290.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:31:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0291.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:32:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0292.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:35:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0294.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26646	103.80936	CT09	4:00:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0091.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26646	103.80936	CT09	4:00:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0092.AVI	Targeted	-
9-Mar-21	2	T2	Terrestrial	XT1195	1.267995033	103.804617	-	824	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1196	1.268340033	103.804449	-	828	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1196	1.268340033	103.804449	-	828	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1196	1.268340033	103.804449	-	828	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1196	1.268340033	103.804449	-	828	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1197	1.268491996	103.804183	-	832	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1197	1.268491996	103.804183	-	832	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1197	1.268491996	103.804183	-	832	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1197	1.268491996	103.804183	-	832	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1198	1.269070012	103.803506	-	839	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1198	1.269070012	103.803506	-	839	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1199	1.269416017	103.803199	-	842	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1199	1.269416017	103.803199	-	842	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1199	1.269416017	103.803199	-	842	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
1/4/2021	-	-	CT	-	1.26796	103.80523	CT02	9:29:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0221.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26796	103.80523	CT02	9:29:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0222.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26796	103.80523	CT02	15:11:42	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0223.AVI	Targeted	-
9-Mar-21	2	T2	Terrestrial	XT1200	1.269674012	103.802995	-	844	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1200	1.269674012	103.802995	-	844	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1200	1.269674012	103.802995	-	844	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	-	-	Terrestrial	CM 742	1.26857	103.80443	-	1420	Mammal	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Endangered	Yes	Native	1	Seen	DY 636-43	Incidental (flora)	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1201	1.270239959	103.802772	-	847	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
1/4/2021	-	-	CT	-	1.26903	103.80488	CT08	19:52:38	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0042.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26916	103.80663	CT04	12:16:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0095.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26916	103.80663	CT04	13:21:32	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0096.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.27053	103.81113	CT07	15:42:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0314.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.27053	103.81113	CT07	15:42:26	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0315.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.27135	103.80305	CT01	0:22:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0071.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.27135	103.80305	CT01	13:25:06	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0070.AVI	Incidental	-
9-Mar-21	2	T2	Terrestrial	XT1202	1.27108804	103.80266	-	900	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1202	1.27108804	103.80266	-	900	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
1/4/2021	-	-	CT	-	1.27171	103.80536	CT05	20:55:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0112.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26796	103.80523	CT02	6:42:20	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0224.AVI	Targeted	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0286.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0287.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:32:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0293.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.26558	103.8042	CT12	17:35:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0295.AVI	Incidental	-
1/4/2021	-	-	CT	-	1.27171	103.80536	CT05	7:10:10	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	5	Seen	IMG_0113.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26545	103.80801	CT03	18:48:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0087.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26545	103.80801	CT03	18:48:32	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0088.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26543	103.80801	CT03	18:52:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0089.AVI	Targeted	-
9-Mar-21	2	T2	Terrestrial	XT1203	1.271869987	103.803051	-	904	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1203	1.271869987	103.803051	-	904	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1204	1.271955986	103.802885	-	908	Bird	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Yes	Resident breeder	1	Heard		Targeted	
31/3/2021	-	-	CT	-	1.26545	103.80801	CT03	18:56:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0090.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26545	103.80801	CT03	18:57:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0091.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:18:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0076.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:27:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0077.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:15:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0075.AVI	Targeted	-
9-Mar-21	2	T2	Terrestrial	XT1179	1.264948966	103.808846	-	731	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1179	1.264948966	103.808846	-	731	Bird	*Corvus splendens*	House crow	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1180	1.264977967	103.808309	-	735	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1188	1.266229972	103.806295	-	757	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1176	1.266398029	103.809664	-	719	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1190	1.266461983	103.806075	-	802	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1192	1.266631968	103.805937	-	807	Bird	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
9-Mar-21	2	T2	Terrestrial	XT1192	1.266631968	103.805937	-	807	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1193	1.266998006	103.805561	-	812	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1193	1.266998006	103.805561	-	812	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1193	1.266998006	103.805561	-	812	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1195	1.267995033	103.804617	-	824	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1198	1.269070012	103.803506	-	839	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1185	1.265680036	103.806908	-	745	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1187	1.265955968	103.806502	-	754	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1194	1.267486	103.805134	-	817	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1178	1.264937986	103.809094	-	729	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1180	1.264977967	103.808309	-	735	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1184	1.265394967	103.807313	-	743	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1176	1.266398029	103.809664	-	719	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen		Targeted	
9-Mar-21	-	-	Intertidal	EK_510	1.27118	103.80269	-	-	Crustacean	*Lobster mount*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	DY_781-3	Incidental (flora)	-
9-Mar-21	-	-	Intertidal	EK_501	1.27118	103.80269	-	-	Crustacean	*Lobster mount*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	DY_735-41	Incidental (flora)	-
9-Mar-21	2	T2	Terrestrial	XT1183	1.265157005	103.807511	-	740	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	6	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1185	1.265680036	103.806908	-	745	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	6	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1202	1.27108804	103.80266	-	900	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	6	Seen		Targeted	
9-Mar-21	2	T2	Terrestrial	XT1186	1.265837029	103.806681	-	750	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	7	Seen		Targeted	
9-Mar-21	-	-	Intertidal	EK_529	1.26784	103.80484	-	-	Crustacean	*Lobster mount*	#N/A	#N/A	#N/A	#N/A	#N/A	7	Seen	DY_899-901	Incidental (flora)	-
31/3/2021	-	-	CT	-	1.26903	103.80488	CT08	15:56:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0041.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.26935	103.80166	CT10	8:19:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0049.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.26935	103.80166	CT10	9:49:46	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0050.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.26935	103.80166	CT10	10:22:56	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0051.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.27135	103.80305	CT01	20:23:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0068.AVI	Targeted	-
31/3/2021	-	-	CT	-	1.27053	103.81113	CT07	11:58:44	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0205.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.27135	103.80305	CT01	11:56:36	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0066.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.27135	103.80305	CT01	20:36:02	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0069.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.27135	103.80305	CT01	13:41:58	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0067.AVI	Incidental	-
31/3/2021	-	-	CT	-	1.26796	103.80523	CT02	19:51:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0220.AVI	Targeted	-
30/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:25:30	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0086.AVI	Incidental	-
30/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:39:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0276.AVI	Incidental	-
30/3/2021	-	-	CT	-	1.26953	103.80488	CT08	5:06:00	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
30/3/2021	-	-	CT	-	1.27135	103.80305	CT01	10:55:30	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0065.AVI	Incidental	-
30/3/2021	-	-	CT	-	1.27171	103.80536	CT05	18:48:22	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0109.AVI	Targeted	-
30/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:39:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0110.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.26545	103.80801	CT03	21:07:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0085.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.26545	103.80801	CT03	20:14:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.26646	103.80936	CT09	14:16:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0090.AVI	Incidental	-
29/3/2021	-	-	CT	-	1.26747	103.803	CT11	20:46:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0073.AVI	Targeted	-
10-Mar-21	-	-	Terrestrial	SH_3885	1.267075	103.805901	-	1530	Bird	*Pernis ptilorhynchus*	Crested honey-buzzard	Least Concern	Not Assessed	No	Winter visitor	1	Seen	SH_6640-6644	Incidental (flora)	
10-Mar-21	-	-	Terrestrial	SH_3887	1.267754	103.804831	-	1405	Bird	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen	SH_6632-6636	Incidental (flora)	
10-Mar-21	-	-	Terrestrial	SH_4002	1.266852	103.806157	-	1800	Odonate	*Unidentified Odonata*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SH_6653-6657	Incidental (flora)	
29/3/2021	-	-	CT	-	1.26796	103.80523	CT02	8:43:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0212.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.26903	103.80488	CT08	21:45:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.26953	103.80608	CT06	15:14:20	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0086.AVI	Incidental	-
29/3/2021	-	-	CT	-	1.27135	103.80305	CT01	23:16:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0064.AVI	Targeted	-
29/3/2021	-	-	CT	-	1.27053	103.81113	CT07	7:59:02	Bird	*Lanius tigrinus*	Tiger shrike	Least Concern	Not Assessed	No	Winter visitor	1	Seen	IMG_0197.AVI	Incidental	-
29/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:52:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0106.AVI	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Cerithidea obtusa*	Chut-chut	Not Assessed	Not Assessed	No	NA	1	Seen	P3101351	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Assessed	No	NA	1	Seen	P3101342	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Clistocoeloma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101315	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Clypeomorus pellucida*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3101299	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Epitonium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101333	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Geloina expansa*	Giant mud clam, lokan	Not Assessed	Not Assessed	No	NA	1	Seen	P3101325	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Isognomon sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101309	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Littoraria carinifera*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3101290	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Littoraria sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101282	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Metaplax sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101322	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Fish	*Oryzias javanicus*	Javanese ricefish	Not Assessed	Not Assessed	No	Native	1	Seen	P3101269	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Parasesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101312	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Fish	*Periophthalmus walailakae*	Yellow-spotted mudskipper	Not Assessed	Not Assessed	No	NA	1	Seen	P3101371	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Perisesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101356	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Perisesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101332	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101306	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Fish	*Pseudogobius javanicus*	Java fat-nose goby	Not Assessed	Not Assessed	No	Native	1	Seen	P3101364	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Drupella margariticola*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3101295	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3101325	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	3:45:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0080.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	6:14:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0082.AVI	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Assessed	No	NA	2	Seen	P3101276	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Littoraria melanostoma*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3101279	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Nerita planospira*	Flat-spire nerite	Not Assessed	Vulnerable	Yes	NA	2	Seen	P3101348	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Fish	*Periophthalmus gracilis*	Slender mudskipper	Not Assessed	Not Assessed	No	NA	2	Seen	P3101256	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3101333	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	2	Seen	P3101336	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Nerita planospira*	Flat-spire nerite	Not Assessed	Vulnerable	Yes	NA	3	Seen	P3101274	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Littoraria intermedia*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P3101285	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	4	Seen	P3101268	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Perisesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	P3101338	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	5	Seen	P3101304	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	39	Seen	P3101304	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_02	1500-1830	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-			-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Ellobium cf. aurisjudae*	#N/A	#N/A	#N/A	#N/A	#N/A		Seen	P3101345	Targeted	-
10-Mar-21	1	-	Mangrove	-	-	-	MP_01	1500-1830	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native		Seen	P3101345	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	20:56:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0076.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:02:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0077.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:19:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	3:45:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0079.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	4:26:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0081.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	6:43:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26545	103.80801	CT03	11:55:08	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0075.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:47:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0273.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.26558	103.8042	CT12	19:46:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0274.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26558	103.8042	CT12	5:23:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0275.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26747	103.803	CT11	9:33:32	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0069.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:45:28	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0070.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.26747	103.803	CT11	19:20:50	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0071.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26747	103.803	CT11	19:21:18	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0072.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26903	103.80488	CT08	14:12:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0038.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26916	103.80663	CT04	23:34:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0067.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26916	103.80663	CT04	1:17:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0070.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26926	103.80166	CT10	15:40:22	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0048.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.26953	103.80608	CT06	13:45:16	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0059.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.26953	103.80608	CT06	7:51:46	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0069.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:04:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0049.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:04:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0050.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:04:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0051.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:05:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0052.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:05:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0053.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:06:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0054.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:07:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0056.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:07:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0057.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:08:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0058.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:10:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0059.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:11:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0060.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:11:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0061.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:12:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0062.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:12:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0063.AVI	Incidental	-
28/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:19:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0100.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:34:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0101.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:46:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0102.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:01:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0103.AVI	Targeted	-
28/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:08:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0104.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	10:29:08	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0067.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	23:48:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0069.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:01:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0072.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:02:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0073.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:18:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0074.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	23:48:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0070.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26545	103.80801	CT03	23:49:10	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0071.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:39:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0260.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:39:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0261.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:41:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0262.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:48:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0263.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:58:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0264.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:00:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0265.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:00:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0266.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:01:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0267.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:19:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0268.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:31:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0269.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:32:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0270.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:45:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0271.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:45:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0272.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26796	103.80523	CT02	15:31:54	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0209.AVI	Incidental	-
27/3/2021	-	-	CT	-	1.26903	103.80488	CT08	17:56:48	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
11-Mar-21	-	-	Intertidal	YY 1539	1.266550	103.806417	-	-	HC	*Carcinoscorpius rotundicauda*	NA	Data Deficient	Vulnerable	Yes	Native	1	Seen	SH 6661-3	Incidental (flora)	-
27/3/2021	-	-	CT	-	1.26903	103.80488	CT08	14:11:26	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0035.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26953	103.80608	CT06	6:51:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.27171	103.80536	CT05	7:31:10	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0099.AVI	Targeted	-
27/3/2021	-	-	CT	-	1.26953	103.80608	CT06	6:52:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:17:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0064.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:57:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0066.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0255.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0256.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0257.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26558	103.8042	CT12	19:44:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0259.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26747	103.803	CT11	10:40:36	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0066.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26747	103.803	CT11	10:49:48	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0067.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26747	103.803	CT11	22:56:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0068.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26903	103.80488	CT08	11:29:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0032.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:42:42	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0046.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:49:36	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0047.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.26953	103.80608	CT06	20:32:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0055.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.27135	103.80305	CT01	22:41:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	15:14:12	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0090.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	15:14:34	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0091.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	15:15:00	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0092.AVI	Incidental	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	0:16:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0095.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	0:20:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0096.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:37:18	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0094.AVI	Targeted	-
26/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:06:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0258.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26545	103.80801	CT03	8:02:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0062.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26545	103.80801	CT03	8:02:46	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0063.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:13:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0239.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:19:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0240.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:20:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0241.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:20:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0242.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:21:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0243.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:21:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0244.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:21:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0245.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:22:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0246.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:22:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0247.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:28:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0253.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:28:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0254.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26646	103.80936	CT09	10:44:58	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0085.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:22:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0195.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:10:40	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0196.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	15:59:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0197.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:46:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0198.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:49:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0201.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:51:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0202.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:56:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0203.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:14:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0205.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:28:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0206.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:30:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0207.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:28:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0208.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26916	103.80663	CT04	15:08:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26916	103.80663	CT04	15:09:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26916	103.80663	CT04	15:12:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0061.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT06	16:50:02	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0047.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26953	103.80608	CT06	20:36:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0052.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.27171	103.80536	CT05	23:32:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0087.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1258	1.263162028	103.805239	-	1029	Butterfly	*Abisara saturata kausambioides*	Malayan plum judy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1258	1.263162028	103.805239	-	1029	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1258	1.263162028	103.805239	-	1029	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1259	1.264707986	103.804555	-	1049	Butterfly	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Resident	1	Seen		Incidental	
13-Mar-21	2	T1	Terrestrial	XT1257	1.265023984	103.804532	-	1022	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
25/3/2021	-	-	CT	-	1.27171	103.80536	CT05	23:38:04	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0089.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:48:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0200.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:21:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0204.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.27171	103.80536	CT05	23:37:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0088.AVI	Targeted	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:22:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0248.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:23:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0249.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:23:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0250.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:24:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0251.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:25:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0252.AVI	Incidental	-
25/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:47:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	IMG_0199.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26558	103.8042	CT12	21:05:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0235.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26558	103.8042	CT12	4:56:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0236.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26558	103.8042	CT12	4:57:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0237.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	12:44:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0080.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1255	1.265955968	103.804243	-	1007	Butterfly	*Euthalia aconthea gunda*	Baron	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1255	1.265955968	103.804243	-	1007	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1254	1.266114973	103.804273	-	1003	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1254	1.266114973	103.804273	-	1003	Butterfly	*Mycalesis mineus macromalayana*	Dark brand bush brown	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1253	1.266318988	103.804077	-	959	Odonate	*Agriocnemis femina*	Variable wisp	Least Concern	Least Concern	No	Native	1	Seen		Incidental	
13-Mar-21	2	T1	Terrestrial	XT1253	1.266318988	103.804077	-	959	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
13-Mar-21	2	T1	Terrestrial	XT1253	1.266318988	103.804077	-	959	Odonate	*Ceriagrion cerinorubellum*	Ornate coraltail	Least Concern	Least Concern	No	Native	1	Seen		Incidental	
13-Mar-21	2	T1	Terrestrial	XT1253	1.266318988	103.804077	-	959	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	12:45:20	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0081.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1252	1.266547982	103.803936	-	952	Butterfly	*Danaus chrysippus chrysippus*	Plain tiger	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1252	1.266547982	103.803936	-	952	Butterfly	*Junonia almana javana*	Peacock pansy	Least Concern	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1252	1.266547982	103.803936	-	952	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1251	1.266923994	103.803771	-	949	Butterfly	*Mycalesis mineus macromalayana*	Dark brand bush brown	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1250	1.267131027	103.803483	-	943	Butterfly	*Eurema blanda snelleni*	Three spot grass yellow	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1250	1.267131027	103.803483	-	943	Butterfly	*Eurema hecabe contubernalis*	Common grass yellow	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1250	1.267131027	103.803483	-	943	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1250	1.267131027	103.803483	-	943	Butterfly	*Mycalesis perseoides perseoides*	Burmese bush brown	Not Assessed	Data Deficient	No	Resident	1	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	12:45:42	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0082.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1248	1.267608963	103.802996	-	934	Butterfly	*Appias libythea olferna*	Striped albatross	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1247	1.267765034	103.802724	-	931	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1247	1.267765034	103.802724	-	931	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:46:42	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:49:08	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1244	1.268816041	103.801928	-	924	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26646	103.80936	CT09	9:36:28	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0079.AVI	Incidental	-
13-Mar-21	2	T1	Terrestrial	XT1243	1.269227006	103.80179	-	920	Butterfly	*Iambrix salsala salsala*	Chestnut bob	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1243	1.269227006	103.80179	-	920	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1243	1.269227006	103.80179	-	920	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	19:33:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0167.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	19:35:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0168.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:17:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0170.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:18:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0171.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:48:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0173.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:59:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0174.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:07:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0175.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:09:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0176.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:10:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0177.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:28:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0178.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:08:04	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0180.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:15:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0182.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:54:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0183.AVI	Targeted	-
13-Mar-21	2	T1	Terrestrial	XT1256	1.265915986	103.804178	-	1012	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1253	1.266318988	103.804077	-	959	Butterfly	*Junonia almana javana*	Peacock pansy	Least Concern	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1252	1.266547982	103.803936	-	952	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1249	1.267160028	103.803393	-	941	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1249	1.267160028	103.803393	-	941	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1246	1.268211035	103.802504	-	928	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1242	1.269475026	103.801637	-	910	Butterfly	*Mycalesis mineus macromalayana*	Dark brand bush brown	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1249	1.267160028	103.803393	-	941	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1242	1.269475026	103.801637	-	910	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1245	1.268583024	103.802162	-	925	Butterfly	*Polyura hebe plautus*	Plain nawab	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1243	1.269227006	103.80179	-	920	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1250	1.267131027	103.803483	-	943	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	6	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1251	1.266923994	103.803771	-	949	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	7	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1248	1.267608963	103.802996	-	934	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	8	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1242	1.269475026	103.801637	-	910	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	10	Seen		Targeted	
13-Mar-21	2	T1	Terrestrial	XT1248	1.267608963	103.802996	-	934	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	15	Seen		Targeted	
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:04:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0185.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:19:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0186.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:21:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0187.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:23:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0188.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:35:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0189.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:41:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0190.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:45:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0191.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:46:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0192.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:49:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0193.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	4:37:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0194.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:07:58	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0044.AVI	Incidental	-
24/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:10:40	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0045.AVI	Incidental	-
24/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:40:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0045.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.27135	103.80305	CT01	7:31:24	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0047.AVI	Incidental	-
24/3/2021	-	-	CT	-	1.27171	103.80536	CT05	4:30:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0086.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.27171	103.80536	CT05	9:10:54	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0085.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:13:56	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0169.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:07:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0179.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:09:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0181.AVI	Targeted	-
24/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:56:06	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0184.AVI	Targeted	-
23/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:37:52	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0061.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26646	103.80936	CT09	8:32:16	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0077.AVI	Targeted	-
23/3/2021	-	-	CT	-	1.26646	103.80936	CT09	10:03:08	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0078.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:27:38	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0060.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:28:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0061.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:28:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0062.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:29:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0063.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:29:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0064.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:09:16	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0165.AVI	Targeted	-
23/3/2021	-	-	CT	-	1.26935	103.80166	CT10	9:35:12	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0042.AVI	Incidental	-
23/3/2021	-	-	CT	-	1.27135	103.80305	CT01	20:58:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
15-Mar-21	2	T1	Terrestrial	VS522	1.263047028	103.805371	-	1708	Aculeate hymenopteran	*Polistes sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	HB698	Incidental	
15-Mar-21	2	T1	Terrestrial	VS523	1.263349028	103.805284	-	1710	Butterfly	*Eurema blanda snelleni*	Three spot grass yellow	Not Assessed	Not Assessed	No	Resident	1	Seen	HB700	Incidental	
15-Mar-21	2	T1	Terrestrial	VS524	1.263662009	103.805197	-	1714	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen	HB701	Incidental	
15-Mar-21	2	T1	Terrestrial	VS525	1.264139023	103.804721	-	1720	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Incidental	
23/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:17:18	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0166.AVI	Targeted	-
23/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:21:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
23/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:22:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26545	103.80801	CT03	2:12:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:15:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0222.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:16:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0223.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:17:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0225.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:36:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0227.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:34:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0229.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:09:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0230.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:10:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0231.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:15:14	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0221.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:54:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0039.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:17:58	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0075.AVI	Incidental	-
15-Mar-21	2	T1	Terrestrial	VS526	1.266415967	103.80416	-	1747	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen	HB706-707	Targeted	
22/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:01:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
15-Mar-21	2	T1	Terrestrial	VS527	1.267276034	103.803401	-	1815	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Incidental	
22/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:02:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0058.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:02:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0059.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:57:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:18:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0162.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:44:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0163.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26903	103.80488	CT08	15:08:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0030.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:58:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0041.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26953	103.80608	CT06	10:34:02	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0045.AVI	Incidental	-
15-Mar-21	2	T3	Terrestrial	SS1870	1.269218037	103.810599	-	1808	Odonate	*Tholymis tillarga*	White-barred duskhawk	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
22/3/2021	-	-	CT	-	1.26953	103.80608	CT06	11:10:58	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0046.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:24:24	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:29:16	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:29:52	Mammal	*Callosciurus notatus*	Plaintain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0037.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
22/3/2021	-	-	CT	-	1.27135	103.80305	CT01	22:00:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0042.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27171	103.80536	CT05	10:29:18	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0078.AVI	Incidental	-
15-Mar-21	2	T1	Terrestrial	VS529	1.269557001	103.801767	-	1842	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	1	Seen		Incidental	
15-Mar-21	2	T3	Terrestrial	SS1866	1.269911975	103.809511	-	1745	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
22/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:21:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0080.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:18:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0079.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:47:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0081.AVI	Targeted	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:17:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0224.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:17:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0226.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:36:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0228.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:10:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0232.AVI	Incidental	-
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:11:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0233.AVI	Incidental	-
15-Mar-21	2	T3	Terrestrial	SS1863	1.271436978	103.803133	-	1723	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
22/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:11:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0234.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:19:48	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.26545	103.80801	CT03	2:26:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:08:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0209.AVI	Incidental	-
15-Mar-21	2	T3	Terrestrial	SS1865	1.271981969	103.804566	-	1728	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Incidental	
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:09:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0210.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:15:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0211.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:28:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0212.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:27:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0214.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:20:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0215.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:21:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0216.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:58:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0217.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:58:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0218.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:59:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0219.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:59:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0220.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:30:38	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0073.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26646	103.80936	CT09	16:03:28	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0074.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:56:36	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0055.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:58:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0056.AVI	Targeted	-
15-Mar-21	2	T1	Terrestrial	VS526	1.266415967	103.80416	-	1755	Odonate	*Brachydiplax chalybea*	Blue dasher	Least Concern	Least Concern	No	Native	2	Seen	HB708-709, 713-714	Targeted	
15-Mar-21	2	T1	Terrestrial	VS526	1.266415967	103.80416	-	1747	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen	HB704-705, 710-712	Targeted	
15-Mar-21	2	T3	Terrestrial	SS1870	1.269218037	103.810599	-	1808	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
21/3/2021	-	-	CT	-	1.26796	103.80523	CT02	12:35:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0160.AVI	Targeted	-
15-Mar-21	2	T3	Terrestrial	SS1864	1.27174099	103.803372	-	1724	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
21/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:43:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0161.AVI	Targeted	-
15-Mar-21	2	T3	Terrestrial	SS1868	1.26960306	103.810019	-	1756	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1867	1.269734027	103.809752	-	1753	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
21/3/2021	-	-	CT	-	1.26903	103.80488	CT08	11:04:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
15-Mar-21	2	T3	Terrestrial	SS1867	1.269734027	103.809752	-	1753	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	4	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1862	1.270259991	103.803307	-	1719	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	4	Seen		Targeted	
15-Mar-21	2	T1	Terrestrial	VS528	1.268585036	103.802366	-	1833	Butterfly	*Polyura hebe plautus*	Plain nawab	Not Assessed	Not Assessed	No	Resident	5	Seen		Incidental	
15-Mar-21	2	T3	Terrestrial	SS1869	1.26927604	103.810336	-	1801	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1866	1.269911975	103.809511	-	1745	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
15-Mar-21	2	T1	Terrestrial	VS525	1.264139023	103.804721	-	1719	Bird	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Winter visitor	6	Seen		Incidental	
15-Mar-21	2	T3	Terrestrial	SS1868	1.26960306	103.810019	-	1756	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	6	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1870	1.269218037	103.810599	-	1808	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	8	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1871	1.268049013	103.810746	-	1831	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	13	Seen		Targeted	
15-Mar-21	2	T3	Terrestrial	SS1869	1.26927604	103.810336	-	1801	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	14	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1872	1.262512011	103.805332	-	745	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1872	1.262512011	103.805332	-	747	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1872	1.262512011	103.805332	-	745	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	748	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	748	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1874	1.263523037	103.805126	-	751	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1874	1.263523037	103.805126	-	751	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1874	1.263523037	103.805126	-	751	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263832999	103.805081	-	752	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263832999	103.805081	-	752	Bird	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263832999	103.805081	-	752	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1877	1.264747968	103.804431	-	758	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1877	1.264747968	103.804431	-	758	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1878	1.265120963	103.804387	-	801	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1878	1.265120963	103.804387	-	801	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1878	1.265120963	103.804387	-	801	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
21/3/2021	-	-	CT	-	1.26916	103.80663	CT04	10:50:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.26953	103.80608	CT06	10:13:50	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0043.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.26953	103.80608	CT06	10:16:22	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0044.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
21/3/2021	-	-	CT	-	1.26953	103.80608	CT06	9:55:54	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0042.AVI	Incidental	-
21/3/2021	-	-	CT	-	1.27053	103.81113	CT07	21:53:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0107.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.27135	103.80305	CT01	5:58:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0031.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:23:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0077.AVI	Targeted	-
21/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:29:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0213.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:30:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0055.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26545	103.80801	CT03	3:07:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:50:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0056.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:23:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0200.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:56:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0201.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:35:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0202.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:39:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0203.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:39:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0204.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:56:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0205.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:57:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0207.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:58:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0208.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26646	103.80936	CT09	14:59:04	Bird	*Orthotomus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0093.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26646	103.80936	CT09	6:05:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0069.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26646	103.80936	CT09	7:01:30	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0072.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26646	103.80936	CT09	7:00:56	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0071.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
20/3/2021	-	-	CT	-	1.26646	103.80936	CT09	10:13:28	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0066.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26747	103.803	CT11	12:48:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0054.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26747	103.803	CT11	8:51:14	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0052.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26747	103.803	CT11	9:40:44	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0053.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	9:04:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0150.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:56:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0153.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:38:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0154.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:59:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0155.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:02:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0159.AVI	Targeted	-
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Bird	*Gracula religiosa*	Common hill myna	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Ardeola bacchus*	Chinese pond heron	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1883	1.267199004	103.803507	-	822	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1883	1.267199004	103.803507	-	823	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1883	1.267199004	103.803507	-	822	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
20/3/2021	-	-	CT	-	1.26916	103.80663	CT04	1:55:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0053.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26935	103.80166	CT10	16:45:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:32:48	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0018.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:33:44	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0019.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:34:42	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0020.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:35:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0021.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:35:32	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:36:02	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0023.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1884	1.267751958	103.802809	-	827	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1884	1.267751958	103.802809	-	827	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:36:28	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0024.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:36:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:37:24	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Reptile	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:37:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:38:16	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:39:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:39:36	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0030.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:39:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0031.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:40:28	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0032.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:40:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0033.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:41:18	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0034.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:42:40	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	18:47:32	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.27053	103.81113	CT07	16:18:42	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0104.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.27053	103.80305	CT01	13:59:50	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0030.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.27171	103.80536	CT05	10:43:24	Reptile	*Eutropis multifasciata*	Many-lined sun skink	Not Assessed	Not Assessed	No	Native	1	Seen	IMG_0076.AVI	Incidental	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	20:26:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0151.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:47:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0152.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:39:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0157.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:27:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0158.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	22:27:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0038.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26953	103.80608	CT06	4:47:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
20/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:56:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0206.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:09:16	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:09:36	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0051.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:59:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0054.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26545	103.80801	CT03	5:59:26	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0053.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26558	103.8042	CT12	13:17:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0197.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:13:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0195.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:15:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0199.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26558	103.8042	CT12	13:16:28	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0196.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263838999	103.805081	-	752	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263832999	103.805081	-	752	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1876	1.263998039	103.804665	-	755	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1877	1.264747968	103.804431	-	758	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1877	1.264747968	103.804431	-	758	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Assessed	No	Winter visitor	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1879	1.265534023	103.804344	-	803	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	21:13:34	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0058.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	21:30:48	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0059.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	22:38:18	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0061.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	22:38:58	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0062.AVI	Incidental	-
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Bird	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	817	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1882	1.266850987	103.803896	-	818	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1883	1.267199004	103.803507	-	823	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1884	1.267751958	103.802809	-	827	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	829	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1880	1.266071973	103.804327	-	806	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1884	1.267751958	103.802809	-	827	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	6:07:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0064.AVI	Targeted	-
16-Mar-21	2	T1	Terrestrial	SS1883	1.267199004	103.803507	-	823	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
19/3/2021	-	-	CT	-	1.26646	103.80936	CT09	6:07:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0065.AVI	Targeted	-
16-Mar-21	2	T1	Terrestrial	SS1881	1.266484028	103.804152	-	812	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	6	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1885	1.268386971	103.802239	-	831	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	6	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1873	1.263088016	103.805259	-	749	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	7	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1875	1.263832999	103.805081	-	752	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	9	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1878	1.265132963	103.804387	-	801	Bird	*Agropsar sturninus*	Daurian starling	Least Concern	Not Assessed	No	Winter visitor	10	Seen		Targeted	
16-Mar-21	2	T1	Terrestrial	SS1877	1.264747968	103.804431	-	758	Bird	*Agropsar sturninus*	Daurian starling	Least Concern	Not Assessed	No	Winter visitor	20	Seen		Targeted	
19/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:47:42	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0050.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:48:02	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0051.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	11:24:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0134.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:27:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0137.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	4:20:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0141.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:07:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0148.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26903	103.80488	CT08	6:09:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26935	103.80166	CT10	18:25:12	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0039.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.26953	103.80608	CT06	6:44:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0017.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:39:02	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0095.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:39:24	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0096.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:40:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0097.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:40:50	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0098.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:43:20	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0099.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:44:18	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0100.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27053	103.81113	CT07	15:44:48	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0101.AVI	Incidental	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:35:46	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0063.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:36:24	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0064.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:36:50	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0065.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:40:08	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0066.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:40:30	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0067.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:41:10	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0068.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:41:32	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0069.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:42:46	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0071.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:43:10	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0072.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:43:32	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0073.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:43:56	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0074.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:25:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0075.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:19:02	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0135.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:20:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0136.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:36:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0138.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	1:39:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0139.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	4:18:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0140.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	4:28:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0142.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:42:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0143.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:54:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0145.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:54:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0146.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:02:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0147.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:09:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0149.AVI	Targeted	-
19/3/2021	-	-	CT	-	1.26558	103.8042	CT12	15:53:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0198.AVI	Incidental	-
17-Mar-21	-	-	Terrestrial	EK_928	1.26859	103.80386	-	1115	Butterfly	*Catochrysops panormus exiguus*	Silver forget-me-not	Not Assessed	Not Assessed	No	Resident	1	Seen	SH_7614-9	Incidental (flora)	
18/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:44:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0047.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26545	103.80801	CT03	23:05:06	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:29:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0158.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:29:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0159.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:32:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0160.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:32:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0161.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:33:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0162.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:34:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0165.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:15:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0169.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:33:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0173.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:44:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0175.AVI	Incidental	-
17-Mar-21	-	-	Terrestrial	EK_921	1.26484	103.80595	-	1050	Bird	*Ardeola bacchus*	Chinese pond heron	Least Concern	Not Assessed	No	Winter visitor	7	Seen	SH_7575-89	Incidental (flora)	
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:47:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0179.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:47:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0180.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:45:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0181.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:31:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0182.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:33:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0183.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:34:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0184.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:34:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0185.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:35:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0186.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:36:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0187.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:37:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0188.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:38:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0189.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:38:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0190.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:39:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0191.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:40:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0192.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:41:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0193.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:42:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0194.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:49:30	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0157.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:59:44	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0167.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:00:24	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0168.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26646	103.80936	CT09	14:42:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0053.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26646	103.80936	CT09	15:12:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26646	103.80936	CT09	15:12:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0055.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:12:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0056.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:12:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26747	103.803	CT11	17:13:06	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0047.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:14:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0127.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	12:45:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0129.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:25:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0130.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:51:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0133.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	10:35:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0022.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	10:36:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0023.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	14:17:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0024.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	8:16:22	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0021.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26935	103.80166	CT10	10:47:46	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0035.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26935	103.80166	CT10	10:58:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26935	103.80166	CT10	10:59:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0038.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:51:26	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:52:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0131.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:50:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0132.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:33:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0163.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:34:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0164.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:35:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0166.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:32:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0170.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:32:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0171.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:32:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0172.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:44:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0174.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:45:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0177.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:46:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0178.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	14:18:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0025.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.26903	103.80488	CT08	14:18:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0026.AVI	Incidental	-
18/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:44:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	2	Seen	IMG_0029.AVI	Targeted	-
18/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:45:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0176.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:15:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:46:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0142.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:46:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0144.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:48:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0145.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:48:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0146.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:49:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0147.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:50:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0148.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:52:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0151.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0153.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:05:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0154.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:29:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0155.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0156.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26646	103.80936	CT09	15:58:24	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0051.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:12:18	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:12:44	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0049.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26646	103.80936	CT09	14:22:24	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0050.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26747	103.803	CT11	9:26:58	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0043.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:39:30	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0044.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26747	103.803	CT11	6:53:44	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0045.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26747	103.803	CT11	6:54:52	Bird	*Otus lempiji*	Sunda scops owl	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0046.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26796	103.80523	CT02	10:27:30	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0122.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26796	103.80523	CT02	11:00:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0123.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26796	103.80523	CT02	11:00:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0124.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:32:38	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0126.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
17/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:35:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0125.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:03:54	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0013.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:04:36	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0015.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:05:06	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0016.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:06:18	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0018.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:06:38	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0019.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:07:00	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0020.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26916	103.80663	CT04	9:49:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0043.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26916	103.80663	CT04	14:53:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:33:42	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:34:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	14:59:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:09:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:10:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0032.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:10:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0033.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:42:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:47:06	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.27053	103.81113	CT07	12:20:00	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0090.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:53:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.27135	103.80305	CT01	16:54:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:51:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0062.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:46:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0143.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:51:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0149.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:04:14	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	2	Seen	IMG_0014.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:05:44	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	2	Seen	IMG_0017.AVI	Targeted	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:51:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0150.AVI	Incidental	-
17/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0152.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:34:46	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0042.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26545	103.80801	CT03	21:37:34	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26545	103.80801	CT03	21:42:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:56:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0117.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:56:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0118.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:16:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0120.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:17:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0121.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:18:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0122.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	10:26:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0124.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:14:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0125.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:15:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0126.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:15:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0127.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:09:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0128.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:28:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0129.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:29:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0130.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:29:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0131.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:31:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0132.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:31:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0133.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	13:00:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0134.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:20:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0137.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:20:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0138.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:43:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0140.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:57:56	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0119.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	2:35:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	2:36:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0040.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	2:37:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0041.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:34:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0042.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:34:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0043.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:35:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0044.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:35:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0045.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:36:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0046.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26646	103.80936	CT09	7:09:54	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0047.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	15:21:52	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0035.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	15:22:48	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0036.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	7:42:08	Bird	*Chalcophaps indica*	Common emerald dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0040.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	7:42:30	Bird	*Chalcophaps indica*	Common emerald dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0041.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	7:42:58	Bird	*Chalcophaps indica*	Common emerald dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0042.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	22:03:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0037.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	22:05:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0038.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26747	103.803	CT11	22:06:36	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:13:54	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0119.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:30:06	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0120.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:30:42	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0121.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT08	14:22:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26903	103.80488	CT08	7:58:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26903	103.80488	CT08	11:18:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0008.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26903	103.80488	CT08	11:19:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0009.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26903	103.80166	CT10	12:21:20	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0024.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26935	103.80166	CT10	13:16:50	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0025.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26935	103.80166	CT10	14:34:56	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0026.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26935	103.80166	CT10	14:35:20	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0027.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27135	103.80305	CT01	1:11:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0024.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27135	103.80305	CT01	1:10:02	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0023.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:36:18	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0053.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:36:40	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:16:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0051.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:16:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0052.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:11:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0055.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:13:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0056.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:13:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0057.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	13:00:12	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0043.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:52:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:52:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:00:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:01:06	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0047.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:09:30	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:14:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0049.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:15:18	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0050.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:45:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	9:59:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:57:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0089.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:19:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0135.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:19:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0136.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:37:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0139.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:43:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0141.AVI	Incidental	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	23:07:38	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	3	Seen	IMG_0059.AVI	Targeted	-
16/3/2021	-	-	CT	-	1.27171	103.80536	CT05	0:59:46	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	4	Seen	IMG_0061.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:03:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0087.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:03:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0088.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:04:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0089.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:17:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0102.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:39:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0103.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:24:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0104.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:24:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0105.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:29:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0108.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:30:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0109.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:42:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0111.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:42:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0112.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:43:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0113.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:50:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0115.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:51:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0116.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26646	103.8936	CT09	6:35:04	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0035.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	17:19:44	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0030.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	12:41:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:31:56	Bird	*Centropus sinensis*	Greater coucal	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0028.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	0:15:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0033.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	0:15:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0032.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26747	103.803	CT11	0:15:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26796	103.80523	CT02	15:46:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0117.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:56:12	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0118.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:32:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0022.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26935	103.80166	CT10	1:35:20	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0023.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:45:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0021.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:45:24	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0020.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:45:46	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0021.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26953	103.80608	CT06	6:41:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0012.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27053	103.81113	CT07	19:46:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0087.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27053	103.81113	CT07	19:47:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0088.AVI	Targeted	-
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	752	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	753	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	753	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	753	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	755	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	757	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	757	Reptile	*Trachemys scripta*	Red-eared slider	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	757	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	759	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	759	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
15/3/2021	-	-	CT	-	1.27053	103.81113	CT07	19:19:28	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0086.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	1:24:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0022.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:39:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0018.AVI	Targeted	-
22-Mar-21	1	T3	Terrestrial	VS562	1.267580967	103.805589	-	800	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS563	1.267751036	103.805429	-	802	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS563	1.267751036	103.805429	-	802	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS611	1.267754976	103.812103	-	1010	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS611	1.267754976	103.812103	-	1009	Bird	*Lanius cristatus*	Brown shrike	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS610	1.267782971	103.811416	-	1006	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS610	1.267782971	103.811416	-	1005	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS610	1.267782971	103.811416	-	1006	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS610	1.267782971	103.811416	-	1006	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS612	1.267879028	103.812675	-	1011	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS613	1.267949017	103.812932	-	1013	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS613	1.267949017	103.812932	-	1013	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS613	1.267949017	103.812932	-	1013	Bird	*Ixobrychus cinnamomeus*	Cinnamon bittern	Least Concern	Not Assessed	No	Resident breeder	1	Seen	HB847	Targeted	
22-Mar-21	1	T3	Terrestrial	VS613	1.267949017	103.812932	-	1013	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:41:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0019.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	1:23:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0021.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	20:30:00	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0017.AVI	Incidental	-
22-Mar-21	1	T3	Terrestrial	VS564	1.268008025	103.805175	-	804	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS565	1.268100981	103.80509	-	805	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS565	1.268100981	103.80509	-	805	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS565	1.268100981	103.80509	-	805	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS566	1.268210029	103.804941	-	806	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS566	1.268210029	103.804941	-	807	Bird	*Pericrocotus divaricatus*	Ashy minivet	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS567	1.268265015	103.80486	-	808	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS567	1.268265015	103.80486	-	807	Bird	*Picus vittatus*	Laced woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS567	1.268265015	103.80486	-	807	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS609	1.268288987	103.811007	-	1003	Bird	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS568	1.268442962	103.804686	-	810	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS568	1.268442962	103.804686	-	810	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS568	1.268442962	103.804686	-	810	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS568	1.268442962	103.804686	-	812	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS608	1.268609008	103.810794	-	1001	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS608	1.268609008	103.810794	-	1001	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS569	1.268617976	103.804504	-	814	Bird	*Gerygone sulphurea*	Golden-bellied gerygone	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS569	1.268617976	103.804504	-	812	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS569	1.268617976	103.804504	-	814	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS569	1.268617976	103.804504	-	812	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS570	1.268699029	103.804367	-	814	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS607	1.26884697	103.810736	-	958	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS607	1.26884697	103.810736	-	958	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS607	1.26884697	103.810736	-	958	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS605	1.268969011	103.810641	-	954	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS605	1.268969011	103.810641	-	954	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS606	1.269005975	103.810974	-	956	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS606	1.269005975	103.810974	-	956	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS606	1.269005975	103.810974	-	956	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS571	1.269009998	103.80407	-	816	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS571	1.269009998	103.80407	-	817	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS571	1.269009998	103.80407	-	817	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:21:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Targeted	-
22-Mar-21	1	T3	Terrestrial	VS604	1.269141007	103.810424	-	953	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS604	1.269141007	103.810424	-	952	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:25:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0040.AVI	Targeted	-
22-Mar-21	1	T3	Terrestrial	VS572	1.269218959	103.803836	-	818	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS573	1.269353991	103.803698	-	821	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS573	1.269353991	103.803698	-	821	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	824	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	824	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	824	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:35:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0041.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.27171	103.80536	CT05	18:30:14	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0038.AVI	Targeted	-
22-Mar-21	1	T3	Terrestrial	VS603	1.269552978	103.810174	-	950	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB483	Targeted	
22-Mar-21	1	T3	Terrestrial	VS603	1.269552978	103.810174	-	950	Bird	*Lanius cristatus*	Brown shrike	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS603	1.269552978	103.810174	-	950	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS601	1.269910969	103.809083	-	943	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS601	1.269910969	103.809083	-	943	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS600	1.269956985	103.808777	-	939	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS600	1.269956985	103.808777	-	939	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	947	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	947	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	947	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS576	1.270180028	103.803217	-	828	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	937	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS599	1.270243982	103.808106	-	936	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	931	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	931	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	934	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS596	1.270560985	103.806992	-	928	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS597	1.270611025	103.807212	-	930	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS595	1.270931968	103.806948	-	927	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS578	1.270996006	103.803136	-	833	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS578	1.270996006	103.803136	-	833	Mammal	*Unidentified Sciuridae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS579	1.271255007	103.80311	-	835	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS579	1.271255007	103.80311	-	835	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS594	1.271283003	103.806568	-	924	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS594	1.271283003	103.806568	-	924	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15/3/2021	-	-	CT	-	1.27171	103.80536	CT05	0:00:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0042.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:05:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0090.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:05:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0091.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:09:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0094.AVI	Incidental	-
22-Mar-21	1	T3	Terrestrial	VS592	1.27135098	103.805958	-	920	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	918	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	918	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	915	Bird	*Psilopogon haemacephalus*	Coppersmith barbet	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	915	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS580	1.27146204	103.803102	-	836	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS580	1.27146204	103.803102	-	836	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS580	1.27146204	103.803102	-	836	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS581	1.271562036	103.803117	-	836	Butterfly	*Abisara saturata kausambioides*	Malayan plum judy	Not Assessed	Not Assessed	No	Resident	1	Seen	HB836	Incidental	
22-Mar-21	1	T3	Terrestrial	VS581	1.271562036	103.803117	-	839	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS581	1.271562036	103.803117	-	840	Bird	*Gracula religiosa*	Common hill myna	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:09:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0095.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:11:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0096.AVI	Incidental	-
22-Mar-21	1	T3	Terrestrial	VS589	1.271746019	103.805093	-	911	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS589	1.271746019	103.805093	-	911	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS589	1.271746019	103.805093	-	911	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS589	1.271746019	103.805093	-	911	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS582	1.271848027	103.803119	-	841	Bird	*Lanius sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS583	1.271873005	103.803212	-	842	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS583	1.271873005	103.803212	-	842	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS587	1.272108033	103.804041	-	904	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS587	1.272108033	103.804041	-	900	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	859	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	854	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	858	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	854	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	858	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS584	1.272178022	103.803259	-	851	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS584	1.272178022	103.803259	-	844	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS584	1.272178022	103.803259	-	846	Bird	*Lanius cristatus*	Brown shrike	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB837	Targeted	
22-Mar-21	1	T3	Terrestrial	VS584	1.272178022	103.803259	-	844	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS585	1.272225967	103.803435	-	853	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:13:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0097.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:13:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0098.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:14:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0099.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:14:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0100.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:15:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0101.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:28:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0106.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:29:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0107.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:30:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0110.AVI	Incidental	-
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	754	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	754	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	757	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS611	1.267754976	103.812103	-	1010	Odonate	*Ictinogomphus decoratus*	Common flangetail	Least Concern	Least Concern	No	Native	2	Seen		Incidental	
22-Mar-21	1	T3	Terrestrial	VS564	1.268008025	103.805175	-	804	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS564	1.268008025	103.805175	-	804	Bird	*Merops sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS564	1.268008025	103.805175	-	804	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS566	1.268210029	103.804941	-	806	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS566	1.268210029	103.804941	-	807	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS566	1.268210029	103.804941	-	806	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS569	1.268617976	103.804504	-	814	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS571	1.269009998	103.80407	-	816	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS604	1.269141007	103.810424	-	953	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS572	1.269218959	103.803836	-	818	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	823	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	823	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS575	1.269868976	103.803461	-	827	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	947	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	931	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS577	1.270565009	103.803118	-	830	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS595	1.270931968	103.806948	-	926	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS595	1.270931968	103.806948	-	926	Bird	*Pycnonotus jocosus*	Red-whiskered bulbul	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS593	1.271319967	103.806257	-	922	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	915	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS591	1.271441001	103.805739	-	918	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS581	1.271562036	103.803117	-	836	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS588	1.271844003	103.804884	-	909	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS582	1.271848027	103.803119	-	841	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS583	1.271873005	103.803212	-	842	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS587	1.272108033	103.804041	-	903	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS587	1.272108033	103.804041	-	903	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS586	1.272170981	103.803846	-	857	Bird	*Psittacula krameri*	Rose-ringed parakeet	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS584	1.272178022	103.803259	-	844	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS562	1.267580967	103.805589	-	800	Bird	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS610	1.267782971	103.811416	-	1005	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS568	1.268440962	103.804686	-	810	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	946	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS602	1.269987999	103.809459	-	946	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	931	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS580	1.27146204	103.803102	-	836	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	759	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS613	1.267949017	103.812932	-	1013	Bird	*Passer montanus*	Eurasian tree sparrow	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS572	1.269218959	103.803836	-	818	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	4	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	823	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS585	1.272225967	103.803435	-	853	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS561	1.267404025	103.805781	-	759	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	5	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS567	1.268265015	103.80486	-	808	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	5	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS590	1.271618027	103.805646	-	914	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	5	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS612	1.267879028	103.812675	-	1011	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	6	Heard		Targeted	
22-Mar-21	1	T3	Terrestrial	VS567	1.268265015	103.80486	-	808	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	8	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS607	1.26884697	103.810736	-	958	Bird	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Assessed	No	Introduced resident breeder	8	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS587	1.272108033	103.804041	-	900	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	10	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS598	1.270500971	103.807289	-	931	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	14	Seen		Targeted	
22-Mar-21	1	T3	Terrestrial	VS574	1.269451976	103.803634	-	825	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	22	Seen		Targeted	
15/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:43:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	IMG_0020.AVI	Targeted	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:05:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0092.AVI	Incidental	-
15/3/2021	-	-	CT	-	1.26558	103.8042	CT12	11:06:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	4	Seen	IMG_0093.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:43:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0075.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:44:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0076.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:45:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0077.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:46:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0078.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:46:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0079.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:32:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0081.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:33:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0082.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:34:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0084.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:36:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0085.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:38:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0086.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26747	103.803	CT11	21:24:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0027.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.26903	103.80488	CT08	12:26:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0004.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26903	103.80488	CT08	12:27:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0005.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26903	103.80488	CT08	13:51:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26953	103.80608	CT06	10:05:52	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.27053	103.81113	CT07	12:13:36	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27053	103.81113	CT07	12:43:18	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:04:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0015.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27135	103.80305	CT01	21:05:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0016.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:29:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0033.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:07:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:16:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0036.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:11:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0113.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:16:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0114.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:31:12	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0115.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:28:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0032.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:21:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0037.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.27053	103.81113	CT07	20:00:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0085.AVI	Targeted	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	14:48:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0080.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:34:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0083.AVI	Incidental	-
14/3/2021	-	-	CT	-	1.26903	103.80488	CT08	12:28:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0006.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:41:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0060.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:42:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0061.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:42:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0062.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:42:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0063.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:45:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0064.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:47:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0065.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:49:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0066.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:49:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0067.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:50:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0068.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:50:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0069.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:51:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0072.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:51:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0073.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:56:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0074.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	13:27:26	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0059.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26558	103.80936	CT09	10:46:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26747	103.803	CT11	5:56:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0025.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26796	103.80523	CT02	11:19:14	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0111.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26796	103.80523	CT02	7:51:02	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0112.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26663	103.80663	CT04	3:13:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26953	103.80608	CT06	11:23:56	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26953	103.80608	CT06	15:29:00	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0008.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:44:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0077.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	3:22:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0079.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	6:09:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0080.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	17:19:38	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0075.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	13:34:02	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0074.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.27135	103.80305	CT01	9:31:46	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0014.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.27171	103.80536	CT05	2:27:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27171	103.80536	CT05	2:41:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:58:36	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:50:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0070.AVI	Incidental	-
13/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:51:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0071.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26545	103.80801	CT03	3:02:38	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26545	103.80801	CT03	0:03:42	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26545	103.80801	CT03	4:42:02	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0041.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	8:59:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0045.AVI	Incidental	-
25-Mar-21	1	T3	Terrestrial	CF1416	1.26757401	103.811812	-	2222	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1364	1.267595971	103.805606	-	2011	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1415	1.267603012	103.811673	-	2222	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1365	1.26767803	103.805544	-	2012	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1417	1.26768901	103.812226	-	2224	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1418	1.26786897	103.812869	-	2226	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1418	1.26786897	103.812869	-	2226	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1366	1.26787601	103.805414	-	2012	Mammal	*Paradoxurus musanqus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:00:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0046.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:02:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0049.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:03:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0050.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:08:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0051.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:09:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0052.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:09:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0053.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:11:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0055.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:32:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0058.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:43:24	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0056.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:43:46	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0057.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26646	103.80936	CT09	20:09:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Targeted	-
25-Mar-21	1	T3	Terrestrial	CF1414	1.267981036	103.811415	-	2221	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1367	1.268278006	103.804901	-	2020	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1367	1.268278006	103.804901	-	2020	Bird	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Yes	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1413	1.268448997	103.811134	-	2217	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1368	1.268511023	103.804687	-	2022	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1412	1.268622	103.8109	-	2216	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1412	1.268622	103.8109	-	2216	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1411	1.268637003	103.810781	-	2215	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1369	1.268788967	103.804386	-	2024	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1410	1.268902961	103.810625	-	2213	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1409	1.268987032	103.810599	-	2210	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1409	1.268987032	103.810599	-	2209	Reptile	*Gehyra mutilata*	Four-clawed gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1370	1.269013016	103.804116	-	2026	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1370	1.269013016	103.804116	-	2026	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
12/3/2021	-	-	CT	-	1.26646	103.80936	CT09	20:42:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0029.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26646	103.80936	CT09	17:11:14	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26646	103.80936	CT09	16:27:24	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0026.AVI	Targeted	-
25-Mar-21	1	T3	Terrestrial	CF1408	1.269213008	103.810515	-	2208	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1408	1.269213008	103.810515	-	2208	Amphibian	*Fejervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1371	1.269274028	103.803865	-	2029	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2203	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2204	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2204	Amphibian	*Fejervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2205	Amphibian	*Fejervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2203	Reptile	*Lycodon capucinus*	House wolf snake	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1372	1.269393973	103.803794	-	2030	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	1	Seen		Targeted	
12/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:59:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0024.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:02:38	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0105.AVI	Incidental	-
25-Mar-21	1	T3	Terrestrial	CF1406	1.269584997	103.810172	-	2201	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1405	1.269742996	103.809912	-	2159	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1405	1.269742996	103.809912	-	2159	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1404	1.269780966	103.809799	-	2159	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
25-Mar-21	1	T3	Terrestrial	CF1404	1.269780966	103.809799	-	2159	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1402	1.269808961	103.809077	-	2154	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1374	1.269909963	103.803554	-	2034	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1375	1.270032004	103.803398	-	2037	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1375	1.270032004	103.803398	-	2037	Amphibian	*Fejervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1375	1.270032004	103.803398	-	2037	Bird	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Yes	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1401	1.270044995	103.808674	-	2152	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1403	1.270057987	103.80927	-	2154	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1403	1.270057987	103.80927	-	2157	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1403	1.270057987	103.80927	-	2156	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2044	Amphibian	*Feiervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2042	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2040	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2040	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1377	1.270319	103.803208	-	2046	Reptile	*Gehyra mutilata*	Four-clawed gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1377	1.270319	103.803208	-	2047	Amphibian	*Kaloula pulchra*	Banded bull frog	Least Concern	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1377	1.270319	103.803208	-	2047	NA	*Unidentified Bird Nest*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1399	1.270564003	103.807085	-	2143	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1400	1.270596022	103.807323	-	2147	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1379	1.270726025	103.803172	-	2054	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1398	1.270864997	103.807023	-	2142	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1380	1.27091202	103.803168	-	2055	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1381	1.27100003	103.803181	-	2100	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1397	1.271263976	103.806657	-	2140	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1395	1.271298006	103.806104	-	2137	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1395	1.271298006	103.806104	-	2137	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1396	1.271314016	103.806287	-	2138	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1394	1.271358021	103.805833	-	2136	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1382	1.271492969	103.803164	-	2106	Reptile	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
12/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:44:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0106.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:06:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0109.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:18:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0110.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26916	103.80663	CT04	19:47:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0029.AVI	Targeted	-
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2041	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1392	1.271760017	103.805136	-	2133	Mammal (Bat)	*Cynopterus brachyotis*	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1392	1.271760017	103.805136	-	2131	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1392	1.271760017	103.805136	-	2131	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1391	1.271847021	103.804955	-	2130	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1391	1.271847021	103.804955	-	2130	Reptile	*Gehyra mutilata*	Four-clawed gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1384	1.271873005	103.803138	-	2111	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1390	1.271922961	103.804836	-	2128	Reptile	*Bronchocela cristatella*	Green crested lizard	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1390	1.271922961	103.804836	-	2128	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1389	1.271980964	103.804585	-	2125	Mammal (Bat)	*Cynopterus brachyotis*	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1385	1.272008959	103.803242	-	2112	NA	*Unidentified Bird Nest*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1388	1.272090012	103.804224	-	2123	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1388	1.272090012	103.804224	-	2124	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1386	1.272126976	103.803335	-	2115	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1386	1.272126976	103.803335	-	2114	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1386	1.272126976	103.803335	-	2114	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1386	1.272126976	103.803335	-	2115	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1387	1.272195037	103.803879	-	2121	Mammal (Bat)	*Cynopterus brachyotis*	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
12/3/2021	-	-	CT	-	1.26916	103.80663	CT04	3:32:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0030.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26916	103.80663	CT04	3:40:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0031.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:15:40	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26935	103.80166	CT10	23:21:28	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0014.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26935	103.80166	CT10	23:16:46	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0013.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:11:28	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0063.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:11:50	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0064.AVI	Incidental	-
25-Mar-21	1	T3	Terrestrial	CF1367	1.268278006	103.804901	-	2020	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1409	1.268987032	103.810599	-	2209	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1408	1.269213008	103.810515	-	2208	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1408	1.269213008	103.810515	-	2208	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	2	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1373	1.269515008	103.80367	-	2032	Amphibian	*Feiervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1406	1.269584997	103.810172	-	2201	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1405	1.269742996	103.809912	-	2159	Amphibian	*Feiervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2040	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1377	1.270319	103.803208	-	2045	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1378	1.270384965	103.803221	-	2049	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1400	1.270596022	103.807323	-	2147	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1379	1.270726025	103.803172	-	2052	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1379	1.270726025	103.803172	-	2052	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1380	1.27091202	103.803168	-	2055	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1380	1.27091202	103.803168	-	2057	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1381	1.27100003	103.803181	-	2058	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1386	1.272126976	103.803335	-	2115	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1387	1.272195037	103.803879	-	2119	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1407	1.26934804	103.810339	-	2204	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	3	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1376	1.270158989	103.803309	-	2044	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	3	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1377	1.270319	103.803208	-	2047	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1399	1.270564003	103.807085	-	2143	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1393	1.271578968	103.805637	-	2135	Mammal (Bat)	*Cynopterus brachyotis*	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1383	1.271634959	103.80309	-	2109	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	3	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1382	1.271492969	103.803164	-	2106	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	4	Seen		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1418	1.26786897	103.812869	-	2226	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	5	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1375	1.270032004	103.803398	-	2037	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	5	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1402	1.270057987	103.80927	-	2154	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	5	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1403	1.270057987	103.80927	-	2157	Amphibian	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Native	10	Heard		Targeted	
25-Mar-21	1	T3	Terrestrial	CF1382	1.271492969	103.803164	-	2106	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	10	Heard		Targeted	
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:12:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0065.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:13:30	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0066.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:14:00	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0067.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:14:20	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0068.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:14:56	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0069.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:37:16	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0070.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:37:42	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0071.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:38:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0072.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.27135	103.80305	CT01	2:48:26	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0013.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27171	103.80536	CT05	10:40:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:55:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:46:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0108.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:18:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:40:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0027.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:55:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:11:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0054.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:00:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0047.AVI	Incidental	-
12/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:01:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0048.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:47:30	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0023.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:11:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0031.AVI	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Camptandriidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261505	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Camptandriidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261560	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Camptandriidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261615	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Cassidula nucleus*	NA	Not Assessed	Not Assessed	No	Native	1	Seen	P3261669	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Assessed	No	NA	1	Seen	P3261449	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Assessed	No	NA	1	Seen	P3261525	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Clithon oualaniensis*	NA	Least Concern	Vulnerable	Yes	NA	1	Seen	P3261458	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Clithon oualaniensis*	NA	Least Concern	Vulnerable	Yes	NA	1	Seen	P3261544	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Corbulidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261523	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Ellobium cf. aurisjudae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261452	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Geloina expansa*	Giant mud clam, lokan	Not Assessed	Not Assessed	No	NA	1	Seen	P3261439	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Geloina expansa*	Giant mud clam, lokan	Not Assessed	Not Assessed	No	NA	1	Seen	P3261645	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Geloina sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261534	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Isognomon sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261536	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Metaplax sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261629	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Metaplax sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261656	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Modiolus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261538	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3261470	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3261566	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3261634	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3261540	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3261658	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Neritina cornucopia*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261460	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Neritina cornucopia*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261479	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Ocypodidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261549	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Fish	*Oryzias javanicus*	Javanese ricefish	Not Assessed	Not Assessed	No	Native	1	Seen	P3261569	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261517	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261535	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261643	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Fish	*Periophthalmus gracilis*	Slender mudskipper	Not Assessed	Not Assessed	No	NA	1	Seen	P3261580	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Perisesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261554	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Pirenella sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261529	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Semiricinula fusca*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3261663	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261499	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261664	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Subulinidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261543	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3261456	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3261475	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3261548	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Unidentified Crab*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261619	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Unidentified Mollusc*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3261532	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:43:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0032.AVI	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Assessed	No	NA	2	Seen	P3261606	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Clypeomorus pellucida*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3261654	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Geloina expansa*	Giant mud clam, lokan	Not Assessed	Not Assessed	No	NA	2	Seen	P3261621	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Isognomon sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3261517	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	2	Seen	P3261489	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Nerita planospira*	Flat-spire nerite	Not Assessed	Vulnerable	Yes	NA	2	Seen	P3261658	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Parasesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3261463	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	2	Seen	P3261624	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	2	Seen	P3261649	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Ostreidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3261668	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	P3261640	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P3261610	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	P3261482	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Subulinidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	P3261514	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Crustacean	*Unidentifiedae Crustacean*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	P3261552	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Geloina coaxans*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	P3261435	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_02	1500-1830	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	6	Seen	P3261598	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Fish	*Pseudogobius javanicus*	Java fat-nose goby	Not Assessed	Not Assessed	No	Native	7	Seen	P3261572	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	17	Seen	-	Targeted	-
26-Mar-21	2	-	Mangrove	-	-	-	MP_01	1500-1830	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	23	Seen	-	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:46:06	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0035.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:48:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:52:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:52:46	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:53:20	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0027.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:53:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0028.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:55:06	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	19:55:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:44:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0033.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:45:20	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	3:33:56	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:15:24	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0019.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:16:00	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0020.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:16:22	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0021.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:47:20	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:39:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0013.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:40:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0014.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:40:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0015.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:41:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0016.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:41:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0017.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:41:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0018.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:42:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0019.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:44:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0020.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:44:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0021.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:46:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0022.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:47:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0023.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:48:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0025.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:48:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0026.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:49:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0027.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:49:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0028.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	16:50:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0029.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0030.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0031.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:03:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0032.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:03:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0033.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:15:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0041.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:15:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0042.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0043.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	2:14:12	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26646	103.80936	CT09	11:32:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0021.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:44:46	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0023.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26646	103.80936	CT09	19:13:40	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0024.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26646	103.80936	CT09	19:14:36	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	8:58:40	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0097.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:37:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0099.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:16:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0100.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:47:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0102.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:20:44	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0104.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26916	103.80663	CT04	16:29:38	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0024.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26916	103.80663	CT04	16:30:00	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0025.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26916	103.80663	CT04	0:00:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0026.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26935	103.80166	CT10	14:52:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26935	103.80166	CT10	7:37:08	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.27053	103.81113	CT07	14:45:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.27171	103.80536	CT05	19:55:42	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0024.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:36:28	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0098.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:28:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0101.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26796	103.80523	CT02	23:57:16	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0103.AVI	Targeted	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0034.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0035.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0036.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0037.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0038.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:08:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0039.AVI	Incidental	-
11/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:15:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0040.AVI	Incidental	-
10/3/2021	-	-	CT	-	1.26545	103.80801	CT03	22:51:40	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0018.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:39:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
10/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:54:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0011.AVI	Incidental	-
10/3/2021	-	-	CT	-	1.26558	103.8042	CT12	18:54:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0012.AVI	Incidental	-
10/3/2021	-	-	CT	-	1.26747	103.803	CT11	14:15:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0021.AVI	Incidental	-
29-Mar-21	1	T3	Terrestrial	VS615	1.267368989	103.805921	-	915	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen	HB880	Targeted	
29-Mar-21	1	T3	Terrestrial	VS615	1.267368989	103.805921	-	917	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
10/3/2021	-	-	CT	-	1.26747	103.803	CT11	14:16:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0022.AVI	Incidental	-
29-Mar-21	1	T3	Terrestrial	VS616	1.267653974	103.805495	-	920	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS616	1.267653974	103.805495	-	920	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	1	Seen	HB881	Targeted	
10/3/2021	-	-	CT	-	1.26796	103.80523	CT02	8:29:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0090.AVI	Targeted	
29-Mar-21	1	T3	Terrestrial	VS671	1.268878989	103.810834	-	1156	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS617	1.268927017	103.804081	-	933	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS617	1.268927017	103.804081	-	935	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	1	Seen	HB882	Targeted	
10/3/2021	-	-	CT	-	1.26796	103.80523	CT02	12:37:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
29-Mar-21	1	T3	Terrestrial	VS618	1.269047968	103.803977	-	936	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	1	Seen	HB883	Targeted	
29-Mar-21	1	T3	Terrestrial	VS619	1.269273022	103.803792	-	939	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS656	1.269281991	103.810347	-	1153	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS620	1.269491035	103.803626	-	942	Odonate	*Orthetrum chrysis*	Spine-tufted skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS621	1.269517019	103.803636	-	943	Butterfly	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Resident	1	Seen	HB884-885	Targeted	
10/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:31:36	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0094.AVI	Targeted	-
29-Mar-21	1	T3	Terrestrial	VS654	1.269708965	103.809917	-	1149	Bird	*Ardeola bacchus*	Chinese pond heron	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB957	Targeted	
29-Mar-21	1	T3	Terrestrial	VS654	1.269708965	103.809917	-	1148	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1142	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Incidental	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1131	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen	HB939, 942	Targeted	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1142	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	1	Seen		Incidental	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1142	Bird	*Egretta garzetta*	Little egret	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Incidental	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1131	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS651	1.270025969	103.809342	-	1143	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	-	-	Terrestrial	-	1.270089	103.809373	-	1142	Reptile	*Chrysopelea paradisi*	Paradise gliding snake	Least Concern	Not Assessed	No	Native	1	Seen	EK_WhatsApp Image 2021-03-29 at 12.32.45	Incidental	
29-Mar-21	1	T3	Terrestrial	VS623	1.270221015	103.803277	-	953	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS624	1.270328974	103.803127	-	957	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS624	1.270328974	103.803127	-	955	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen		Incidental	
29-Mar-21	1	T3	Terrestrial	VS649	1.27035697	103.807887	-	1125	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen	No	Targeted	
29-Mar-21	1	T3	Terrestrial	VS649	1.27035697	103.807887	-	1125	Butterfly	*Appias libythea olferna*	Striped albatross	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
10/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:35:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0095.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26916	103.80663	CT04	6:41:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0021.AVI	Targeted	-
29-Mar-21	1	T3	Terrestrial	VS647	1.270596022	103.807234	-	1120	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS647	1.270596022	103.807234	-	1120	Butterfly	*Catopsilia scylla cornelia*	Orange emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS647	1.270596022	103.807234	-	1120	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	1	Seen	HB931-932	Targeted	
29-Mar-21	1	T3	Terrestrial	VS625	1.270657964	103.803137	-	1000	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS626	1.270893998	103.803144	-	1001	Butterfly	*Abisara saturata kausambioides*	Malayan plum judy	Not Assessed	Not Assessed	No	Resident	1	Seen	HB890	Targeted	
29-Mar-21	1	T3	Terrestrial	VS626	1.270893998	103.803144	-	1001	Odonate	*Tholymis tillarga*	White-barred duskhawk	Least Concern	Least Concern	No	Native	1	Seen	HB891	Targeted	
29-Mar-21	1	T3	Terrestrial	VS645	1.270916965	103.806961	-	1112	Butterfly	*Appias libythea olferna*	Striped albatross	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS645	1.270916965	103.806961	-	1112	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS645	1.270916965	103.806961	-	1112	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS644	1.271217037	103.806719	-	1109	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS642	1.271272022	103.806162	-	1103	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS627	1.271278979	103.803104	-	1013	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS627	1.271278979	103.803104	-	1010	Odonate	*Gynacantha dohrni*	Spear-tail duskhawker	Not Assessed	Least Concern	No	Native	1	Seen	HB897-902	Targeted	
29-Mar-21	1	T3	Terrestrial	VS627	1.271278979	103.803104	-	1013	Butterfly	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Resident	1	Seen	HB904-905	Targeted	
29-Mar-21	1	T3	Terrestrial	VS643	1.271280032	103.806447	-	1106	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS641	1.271358021	103.8059	-	1101	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS641	1.271358021	103.8059	-	1102	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS628	1.271450976	103.80315	-	1015	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS640	1.271663038	103.805227	-	1059	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
10/3/2021	-	-	CT	-	1.26935	103.80166	CT10	17:44:14	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0005.AVI	Targeted	-
29-Mar-21	1	T3	Terrestrial	VS629	1.271820031	103.803113	-	1019	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS630	1.271861019	103.803231	-	1020	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS639	1.27193897	103.804618	-	1055	Butterfly	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS639	1.27193897	103.804618	-	1055	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS631	1.272036033	103.803208	-	1023	Butterfly	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS636	1.272096969	103.803978	-	1039	Butterfly	*Rapala manea chozeba*	Slate flash	Not Assessed	Not Assessed	No	Resident	1	Seen	HB915-916	Targeted	
29-Mar-21	1	T3	Terrestrial	VS638	1.272099987	103.804096	-	1046	Butterfly	*Danaus genutia genutia*	Common tiger	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS638	1.272099987	103.804096	-	1042	Butterfly	*Iambrix salsala salsala*	Chestnut bob	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS638	1.272099987	103.804096	-	1043	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS638	1.272099987	103.804096	-	1044	Butterfly	*Rapala manea chozeba*	Slate flash	Not Assessed	Not Assessed	No	Resident	1	Seen	HB918-919	Targeted	
29-Mar-21	1	T3	Terrestrial	VS637	1.272109961	103.80403	-	1041	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS633	1.272111973	103.80334	-	1033	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1024	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1030	Butterfly	*Appias libythea olferna*	Striped albatross	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1030	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen	HB910-911	Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1024	Butterfly	*Junonia almana javana*	Peacock pansy	Least Concern	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1025	Butterfly	*Pelopidas mathias mathias*	Small branded swift	Not Assessed	Not Assessed	No	Resident	1	Seen	HB907-908	Targeted	
29-Mar-21	1	T3	Terrestrial	VS634	1.272251029	103.803576	-	1035	Butterfly	*Iambrix salsala salsala*	Chestnut bob	Not Assessed	Not Assessed	No	Resident	1	Seen	HB914	Targeted	
29-Mar-21	1	T3	Terrestrial	VS634	1.272251029	103.803576	-	1035	Butterfly	*Junonia almana javana*	Peacock pansy	Least Concern	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS634	1.272251029	103.803576	-	1035	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS614	1.266842019	103.806322	-	904	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS614	1.266842019	103.806322	-	904	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS615	1.267368989	103.805921	-	908	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen	HB878	Targeted	
29-Mar-21	1	T3	Terrestrial	VS673	1.267784983	103.811982	-	1208	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	2	Seen	HB961-962	Targeted	
29-Mar-21	1	T3	Terrestrial	VS673	1.267784983	103.811982	-	1210	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS672	1.268617976	103.810924	-	1205	Odonate	*Unidentified Odonata*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS672	1.268617976	103.810924	-	1206	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1131	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen	HB941	Targeted	
29-Mar-21	1	T3	Terrestrial	VS653	1.269898983	103.809567	-	1146	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS653	1.269898983	103.809567	-	1146	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS622	1.269924967	103.803525	-	949	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS622	1.269924967	103.803525	-	949	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen	HB888	Targeted	
29-Mar-21	1	T3	Terrestrial	VS651	1.270025969	103.809342	-	1143	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS623	1.270221	103.803277	-	953	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS649	1.27035697	103.807887	-	1125	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS633	1.272111973	103.80334	-	1033	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1025	Butterfly	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1025	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS635	1.272215992	103.803721	-	1037	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS615	1.267368989	103.805921	-	908	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS652	1.269981042	103.809493	-	1143	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS648	1.270416984	103.807394	-	1122	Odonate	*Unidentified Libellulidae*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS634	1.272251029	103.803576	-	1035	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS671	1.268878989	103.810834	-	1156	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	4	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS670	1.268959036	103.810803	-	1155	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	4	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS655	1.26956203	103.810188	-	1150	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	4	Seen	HB958	Targeted	
29-Mar-21	1	T3	Terrestrial	VS630	1.271861019	103.803231	-	1019	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	4	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS675	1.267928984	103.812738	-	1212	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS650	1.269882973	103.809115	-	1131	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS674	1.267723041	103.8124	-	1212	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	6	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS632	1.272209035	103.803299	-	1030	Bird	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Assessed	No	Resident breeder	6	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS615	1.267368989	103.805921	-	908	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	9	Seen	HB877	Targeted	
29-Mar-21	1	T3	Terrestrial	VS651	1.270025969	103.809342	-	1143	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS646	1.270711021	103.807035	-	1114	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	10	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
29-Mar-21	1	T3	Terrestrial	VS673	1.267784983	103.811982	-	1207	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	13	Seen		Targeted	
29-Mar-21	1	T3	Terrestrial	VS643	1.271288032	103.806447	-	1106	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	30	Seen	HB928	Targeted	
10/3/2021	-	-	CT	-	1.26935	103.80166	CT10	17:44:36	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0006.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26935	103.80166	CT10	19:25:54	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0007.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26935	103.80166	CT10	19:26:28	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0008.AVI	Targeted	-
30-Mar-21	1	T2	Terrestrial	HB2509	1.269570999	103.803138	-	1708	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
10/3/2021	-	-	CT	-	1.26935	103.80166	CT10	19:26:50	Mammal	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Non-native	1	Seen	IMG_0009.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27053	103.81113	CT07	19:53:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0052.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27053	103.81113	CT07	2:10:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0053.AVI	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Anadara antiquata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301883	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Anomalodiscus squamosus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301773	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Crustacean	*Camptandriidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301829	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	HC	*Carcinoscorpius rotundicauda*	NA	Data Deficient	Vulnerable	Yes	Native	1	Seen	P1000064	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Clypeomorus cf bifasciata*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301875	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Clypeomorus pellucida*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301873	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Gafrarium pectinatum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301856	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Gafrarium pectinatum & tumidum synomised*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301785	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3301867	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Muricidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301871	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301780	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Crustacean	*Nanosesarma sp.*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P1000060	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Crustacean	*Neosesarma sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301811	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3301846	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Nerita histrio*	Scaled nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3301857	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Nerita undata*	Waved nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P3301777	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Crustacean	*Parasesarma tutilinanum*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P1000054	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Assessed	No	NA	1	Seen	P3301864	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301843	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Potamilidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301771	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Psamobiidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P3301887	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Pseudanachis basedowi*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301821	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Pseudanachis basedowi*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P3301884	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3301767	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3301787	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	1	Seen	P3301814	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Fish	*Toxotes jaculatrix*	Banded archerfish	Least Concern	Not Assessed	No	Native	1	Seen	P3301843	Targeted	-
30-Mar-21	1	T2	Terrestrial	-	1.265078969	103.80819	-	1745	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Incidental	
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Littoraria articulata/strigata*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P3301850	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	2	Seen	P3301848	Targeted	-
30-Mar-21	1	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Clypeomorus pellucida*	NA	Not Assessed	Not Assessed	No	NA	4	Seen	P3301817	Targeted	-
10/3/2021	-	-	CT	-	1.27053	103.81113	CT07	2:14:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0055.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27053	103.81113	CT07	2:14:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0056.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27135	103.80305	CT01	11:22:36	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Incidental	-
10/3/2021	-	-	CT	-	1.27171	103.80536	CT05	21:16:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0020.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:22:46	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0096.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27171	103.80536	CT05	22:33:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0021.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27171	103.80536	CT05	1:24:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0022.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:22:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0023.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.27053	103.81113	CT07	2:10:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
10/3/2021	-	-	CT	-	1.26953	103.80608	CT06	10:09:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen	IMG_0004.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	17:27:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:08:44	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0008.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:09:10	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0009.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:09:34	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0010.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:10:00	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0011.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:10:30	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0012.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:10:56	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0013.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26545	103.80801	CT03	9:11:26	Bird	*Pitta moluccensis*	Blue-winged pitta	Least Concern	Not Assessed	No	Migrant breeder	1	Seen	IMG_0014.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:40:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26646	103.80936	CT09	8:02:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0009.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26646	103.80936	CT09	14:26:54	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26747	103.803	CT11	20:22:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0017.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:03:40	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0077.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:39:48	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:40:24	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0079.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:41:02	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0080.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:42:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0081.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:43:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0082.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:44:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26953	103.80608	CT06	13:36:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0002.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26953	103.80608	CT06	13:36:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0002.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.26953	103.80608	CT06	13:53:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0003.AVI	Incidental	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:32:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0037.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:31:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0038.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:35:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0042.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:38:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0044.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:39:18	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0045.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	3:01:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0047.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	3:46:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0048.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27135	103.80305	CT01	1:57:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0010.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:01:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0087.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:05:08	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0088.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:04:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0013.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:05:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0014.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	3:05:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0015.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	5:21:08	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:54:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:55:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0018.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27171	103.80536	CT05	6:56:30	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0019.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:31:44	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0039.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:32:08	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:33:20	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0041.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:36:50	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0043.AVI	Targeted	-
9/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:39:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.26545	103.80801	CT03	14:36:02	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0019.AVI	Incidental	-
8/3/2021	-	-	CT	-	1.26545	103.80801	CT03	2:29:00	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0007.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:49:44	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0018.AVI	Incidental	-
8/3/2021	-	-	CT	-	1.26747	103.803	CT11	18:21:34	Bird	*Larvivora cyane*	Siberian blue robin	Least Concern	Not Assessed	No	Winter visitor	1	Seen	IMG_0015.AVI	Incidental	-
8/3/2021	-	-	CT	-	1.26747	103.803	CT11	18:21:56	Bird	*Larvivora cyane*	Siberian blue robin	Least Concern	Not Assessed	No	Winter visitor	1	Seen	IMG_0016.AVI	Incidental	-
8/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:49:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0042.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:49:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0043.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.26796	103.80523	CT02	3:02:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0044.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.26796	103.80523	CT02	6:52:32	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0076.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:03:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0045.AVI	Targeted	-
8/3/2021	-	-	CT	-	1.27053	103.81113	CT07	0:03:46	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0046.AVI	Incidental	-
8/3/2021	-	-	CT	-	1.27171	103.80536	CT05	20:31:58	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	2	Seen	IMG_0011.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.26545	103.80801	CT03	8:30:12	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Incidental	-
7/3/2021	-	-	CT	-	1.26646	103.80936	CT09	21:43:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0008.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.26796	103.80523	CT02	5:42:38	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0033.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.26796	103.80523	CT02	5:50:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.26903	103.80488	CT08	11:39:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0023.AVI	Incidental	-
7/3/2021	-	-	CT	-	1.26916	103.80663	CT04	12:18:32	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0028.AVI	Incidental	-
7/3/2021	-	-	CT	-	1.26953	103.80608	CT06	8:16:28	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Incidental	-
7/3/2021	-	-	CT	-	1.27053	103.81113	CT07	6:43:36	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0043.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.27053	103.81113	CT07	6:45:06	Mammal	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
7/3/2021	-	-	CT	-	1.27135	103.80305	CT01	22:27:14	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0018.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
7/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:27:04	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0018.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26545	103.80801	CT03	13:36:10	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0016.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:32:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0003.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26558	103.8042	CT12	12:33:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0004.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26646	103.80936	CT09	13:09:02	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0007.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	11:55:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0008.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	12:09:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0009.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	13:12:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	20:30:10	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0012.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	0:30:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0013.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26747	103.803	CT11	0:31:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:24:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:54:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:34:28	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:54:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0028.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:54:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:55:56	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	21:57:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26796	103.80523	CT02	22:01:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0032.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26903	103.80488	CT08	4:24:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0021.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26903	103.80488	CT08	19:49:22	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0022.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.26935	103.80166	CT10	11:16:56	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0002.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.26935	103.80166	CT10	11:28:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0003.AVI	Incidental	-
6/3/2021	-	-	CT	-	1.27053	103.81113	CT07	11:09:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27053	103.81113	CT07	11:10:12	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27135	103.80305	CT01	11:09:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27135	103.80305	CT01	11:10:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27171	103.80536	CT05	13:29:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27171	103.80536	CT05	13:33:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27171	103.80536	CT05	13:39:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0037.AVI	Targeted	-
6/3/2021	-	-	CT	-	1.27171	103.80536	CT05	13:55:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0038.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26545	103.80801	CT03	8:19:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0014.AVI	Incidental	-
5-Apr-21	2	T3	Terrestrial	SS2013	1.267695967	103.811776	-	740	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2013	1.267695967	103.811776	-	740	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5/3/2021	-	-	CT	-	1.26545	103.80801	CT03	8:29:14	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0015.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26558	103.8042	CT12	7:44:52	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0208.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26558	103.8042	CT12	9:12:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0209.AVI	Incidental	-
5-Apr-21	2	T3	Terrestrial	SS2039	1.268053958	103.805158	-	925	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2039	1.268053958	103.805158	-	925	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2039	1.268053958	103.805158	-	925	Bird	*Pelargopsis capensis*	Stork-billed kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2015	1.268457966	103.811091	-	747	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2038	1.268542036	103.804586	-	924	Bird	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen	1106	Targeted	
5-Apr-21	2	T3	Terrestrial	SS2038	1.268542036	103.804586	-	920	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	751	Bird	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Yes	Resident breeder	1	Seen	1107	Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	749	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	751	Bird	*Egretta garzetta*	Little egret	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	749	Bird	*Falco peregrinus*	Peregrine falcon	Least Concern	Not Assessed	No	Winter visitor	1	Seen	1097-1100	Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	751	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2017	1.268912014	103.81085	-	755	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2017	1.268912014	103.81085	-	755	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2017	1.268912014	103.81085	-	755	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Lanius cristatus*	Brown shrike	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
5/3/2021	-	-	CT	-	1.26646	103.80936	CT09	9:54:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0067.AVI	Targeted	-
5-Apr-21	2	T3	Terrestrial	SS2037	1.269072024	103.804039	-	918	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2037	1.269072024	103.804039	-	918	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2036	1.269262964	103.803879	-	915	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2036	1.269262964	103.803879	-	915	Odonate	*Diplacodes trivialis*	Blue percher	Least Concern	Least Concern	No	Native	1	Seen		Incidental	
5/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:15:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2021	1.269943994	103.808932	-	809	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2021	1.269943994	103.808932	-	809	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2021	1.269943994	103.808932	-	809	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2020	1.270062011	103.809353	-	804	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2020	1.270062011	103.809353	-	804	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2020	1.270062011	103.809353	-	804	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2020	1.270062011	103.809353	-	808	Mammal	*Unidentified Sciuridae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2033	1.270763995	103.803109	-	903	Bird	*Accipiter gularis*	Japanese sparrowhawk	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2033	1.270763995	103.803109	-	903	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2033	1.270763995	103.803109	-	903	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2024	1.27098796	103.806876	-	822	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2024	1.27098796	103.806876	-	822	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	-	-	Terrestrial	SH 4404	1.269317927	103.81051	-	1025	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen	-	Incidental (flora)	
5/3/2021	-	-	CT	-	1.26796	103.80523	CT02	12:51:52	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Incidental	-
5-Apr-21	2	T3	Terrestrial	SS2025	1.271361038	103.806349	-	824	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Lanius cristatus*	Brown shrike	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2027	1.271678042	103.805369	-	830	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2027	1.271678042	103.805369	-	830	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	3:32:24	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0015.AVI	Targeted	-
5-Apr-21	2	T3	Terrestrial	SS2031	1.271780971	103.803059	-	846	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2031	1.271780971	103.803059	-	846	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2028	1.271856995	103.804906	-	841	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2028	1.271856995	103.804906	-	841	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2028	1.271856995	103.804906	-	841	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2028	1.271856995	103.804906	-	841	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2029	1.272172993	103.803883	-	843	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2029	1.272172993	103.803883	-	843	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2029	1.272172993	103.803883	-	843	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2030	1.272243988	103.803487	-	845	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2030	1.272243988	103.803487	-	845	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	2:17:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Targeted	-
5-Apr-21	2	T3	Terrestrial	SS2041	1.26717302	103.805991	-	942	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2041	1.26717302	103.805991	-	942	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2013	1.267695967	103.811776	-	740	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2039	1.268053958	103.805158	-	925	Bird	*Chrysococcyx minutillus*	Little bronze-cuckoo	Least Concern	Not Assessed	No	Resident breeder	2	Seen	1110-1111	Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2038	1.268542036	103.804586	-	920	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2036	1.269262964	103.803879	-	915	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2035	1.269650962	103.803521	-	912	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2021	1.269943994	103.808932	-	809	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Bird	*Psittacula krameri*	Rose-ringed parakeet	Least Concern	Not Assessed	No	Introduced resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2034	1.270208023	103.803268	-	907	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2033	1.270763995	103.803109	-	903	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2024	1.27098796	103.806876	-	822	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2025	1.271361038	103.806349	-	824	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2032	1.271400014	103.803137	-	852	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2026	1.271623978	103.805635	-	827	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2040	1.267694039	103.805515	-	937	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2040	1.267694039	103.805515	-	937	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2039	1.268053958	103.805158	-	925	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2038	1.268542036	103.804586	-	920	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2016	1.268613031	103.81085	-	749	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2018	1.268991977	103.810446	-	800	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2026	1.271623978	103.805635	-	827	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2027	1.271678042	103.805369	-	830	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2027	1.271678042	103.805369	-	830	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2014	1.268060999	103.811334	-	745	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	4	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2022	1.270238031	103.80811	-	813	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2023	1.270541037	103.807341	-	819	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	5	Heard		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2028	1.271856995	103.804906	-	841	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	5	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2030	1.272243988	103.803487	-	845	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	8	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2017	1.268991014	103.81085	-	755	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	10	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2026	1.271623978	103.805635	-	827	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	10	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2012	1.267927978	103.812873	-	730	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	13	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2019	1.269595977	103.810147	-	804	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	13	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2038	1.268542036	103.804586	-	924	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	17	Seen		Targeted	
5-Apr-21	2	T3	Terrestrial	SS2031	1.271780971	103.803059	-	846	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	20	Seen		Targeted	
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	20:21:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0020.AVI	Targeted	-
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	19:27:22	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0019.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	19:19:08	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0017.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	19:19:34	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0018.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26903	103.80488	CT08	5:57:12	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0016.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26953	103.80608	CT06	9:00:20	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0010.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.26953	103.80608	CT06	9:43:52	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0011.AVI	Incidental	-
5/3/2021	-	-	CT	-	1.27053	103.81113	CT07	7:34:04	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
7-Apr-21	2	T1	Terrestrial	SS2066	1.267536962	103.803	-	1654	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
4/3/2021	-	-	CT	-	1.26646	103.80936	CT09	3:29:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0061.AVI	Targeted	-
4/3/2021	-	-	CT	-	1.26646	103.80936	CT09	11:20:00	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0062.AVI	Incidental	-
4/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:55:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0023.AVI	Targeted	-
4/3/2021	-	-	CT	-	1.26903	103.80488	CT08	10:44:00	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0013.AVI	Incidental	-
4/3/2021	-	-	CT	-	1.26935	103.80166	CT10	15:27:58	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0250.AVI	Incidental	-
4/3/2021	-	-	CT	-	1.27053	103.81113	CT07	5:09:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0029.AVI	Targeted	-
4/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:59:46	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0039.AVI	Targeted	-
4/3/2021	-	-	CT	-	1.27053	103.81113	CT07	11:52:50	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0033.AVI	Incidental	-
4/3/2021	-	-	CT	-	1.27053	103.81113	CT07	11:53:26	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0034.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.26545	103.80801	CT03	11:49:08	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Incidental	-
7-Apr-21	2	T1	Terrestrial	SS2069	1.266334997	103.804154	-	1705	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
7-Apr-21	2	T1	Terrestrial	SS2069	1.266334997	103.804154	-	1705	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
7-Apr-21	2	T1	Terrestrial	SS2067	1.267204033	103.803464	-	1658	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
7-Apr-21	2	T1	Terrestrial	SS2068	1.26675996	103.803889	-	1701	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	4	Seen		Targeted	
3/3/2021	-	-	CT	-	1.26545	103.80801	CT03	11:49:38	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0012.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0207.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.26646	103.80936	CT09	1:59:54	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0058.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26646	103.80936	CT09	4:44:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0059.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26646	103.80936	CT09	16:03:28	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0060.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.26796	103.80523	CT02	2:57:54	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0021.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26796	103.80523	CT02	14:46:06	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.26903	103.80488	CT08	2:37:50	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0010.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26903	103.80488	CT08	2:38:12	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0011.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26935	103.80166	CT10	17:22:08	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0207.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.27053	103.81113	CT07	13:29:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.27053	103.81113	CT07	18:42:24	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.27053	103.81113	CT07	5:59:52	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0026.AVI	Incidental	-
3/3/2021	-	-	CT	-	1.27135	103.80305	CT01	18:42:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0011.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26903	103.80488	CT08	2:36:00	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0009.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.26903	103.80488	CT08	19:58:10	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0012.AVI	Targeted	-
3/3/2021	-	-	CT	-	1.27171	103.80536	CT05	9:12:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen	IMG_0007.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:03:18	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0007.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:03:40	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0008.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26545	103.80801	CT03	12:04:04	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0009.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26796	103.80523	CT02	0:55:24	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0015.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.26796	103.80523	CT02	13:02:06	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0017.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26796	103.80523	CT02	15:22:44	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0018.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26953	103.80608	CT06	17:29:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0005.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26953	103.80608	CT06	17:30:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0006.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.26953	103.80608	CT06	17:30:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
2/3/2021	-	-	CT	-	1.26953	103.80608	CT06	17:41:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0008.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	7:01:26	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0012.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	7:01:48	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0013.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	7:02:08	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0014.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:59:20	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0020.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:57:40	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0025.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	4:19:18	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0011.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	20:49:28	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0018.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:59:50	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0021.AVI	Incidental	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:39:30	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0022.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.27053	103.81113	CT07	23:56:28	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	-
2/3/2021	-	-	CT	-	1.26903	103.80488	CT08	22:49:22	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0008.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.26646	103.80936	CT09	10:22:26	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0049.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.26646	103.80936	CT09	18:01:58	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0051.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.26646	103.80936	CT09	10:27:10	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0050.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.26796	103.80523	CT02	16:29:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0014.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.26796	103.80523	CT02	12:27:32	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0013.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.26935	103.80166	CT10	10:16:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0245.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:30:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0248.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:31:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0249.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.27053	103.81113	CT07	20:10:14	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0008.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:32:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0010.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.27053	103.81113	CT07	22:31:56	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0009.AVI	Targeted	-
1/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:29:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0246.AVI	Incidental	-
1/3/2021	-	-	CT	-	1.26935	103.80166	CT10	12:29:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0247.AVI	Incidental	-
28/2/2021	-	-	CT	-	1.26646	103.80936	CT09	12:56:18	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0048.AVI	Incidental	-
28/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:27:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0243.AVI	Targeted	-
28/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:28:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0244.AVI	Targeted	-
28/2/2021	-	-	CT	-	1.26935	103.80166	CT10	10:47:44	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0242.AVI	Incidental	-
27/2/2021	-	-	CT	-	1.26558	103.8042	CT12	9:22:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0204.AVI	Incidental	-
27/2/2021	-	-	CT	-	1.26558	103.8042	CT12	14:44:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0205.AVI	Incidental	-
27/2/2021	-	-	CT	-	1.26558	103.8042	CT12	14:45:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0206.AVI	Incidental	-
27/2/2021	-	-	CT	-	1.26558	103.8042	CT12	14:45:12	Bird	*Unidentified Gallus gallus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0206.AVI	Incidental	-
26/2/2021	-	-	CT	-	1.26558	103.8042	CT12	7:42:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0203.AVI	Incidental	-
26/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:36:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0240.AVI	Targeted	-
26/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:53:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0241.AVI	Targeted	-
26/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:22:26	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0239.AVI	Incidental	-
25/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:40:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
25/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:41:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
25/2/2021	-	-	CT	-	1.26646	103.80936	CT09	10:57:46	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0043.AVI	Incidental	-
24/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:07:18	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0068.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26558	103.8042	CT12	6:39:28	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0197.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26558	103.8042	CT12	21:06:52	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0200.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26558	103.8042	CT12	21:18:42	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0201.AVI	Targeted	-
9-Apr-21	2	T3	Terrestrial	CF964	1.267735027	103.812146	-	2025	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF965	1.267739972	103.811994	-	2025	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF963	1.267945999	103.812954	-	2020	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF963	1.267945999	103.812954	-	2023	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1090	1.268054964	103.805165	-	2224	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF966	1.268237019	103.81107	-	2030	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF968	1.268515969	103.811066	-	2033	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF967	1.26853399	103.81111	-	2033	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF969	1.268586041	103.810936	-	2034	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF970	1.268663993	103.810682	-	2035	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF970	1.268663993	103.810682	-	2035	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1089	1.268869014	103.80426	-	2219	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF971	1.268971022	103.810704	-	2039	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF972	1.269208984	103.810624	-	2040	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF973	1.269213008	103.810486	-	2041	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1088	1.269248966	103.803826	-	2216	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF974	1.269290037	103.810338	-	2043	Amphibian	*Fejervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF974	1.269290037	103.810338	-	2042	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1087	1.269399002	103.803687	-	2215	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF975	1.269465974	103.810191	-	2045	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF975	1.269465974	103.810191	-	2044	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF976	1.269554989	103.810179	-	2045	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF977	1.269669989	103.810073	-	2046	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1085	1.269730004	103.803556	-	2213	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF982	1.269883979	103.8091	-	2053	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF983	1.26989102	103.808808	-	2055	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF981	1.269939025	103.809138	-	2053	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1084	1.270050025	103.80342	-	2210	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1084	1.270050025	103.80342	-	2210	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF979	1.27005103	103.809459	-	2049	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF985	1.270221015	103.808265	-	2058	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF986	1.270273989	103.808049	-	2059	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF989	1.270382032	103.807466	-	2102	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF994	1.270504994	103.807006	-	2110	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF994	1.270504994	103.807006	-	2112	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF994	1.270504994	103.807006	-	2110	Amphibian	*Fejervarya sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
23/2/2021	-	-	CT	-	1.26646	103.80936	CT09	11:21:42	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0039.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26646	103.80936	CT09	11:22:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26796	103.80523	CT02	8:17:24	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0063.AVI	Targeted	-
9-Apr-21	2	T3	Terrestrial	CF993	1.270551011	103.807059	-	2109	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF992	1.270566015	103.807111	-	2108	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF991	1.270569032	103.807189	-	2107	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF991	1.270569032	103.807189	-	2107	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF991	1.270569032	103.807189	-	2108	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF990	1.27059401	103.807336	-	2106	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF995	1.270926017	103.806924	-	2114	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1080	1.271024002	103.803131	-	2204	Bird	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1080	1.271024002	103.803131	-	2201	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1080	1.271024002	103.803131	-	2202	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen	RS133-135	Targeted	
9-Apr-21	2	T3	Terrestrial	CF1079	1.271130033	103.803142	-	2159	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF996	1.27120899	103.806772	-	2116	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF996	1.27120899	103.806772	-	2116	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF997	1.271330025	103.806062	-	2122	Reptile	*Lepidodactylus lugubris*	Mourning gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF998	1.271375036	103.805953	-	2124	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF999	1.271487018	103.805786	-	2128	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1012	1.271515014	103.803139	-	2156	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1011	1.271572011	103.803152	-	2155	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1011	1.271572011	103.803152	-	2155	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1010	1.271609981	103.803129	-	2154	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1010	1.271609981	103.803129	-	2153	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1010	1.271609981	103.803129	-	2154	Bird	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Yes	Resident breeder	1	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1009	1.271708971	103.803104	-	2152	Reptile	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
23/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:17:32	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0065.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:27:22	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0066.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:08:00	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0067.AVI	Targeted	-
23/2/2021	-	-	CT	-	1.26796	103.80523	CT02	9:44:14	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0064.AVI	Incidental	-
23/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:16:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0238.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:54:20	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0177.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:01:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0181.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:01:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0182.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0183.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0184.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0190.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0191.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0192.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0193.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:16	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0194.AVI	Incidental	-
9-Apr-21	2	T3	Terrestrial	CF1000	1.271780971	103.805122	-	2132	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1001	1.271793041	103.805043	-	2134	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1008	1.271846015	103.803129	-	2151	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1002	1.271870993	103.804926	-	2138	Reptile	*Bronchocela cristatella*	Green crested lizard	Not Assessed	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1002	1.271870993	103.804926	-	2137	Bird	*Unidentified bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	RS121-125	Incidental	
9-Apr-21	2	T3	Terrestrial	CF1003	1.272129994	103.804109	-	2143	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1007	1.272148015	103.803166	-	2149	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1006	1.272208029	103.803202	-	2149	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1005	1.272210041	103.803384	-	2147	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	1	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1004	1.272224039	103.803759	-	2146	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen	RS128-130	Targeted	
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0195.AVI	Incidental	
9-Apr-21	2	T3	Terrestrial	CF963	1.267945999	103.812954	-	2020	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1086	1.2696	103.803577	-	2214	Amphibian	*Feiervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF984	1.270123031	103.808466	-	2056	Reptile	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1082	1.27022001	103.803242	-	2208	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF987	1.27038002	103.807863	-	2100	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF988	1.270400975	103.807644	-	2101	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF994	1.270504994	103.807006	-	2110	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF993	1.270551011	103.807059	-	2109	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF990	1.27059401	103.807336	-	2104	Reptile	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1081	1.27063198	103.80315	-	2206	Amphibian	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Native	2	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1079	1.271130033	103.803142	-	2159	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	2	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF996	1.27120899	103.806772	-	2116	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	2	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF963	1.267945999	103.812954	-	2022	Reptile	*Unidentified Gekkonidae*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1082	1.27022001	103.803242	-	2208	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	3	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1081	1.27063198	103.80315	-	2205	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	3	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF997	1.271330025	103.806062	-	2122	Reptile	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Non-native	3	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF971	1.268971022	103.810704	-	2038	Amphibian	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Native	4	Seen		Targeted	
9-Apr-21	2	T3	Terrestrial	CF978	1.27000099	103.809529	-	2049	Amphibian	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Native	4	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF980	1.270035021	103.809291	-	2051	Amphibian	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Native	4	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1083	1.270128982	103.803363	-	2209	Amphibian	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Non-native	6	Heard		Targeted	
9-Apr-21	2	T3	Terrestrial	CF1091	1.26660699	103.806609	-	2231	NA	*Unidentifiedentified Bird Nest*	#N/A	#N/A	#N/A	#N/A	#N/A				Incidental	
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:07:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0196.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:55:56	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0178.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:56:18	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0179.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:56:44	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0180.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:01:56	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0182.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:18	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0183.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:02:40	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0184.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:03:00	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0185.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:03:22	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0186.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:03:46	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0187.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:06	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0188.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:28	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0189.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:04:50	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0190.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:12	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0191.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:32	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0192.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:05:54	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0193.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:16	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0194.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:38	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0195.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:07:00	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0196.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:06:38	Bird	*Unidentified Gallus gallus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0195.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:07:00	Bird	*Unidentified Gallus gallus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0196.AVI	Incidental	-
22/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:16:20	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
22/2/2021	-	-	CT	-	1.26796	103.80523	CT02	0:27:38	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0061.AVI	Targeted	-
22/2/2021	-	-	CT	-	1.26796	103.80523	CT02	0:05:20	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
22/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:03:12	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0062.AVI	Incidental	-
21/2/2021	-	-	CT	-	1.26558	103.8042	CT12	8:21:46	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen	IMG_0164.AVI	Incidental	-
21/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:37:44	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0168.AVI	Incidental	-
21/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:58:16	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0037.AVI	Incidental	-
21/2/2021	-	-	CT	-	1.26558	103.8042	CT12	10:44:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0165.AVI	Incidental	-
21/2/2021	-	-	CT	-	1.26558	103.8042	CT12	10:44:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0166.AVI	Incidental	-
20/2/2021	-	-	CT	-	1.26796	103.80523	CT02	6:41:28	Mammal	*Rattus tiomanicus*	Malaysian wood rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0057.AVI	Targeted	-
12-Apr-21	2	T3	Terrestrial	XT1283	1.267349962	103.805938	-	1830	Odonate	*Tholymis tillarga*	White-barred duskhawk	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1273	1.267801998	103.8124	-	1708	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1274	1.267858004	103.812342	-	1710	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1276	1.269357009	103.810319	-	1728	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1276	1.269357009	103.810319	-	1728	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1278	1.26963797	103.810072	-	1736	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1278	1.26963797	103.810072	-	1736	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1279	1.269650962	103.810003	-	1739	Odonate	*Agriocnemis femina*	Variable wisp	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1281	1.269791024	103.809584	-	1743	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
20/2/2021	-	-	CT	-	1.26796	103.80523	CT02	6:41:52	Mammal	*Rattus tiomanicus*	Malaysian wood rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
20/2/2021	-	-	CT	-	1.26796	103.80523	CT02	18:47:38	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0055.AVI	Targeted	-
20/2/2021	-	-	CT	-	1.26796	103.80523	CT02	20:56:10	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0056.AVI	Targeted	-
19/2/2021	-	-	CT	-	1.26558	103.8042	CT12	11:39:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0151.AVI	Incidental	-
19/2/2021	-	-	CT	-	1.26558	103.8042	CT12	11:40:48	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0152.AVI	Incidental	-
19/2/2021	-	-	CT	-	1.26796	103.80523	CT02	5:25:24	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0052.AVI	Targeted	-
19/2/2021	-	-	CT	-	1.26796	103.80523	CT02	5:26:12	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0053.AVI	Targeted	-
19/2/2021	-	-	CT	-	1.26796	103.80523	CT02	5:26:56	Mammal	*Paradoxurus musangus*	Common palm civet	Least Concern	Least Concern	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
19/2/2021	-	-	CT	-	1.26935	103.80166	CT10	8:16:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0234.AVI	Incidental	-
19/2/2021	-	-	CT	-	1.26935	103.80166	CT10	8:13:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0233.AVI	Incidental	-
18/2/2021	-	-	CT	-	1.26558	103.8042	CT12	8:20:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0141.AVI	Incidental	-
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	18:55:08	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:18:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0047.AVI	Targeted	-
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:33:08	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0051.AVI	Targeted	-
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:22:42	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
12-Apr-21	2	T3	Terrestrial	XT1283	1.267349962	103.805938	-	1830	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1277	1.269354997	103.810196	-	1731	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1277	1.269354997	103.810196	-	1731	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1280	1.269710977	103.809841	-	1741	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:32:56	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0049.AVI	Targeted	-
18/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:05:26	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0050.AVI	Targeted	-
12-Apr-21	2	T3	Terrestrial	XT1275	1.268627029	103.810853	-	1718	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
12-Apr-21	2	T3	Terrestrial	XT1282	1.272086995	103.80332	-	1805	Odonate	*Pantala flavescens*	Wandering glider	Least Concern	Least Concern	No	Native	30	Seen		Targeted	
18/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:56:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0232.AVI	Targeted	-
17/2/2021	-	-	CT	-	1.26646	103.80936	CT09	17:07:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
17/2/2021	-	-	CT	-	1.26646	103.80936	CT09	17:22:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
17/2/2021	-	-	CT	-	1.26935	103.80166	CT10	7:24:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0227.AVI	Incidental	-
17/2/2021	-	-	CT	-	1.26935	103.80166	CT10	7:27:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0229.AVI	Incidental	-
17/2/2021	-	-	CT	-	1.26935	103.80166	CT10	7:28:10	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0230.AVI	Incidental	-
17/2/2021	-	-	CT	-	1.26558	103.8042	CT12	13:13:48	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0136.AVI	Incidental	-
17/2/2021	-	-	CT	-	1.26558	103.8042	CT12	10:15:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0135.AVI	Incidental	-
17/2/2021	-	-	CT	-	1.26935	103.80166	CT10	7:27:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0228.AVI	Incidental	-
16/2/2021	-	-	CT	-	1.26558	103.8042	CT12	8:17:12	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0134.AVI	Incidental	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:31:30	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:32:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0028.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	18:00:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	6:36:58	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0024.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	6:38:02	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0025.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26646	103.80936	CT09	6:39:34	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0026.AVI	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
16/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:18:56	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0039.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:20:34	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:24:30	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0041.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:26:14	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0042.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:09:34	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	12:42:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0214.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	12:42:34	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0215.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:23:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0216.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:28:46	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0217.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	14:39:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0221.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	15:48:42	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0222.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	16:58:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0223.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	17:09:10	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0225.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	17:10:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0226.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:51:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0220.AVI	Incidental	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:23:28	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0216.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:51:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	2	Seen	IMG_0220.AVI	Targeted	-
16/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:49:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0219.AVI	Incidental	-
15/2/2021	-	-	CT	-	1.26558	103.8042	CT12	11:13:04	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0131.AVI	Incidental	-
15/2/2021	-	-	CT	-	1.26558	103.8042	CT12	21:32:30	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0132.AVI	Targeted	-
15/2/2021	-	-	CT	-	1.26558	103.8042	CT12	21:47:08	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0133.AVI	Targeted	-
15/2/2021	-	-	CT	-	1.26935	103.80166	CT10	19:19:42	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0212.AVI	Targeted	-
15/2/2021	-	-	CT	-	1.26558	103.8042	CT12	11:13:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0131.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:23:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0105.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:31:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0106.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:33:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0107.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:33:46	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0108.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	12:34:16	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0109.AVI	Incidental	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	9:02:14	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	2	Seen	IMG_0102.AVI	Incidental	-
15-Apr-21	2	T4	Intertidal	HB2589	1.264713015	103.808134	-	645	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2592	1.264762972	103.808241	-	655	Nemertea	*Nemertea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2591	1.264765989	103.808215	-	652	Polychaete	*Polynoidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2588	1.264775041	103.807982	-	640	Crustacean	*Ashtoret lunaris*	Yellow moon crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2593	1.264826003	103.808216	-	658	Nemertea	*Nemertea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2593	1.264826003	103.808216	-	658	Crustacean	*Ocypodidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2593	1.264826003	103.808216	-	658	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2587	1.264885012	103.807921	-	638	Fish	*Ostorhinchus margaritophorus*	Chequered cardinalfish	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2587	1.264885012	103.807921	-	638	Crustacean	*Thalamita sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2586	1.26492097	103.807882	-	635	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2595	1.264929017	103.808172	-	705	Nemertea	*Nemertea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2585	1.264975034	103.807793	-	632	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2585	1.264975034	103.807793	-	632	Crustacean	*Thalamita sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2596	1.265004035	103.808135	-	706	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2596	1.265004035	103.808135	-	706	Crustacean	*Scylla sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2597	1.26503597	103.808117	-	710	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS2005-2008	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2583	1.265082993	103.807733	-	617	Mollusc	*Sepioteuthis lessoniana*	Bidfin reef squid, oval squid	Not Assessed	Not Assessed	No	NA	1	Seen	SS990-991	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2583	1.265082993	103.807733	-	617	Fish	*Siganus javus*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS989, 992	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2584	1.265104031	103.807702	-	620	Fish	*Acreichthys tomentosus*	Searrass filefish	Least Concern	Not Assessed	No	NA	1	Seen	SS995	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2579	1.265219031	103.807783	-	558	Platyhelminthes	*Acotylea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS985	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2579	1.265219031	103.807783	-	558	Crustacean	*Sesarmidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS977-980	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2579	1.265219031	103.807783	-	558	Crustacean	*Unidentifiedae Crustacean*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS981-984	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2580	1.26522297	103.807705	-	600	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2580	1.26522297	103.807705	-	600	Crustacean	*Scylla sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2577	1.265236968	103.807818	-	552	Crustacean	*Metaplax elegans*	Orange fiddler crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2578	1.265243003	103.807815	-	555	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
14/2/2021	-	-	CT	-	1.26558	103.8042	CT12	9:02:34	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	2	Seen	IMG_0103.AVI	Incidental	-
13/2/2021	-	-	CT	-	1.26646	103.80936	CT09	11:14:14	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0021.AVI	Incidental	-
13/2/2021	-	-	CT	-	1.26646	103.80936	CT09	11:14:42	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Incidental	-
15-Apr-21	2	T4	Intertidal	HB2590	1.264707986	103.808178	-	646	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2591	1.264765989	103.808215	-	652	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2593	1.264826003	103.808216	-	658	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2594	1.264903033	103.808171	-	700	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2596	1.265004035	103.808135	-	706	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2596	1.265004035	103.808135	-	706	Polychaete	*Polynoidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2584	1.265104031	103.807702	-	620	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	2	Seen	SS993-994	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2584	1.265104031	103.807702	-	620	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	2	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2579	1.265219031	103.807783	-	558	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
15-Apr-21	2	T4	Intertidal	HB2594	1.264903033	103.808171	-	700	Polychaete	*Polychaete sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2583	1.265082993	103.807733	-	617	Sipuncula	*Sipuncula sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2582	1.265135966	103.807708	-	612	Crustacean	*Thalamita sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2578	1.265243003	103.807815	-	555	Crustacean	*Pilumnus vespertilio*	Hairy crab / bat / hair day crab	Not Assessed	Not Assessed	No	NA	3	Seen	-	Targeted	-
13/2/2021	-	-	CT	-	1.26646	103.80936	CT09	11:15:14	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0023.AVI	Incidental	-
15-Apr-21	2	T5	Intertidal	HB2581	1.265191035	103.807732	-	608	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	9	Seen	-	Targeted	-
15-Apr-21	2	T5	Intertidal	HB2586	1.26492097	103.807882	-	635	Fish	*Anibassis kopsii*	Kops' glass perchlet	Not Assessed	Not Assessed	No	Native	10	Seen	-	Targeted	-
13/2/2021	-	-	CT	-	1.26796	103.80523	CT02	16:17:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0037.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:55:44	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0076.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:56:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0077.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	16:59:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0078.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:00:14	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0079.AVI	Incidental	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Anomalodiscus squamosus*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P4162026	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Gafrarium sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P4162026	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Littoraria conica*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P4162042	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Littoraria melanostoma*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P4162046	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Littoraria pallescens*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P4162049	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Monodonta labio*	Maculated top shell	Not Assessed	Not Assessed	No	NA	1	Seen	P41620344	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Nerita balteata*	Lined nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P4162039	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Nerita undata*	Waved nerite	Not Assessed	Not Assessed	No	NA	1	Seen	P4162036	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Assessed	No	NA	6	Seen	-	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	13	Seen	-	Targeted	-
16-Apr-21	2	-	Mangrove	-	-	-	MP_03	1600-1900	Mollusc	*Sphaerassiminea miniata*	NA	Not Assessed	Not Assessed	No	NA	14	Seen	-	Targeted	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:34	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0088.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:23:00	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0089.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:23:22	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0090.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:06	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0091.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0092.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0093.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:25:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0094.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:25:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0095.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:31:56	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0097.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:00:14	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0079.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:54	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0084.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:21:30	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0085.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:21:50	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0086.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:34	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0088.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:23:00	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0089.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:23:22	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0090.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:06	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0091.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:32	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0092.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:24:54	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0093.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:25:18	Bird	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Introduced	1	Seen	IMG_0094.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26646	103.80936	CT09	13:16:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0019.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26796	103.80523	CT02	13:47:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0035.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26796	103.80523	CT02	13:48:26	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0036.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:19:42	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0081.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:31:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen	IMG_0096.AVI	Incidental	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:02	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0082.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:28	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0083.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:20:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0084.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:21:30	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0085.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:21:50	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0086.AVI	Incidental	-
12/2/2021	-	-	CT	-	1.26558	103.8042	CT12	17:22:12	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	3	Seen	IMG_0087.AVI	Incidental	-
11/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:05:44	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
10/2/2021	-	-	CT	-	1.26646	103.80936	CT09	7:33:06	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
10/2/2021	-	-	CT	-	1.26646	103.80936	CT09	17:55:28	Mammal	*Unidentified shrew or squirrel*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0018.AVI	Targeted	-
10/2/2021	-	-	CT	-	1.26796	103.80523	CT02	8:56:52	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0032.AVI	Targeted	-
10/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:09:32	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0033.AVI	Targeted	-
10/2/2021	-	-	CT	-	1.26935	103.80166	CT10	12:50:46	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0211.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26558	103.8042	CT12	15:18:22	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26558	103.8042	CT12	15:18:54	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0023.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26796	103.80523	CT02	1:21:22	Mammal	*Rattus tiomanicus*	Malaysian wood rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:05:48	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26796	103.80523	CT02	18:59:00	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:33:56	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0210.AVI	Targeted	-
9/2/2021	-	-	CT	-	1.26796	103.80523	CT02	8:00:38	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	3	Seen	IMG_0028.AVI	Targeted	-
7/2/2021	-	-	CT	-	1.26796	103.80523	CT02	13:16:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
7/2/2021	-	-	CT	-	1.26796	103.80523	CT02	21:38:06	NA	*Unidentified sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0027.AVI	Incidental	-
6/2/2021	-	-	CT	-	1.26796	103.80523	CT02	16:46:40	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0024.AVI	Targeted	-
6/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:25:10	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
6/2/2021	-	-	CT	-	1.26935	103.80166	CT10	11:57:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0093.AVI	Targeted	-
6/2/2021	-	-	CT	-	1.26935	103.80166	CT10	12:00:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0094.AVI	Targeted	-
6/2/2021	-	-	CT	-	1.26935	103.80166	CT10	12:13:14	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	3	Seen	IMG_0096.AVI	Incidental	-
5/2/2021	-	-	CT	-	1.26796	103.80523	CT02	23:34:56	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0023.AVI	Targeted	-
5/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:27:18	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0022.AVI	Targeted	-
5/2/2021	-	-	CT	-	1.26935	103.80166	CT10	13:40:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0062.AVI	Targeted	-
5/2/2021	-	-	CT	-	1.26935	103.80166	CT10	14:10:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0067.AVI	Incidental	-
4/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:04:48	Mammal	*Tupaia gilis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0021.AVI	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1333	1.266885018	103.806226	-	1532	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1294	1.26755096	103.811737	-	1309	Butterfly	*Catochrysops panormus exiguus*	Silver forget-me-not	Not Assessed	Not Assessed	No	Resident	1	Seen	HB1392	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1294	1.26755096	103.811737	-	1309	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1331	1.267592032	103.805766	-	1528	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1291	1.267716	103.812444	-	1300	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen	HB1387	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1291	1.267716	103.812444	-	1300	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1292	1.267741984	103.812332	-	1303	Butterfly	*Catochrysops panormus exiguus*	Silver forget-me-not	Not Assessed	Not Assessed	No	Resident	1	Seen	HB1388	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1292	1.267741984	103.812332	-	1303	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen	HB1387	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1293	1.267763022	103.812081	-	1306	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1293	1.267763022	103.812081	-	1306	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1290	1.267817002	103.812557	-	1258	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1286	1.267930996	103.813009	-	1242	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen	HB1381,82	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1286	1.267930996	103.813009	-	1242	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1286	1.267930996	103.813009	-	1242	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1330	1.268015988	103.805199	-	1526	Odonate	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1295	1.268393006	103.811099	-	1319	Butterfly	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Resident	1	Seen	HB1393	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1296	1.268597022	103.81093	-	1321	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1297	1.26865603	103.810635	-	1328	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1297	1.26865603	103.810635	-	1328	Odonate	*Rhyothemis phyllis*	Yellow-barred flutterer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1329	1.268701041	103.804485	-	1522	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1329	1.268701041	103.804485	-	1522	Bird	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Yes	Resident breeder	1	Seen	HB1412	Incidental	
26-Apr-21	2	T3	Terrestrial	XT1298	1.268972028	103.810965	-	1332	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1328	1.268980997	103.804076	-	1518	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1299	1.269231029	103.810326	-	1334	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1299	1.269231029	103.810326	-	1334	Odonate	*Rhyothemis phyllis*	Yellow-barred flutterer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1299	1.269231029	103.810326	-	1334	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1300	1.269349968	103.81019	-	1338	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1300	1.269349968	103.81019	-	1338	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1301	1.269502016	103.810195	-	1340	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1302	1.269639982	103.810126	-	1343	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1309	1.269861013	103.809146	-	1401	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1309	1.269861013	103.809146	-	1401	Odonate	*Trithemis aurora*	Crimson dropwing	Least Concern	Least Concern	No	Native	1	Seen	HB1400	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1307	1.269931002	103.809492	-	1357	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1327	1.269936031	103.803494	-	1514	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1308	1.270000937	103.809307	-	1358	Odonate	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1310	1.270149015	103.808429	-	1406	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1310	1.270149015	103.808429	-	1406	Butterfly	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1326	1.270200983	103.803362	-	1507	Odonate	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	-	-	Terrestrial	DGPS	-	-	-	1215	Bird	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Yes	Resident breeder	1	Seen	DY_907-9	Incidental (flora)	
26-Apr-21	2	T3	Terrestrial	XT1312	1.270354036	103.80789	-	1410	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1312	1.270354036	103.80789	-	1410	Butterfly	*Zizeeria maha serica*	Pale grass blue	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1313	1.270427965	103.807409	-	1412	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen	HB1402,03	Incidental	
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	18:58:48	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:02:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0017.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:03:18	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0018.AVI	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1325	1.270714961	103.803151	-	1504	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1315	1.270805988	103.806719	-	1420	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1324	1.270878995	103.803174	-	1502	Reptile	*Eutropis sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Incidental	
26-Apr-21	2	T3	Terrestrial	XT1316	1.271156017	103.80671	-	1422	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	-	-	Terrestrial	SH_4645	1.271312004	103.803731	-	930	Odonate	*Gynacantha dohrni*	Spear-tail duskhawker	Not Assessed	Least Concern	No	Native	1	Seen	SH_8756-65	Incidental (flora)	
26-Apr-21	-	-	Terrestrial	SH_4691	1.269480977	103.806146	-	1150	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	DY_890	Incidental (flora)	
26-Apr-21	2	T3	Terrestrial	XT1317	1.271318039	103.806093	-	1424	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1317	1.271318039	103.806093	-	1424	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1323	1.271447958	103.803145	-	1457	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1323	1.271447958	103.803145	-	1457	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1318	1.271581985	103.805615	-	1428	Butterfly	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:43:56	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0006.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:46:46	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0007.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:47:22	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0008.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:47:46	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0009.AVI	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1319	1.271985993	103.804524	-	1437	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1320	1.272081966	103.804189	-	1444	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1321	1.272201994	103.803764	-	1447	Butterfly	*Acraea terpsicore*	Tawny coster	Not Assessed	Not Assessed	No	Non-native, resident	1	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1322	1.272203	103.803225	-	1454	Odonate	*Pantala flavescens*	Wandering glider	Least Concern	Least Concern	No	Native	1	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF1_01	810	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	1	Seen	-	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF6_02	1100	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF1	810	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	1	Seen	-	Incidental	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF1	810	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	1	Seen	-	Incidental	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF1	810	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	-	Incidental	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF1	810	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	-	Incidental	-
26-Apr-21	2	T3	Terrestrial	XT1294	1.26755096	103.811737	-	1309	Butterfly	*Zizeeria maha serica*	Pale grass blue	Not Assessed	Not Assessed	No	Non-native, resident	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1294	1.26755096	103.811737	-	1309	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1291	1.267716	103.812444	-	1300	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1292	1.267741984	103.812332	-	1303	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1290	1.267817002	103.812557	-	1258	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen	HB1386	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1287	1.267924961	103.812898	-	1246	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1287	1.267924961	103.812898	-	1246	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen	HB1383	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1287	1.267924961	103.812898	-	1246	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1286	1.267930996	103.813009	-	1242	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1286	1.267930996	103.813009	-	1242	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1288	1.267933007	103.812719	-	1250	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1328	1.268980997	103.804076	-	1518	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1301	1.269502016	103.810195	-	1340	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1301	1.269502016	103.810195	-	1340	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	2	Seen	HB1399	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1302	1.269639982	103.810126	-	1343	Butterfly	*Eurema sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
26-Apr-21	2	T3	Terrestrial	XT1305	1.269722041	103.809772	-	1353	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1326	1.270200983	103.803362	-	1507	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen	HB1411	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1314	1.270566015	103.807138	-	1417	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	2	Seen		Targeted	
26-Apr-21	-	-	Terrestrial	SH_4652	1.270593004	103.804785	-	1015	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	2	Seen	SH_8766-8771	Incidental (flora)	
26-Apr-21	2	T3	Terrestrial	XT1318	1.271581985	103.805615	-	1428	Butterfly	*Catopsilia scylla cornelia*	Orange emigrant	Not Assessed	Not Assessed	No	Resident	2	Seen	XT257	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1322	1.272203	103.803225	-	1454	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	2	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF2_04	846	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	2	Seen	-	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF3_03	912	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	2	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1289	1.267904006	103.812597	-	1252	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen	XT240	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1302	1.269639982	103.810126	-	1343	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1302	1.269639982	103.810126	-	1343	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1304	1.269707959	103.809867	-	1351	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1309	1.269861013	103.809146	-	1401	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1308	1.270009037	103.809307	-	1358	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1308	1.270009037	103.809307	-	1358	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1310	1.270149015	103.808429	-	1406	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	3	Seen		Targeted	
26-Apr-21	-	-	Terrestrial	DGPS	-	-	-	1215	Odonate	*Pseudagrion sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	DY_910-1	Incidental (flora)	
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:48:44	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0011.AVI	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF3_01	912	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	3	Seen	-	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF3_01	912	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF6_01	1100	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	-	Targeted	-
26-Apr-21	1	-	Pond	-	-	-	AF3_02	912	Fish	*Pterygoplichthys disjunctivus*	Vermiculated sailfin sucker catfish	Not Assessed	Not Assessed	No	Non-native	3	Seen	-	Targeted	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF3_03	912	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	3	Seen	-	Incidental	-
26-Apr-21	1	-	Terrestrial	-	-	-	AF3_03	912	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	3	Seen	-	Incidental	-
26-Apr-21	2	T3	Terrestrial	XT1296	1.268597022	103.81093	-	1321	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	4	Seen	HB1396	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1297	1.26865603	103.810635	-	1328	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	4	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1305	1.269722041	103.809772	-	1353	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	4	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF4_01	1000	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	4	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1331	1.267592032	103.805766	-	1528	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1292	1.267741984	103.812332	-	1303	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1293	1.267763022	103.812081	-	1306	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1297	1.26865603	103.810635	-	1328	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1303	1.269638976	103.810092	-	1348	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1311	1.270278012	103.808111	-	1409	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	5	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1303	1.269638976	103.810092	-	1348	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	6	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1304	1.269707959	103.809867	-	1351	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	6	Seen		Targeted	
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:50:56	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0012.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:51:16	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0013.AVI	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1321	1.272201994	103.803764	-	1447	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	6	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF3_03	912	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	6	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1306	1.269804016	103.809639	-	1355	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	7	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1307	1.269931002	103.809492	-	1357	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	7	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF3_02	912	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	7	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1290	1.267817002	103.812557	-	1258	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	8	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1299	1.269231029	103.810326	-	1334	Odonate	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Native	8	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1302	1.269639982	103.810126	-	1343	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	8	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1291	1.267716	103.812444	-	1300	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	9	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1305	1.269722041	103.809772	-	1353	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	9	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1332	1.26736396	103.80597	-	1531	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1332	1.26736396	103.80597	-	1531	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1331	1.267592032	103.805766	-	1528	Odonate	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1296	1.268597022	103.81093	-	1321	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1304	1.269707959	103.809867	-	1351	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1305	1.269722041	103.809772	-	1353	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1306	1.269804016	103.809639	-	1355	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1307	1.269931002	103.809492	-	1357	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	10	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1314	1.270566015	103.807138	-	1417	Butterfly	*Chliaides pandava pandava*	Cycad blue	Not Assessed	Not Assessed	No	Resident	10	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF6_01	1100	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	13	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1291	1.267716	103.812444	-	1300	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	15	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1303	1.269638976	103.810092	-	1348	Odonate	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Native	15	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1321	1.272201994	103.803764	-	1447	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	15	Seen		Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF4_02	1000	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	17	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1306	1.269804016	103.809639	-	1355	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	18	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1297	1.26865603	103.810635	-	1328	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	20	Seen		Targeted	
26-Apr-21	2	T3	Terrestrial	XT1287	1.267924961	103.812898	-	1246	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	21	Seen		Targeted	
26-Apr-21	-	-	Pond	-	-	-	AF6_02	1100	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	21	Seen	-	Targeted	-
26-Apr-21	2	T3	Terrestrial	XT1288	1.267933007	103.812719	-	1250	Butterfly	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Resident	30	Seen	HB1384,85	Targeted	
26-Apr-21	2	T3	Terrestrial	XT1296	1.268597022	103.81093	-	1321	Butterfly	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Resident	50	Seen	HB1395,97	Targeted	
26-Apr-21	1	-	Pond	-	-	-	AF1_02	810	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
26-Apr-21	1	-	Pond	-	-	-	AF2_01	846	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
26-Apr-21	1	-	Pond	-	-	-	AF2_02	846	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
26-Apr-21	1	-	Pond	-	-	-	AF2_03	846	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
26-Apr-21	1	-	Pond	-	-	-	AF5	1030	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:54:32	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	1	Seen	IMG_0015.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	19:26:24	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0019.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	7:07:20	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0020.AVI	Targeted	-
2/2/2021	-	-	CT	-	1.26796	103.80523	CT02	14:48:06	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	2	Seen	IMG_0010.AVI	Targeted	-
1/2/2021	-	-	CT	-	1.26796	103.80523	CT02	8:03:08	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0061.AVI	Targeted	-
1/2/2021	-	-	CT	-	1.26796	103.80523	CT02	8:17:30	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0062.AVI	Targeted	-
29/1/2021	-	-	CT	-	1.26796	103.80523	CT02	11:16:32	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0060.AVI	Targeted	-
29/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:55:28	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0057.AVI	Targeted	-
29/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:56:14	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
29/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:56:38	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0059.AVI	Targeted	-
29/1/2021	-	-	CT	-	1.26796	103.80523	CT02	9:43:32	Mammal	*Tupaia gis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0056.AVI	Targeted	-
28/1/2021	-	-	CT	-	1.26796	103.80523	CT02	7:12:48	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0055.AVI	Incidental	-
27/1/2021	-	-	CT	-	1.26796	103.80523	CT02	16:38:14	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0054.AVI	Targeted	-
26/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:31:38	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0051.AVI	Targeted	-
26/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:33:12	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0052.AVI	Targeted	-
28-Apr-21	2	T1	Intertidal	SG862	1.264692983	103.809209	-	612	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen		Targeted	-
28-Apr-21	2	T1	Intertidal	SG862	1.264692983	103.809209	-	612	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG861	1.264707986	103.809202	-	610	Fish	*Acreichthys tomentosus*	Seagrass filefish	Least Concern	Not Assessed	No	NA	1	Seen		Targeted	-
28-Apr-21	2	T1	Intertidal	SG859	1.264727013	103.809201	-	609	Mollusc	*Cypraea errones*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	P4282162	Targeted	-
28-Apr-21	2	T1	Intertidal	SG859	1.264727013	103.809201	-	609	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG860	1.264738999	103.809191	-	610	Fish	*Acentrogobius nebulosus*	Shadow goby	Least Concern	Not Assessed	No	NA	1	Seen		Targeted	-
28-Apr-21	2	T2	Intertidal	SG877	1.264747968	103.808831	-	641	Fish	*Chelmon sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG877	1.264747968	103.808831	-	641	Crustacean	*Myomenippe hardwickii*	Thunder crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG856	1.264762972	103.809278	-	604	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG853	1.264783004	103.809321	-	601	Fish	*Siganus canaliculatus*	White-spotted rabbitfish	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG876	1.264789961	103.808821	-	638	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG857	1.264795996	103.809211	-	605	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG855	1.264811	103.809339	-	603	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG852	1.264820974	103.809333	-	557	Fish	*Dischistodus prosopotaenia*	Honey-head damsel	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG852	1.264820974	103.809333	-	557	Fish	*Siganus canaliculatus*	White-spotted rabbitfish	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG875	1.264822986	103.808766	-	637	Crustacean	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG851	1.264850982	103.809373	-	554	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG850	1.264866991	103.809397	-	553	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG850	1.264866991	103.809397	-	553	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG864	1.264871014	103.809071	-	617	Fish	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG873	1.264884006	103.808814	-	633	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG869	1.264896998	103.808903	-	624	Crustacean	*Ocypodidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG854	1.264903033	103.809331	-	602	Echinoderm	*Ophiothrichidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG854	1.264903033	103.809331	-	602	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG874	1.264921976	103.808863	-	634	Fish	*Acentrogobius nebulosus*	Shadow goby	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG874	1.264921976	103.808863	-	634	Crustacean	*Scylla sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG843	1.264923988	103.809479	-	531	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG863	1.264926	103.809074	-	615	Fish	*Acentrogobius nebulosus*	Shadow goby	Least Concern	Not Assessed	No	NA	1	Seen	-	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
28-Apr-21	2	T2	Intertidal	SG872	1.264930023	103.808829	-	631	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG844	1.26493304	103.809507	-	534	Fish	*Terapon jarbua*	Common jarbua / crescent perch / jarbua	Least Concern	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG848	1.264934968	103.809477	-	546	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen	SS2141-2142	Targeted	-
28-Apr-21	2	T1	Intertidal	SG848	1.264934968	103.809477	-	546	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS2136-2140	Targeted	-
28-Apr-21	2	T2	Intertidal	SG871	1.264934968	103.808892	-	630	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG846	1.264935974	103.809501	-	542	Crustacean	*Portunus pelagicus*	Flower crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG870	1.264938992	103.80889	-	625	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen	SS2169	Targeted	-
28-Apr-21	2	T2	Intertidal	SG870	1.264938992	103.80889	-	625	Fish	*Chelmon rostratus*	Copperband butterflyfish	Least Concern	Not Assessed	No	NA	1	Seen	SS2168	Targeted	-
28-Apr-21	2	T2	Intertidal	SG870	1.264938992	103.80889	-	625	Fish	*Syngnathidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	SS2173	Targeted	-
28-Apr-21	2	T1	Intertidal	SG865	1.26494796	103.809009	-	618	Fish	*Plotosus canius*	Black eeltail catfish	Not Assessed	Not Assessed	No	Native	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG845	1.264949972	103.809479	-	536	Crustacean	*Alpheus sp. (Blue-tailed Penaeid Shrimp)*	Blue-tailed penaeid prawn	Not Assessed	Not Assessed	No	NA	1	Seen	SS2134-2135	Targeted	-
28-Apr-21	2	T1	Intertidal	SG845	1.264949972	103.809479	-	536	Fish	*Istigobius goldmanni*	Black-spotted lagoon-goby	Not Assessed	Not Assessed	No	NA	1	Seen	SS2134-2135	Targeted	-
28-Apr-21	2	T1	Intertidal	SG845	1.264949972	103.809479	-	536	Fish	*Paracentropogon longispinis*	Long-spined waspfish / longspine scorpionfish	Not Assessed	Not Assessed	No	NA	1	Seen	SS2134-2135	Targeted	-
28-Apr-21	2	T2	Intertidal	SG866	1.264966987	103.808922	-	620	Crustacean	*Scylla olivacea*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG842	1.26498702	103.809642	-	529	Crustacean	*Gelasimus vocans*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG867	1.265023984	103.808937	-	621	Mollusc	*Cypraea errones*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	SS2162-2166	Targeted	-
26/1/2021	-	-	CT	-	1.26796	103.80523	CT02	7:12:20	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0053.AVI	Incidental	-
25/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:19:56	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
25/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:15:56	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0050.AVI	Targeted	-
25/1/2021	-	-	CT	-	1.26796	103.80523	CT02	11:00:04	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0049.AVI	Targeted	-
28-Apr-21	2	T1	Intertidal	SG858	1.264719972	103.80923	-	608	Fish	*Acreichthys tomentosus*	Seagrass filefish	Least Concern	Not Assessed	No	NA	2	Seen	-	Targeted	-
28-Apr-21	2	T2	Intertidal	SG877	1.264747968	103.808831	-	641	Platyhelminthes	*Pseudoceros concinnus*	Elegant lined flatworm	Not Assessed	Vulnerable	Yes	NA	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG851	1.264850982	103.809373	-	554	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG847	1.264879983	103.809493	-	544	Fish	*Acreichthys tomentosus*	Seagrass filefish	Least Concern	Not Assessed	No	NA	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG863	1.264926	103.809074	-	615	Mollusc	*Diminovula alabaster*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG863	1.264926	103.809074	-	615	Crustacean	*Metopograpsus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG848	1.264934968	103.809477	-	546	Crustacean	*Xanthidae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG849	1.264890041	103.809441	-	551	Polychaete	*Eurythoe complanata*	#N/A	#N/A	#N/A	#N/A	#N/A	3	Seen	SS2143-2145	Targeted	-
28-Apr-21	2	T1	Intertidal	SG844	1.26493304	103.809507	-	534	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	3	Seen	-	Targeted	-
28-Apr-21	2	T1	Intertidal	SG857	1.264795996	103.809211	-	605	Fish	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Assessed	No	NA	4	Seen	SS2158	Targeted	-
24/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:02:12	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
24/1/2021	-	-	CT	-	1.26796	103.80523	CT02	13:56:52	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0046.AVI	Targeted	-
24/1/2021	-	-	CT	-	1.26796	103.80523	CT02	18:57:06	Bird	*Unidentified Bird*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0047.AVI	Incidental	-
23/1/2021	-	-	CT	-	1.26796	103.80523	CT02	15:20:08	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Incidental	-
21/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:05:30	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
21/1/2021	-	-	CT	-	1.26796	103.80523	CT02	15:43:24	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0041.AVI	Targeted	-
21/1/2021	-	-	CT	-	1.26796	103.80523	CT02	15:44:18	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0042.AVI	Targeted	-
21/1/2021	-	-	CT	-	1.26796	103.80523	CT02	10:49:14	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0039.AVI	Targeted	-
20/1/2021	-	-	CT	-	1.26796	103.80523	CT02	8:22:54	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0038.AVI	Incidental	-
19/1/2021	-	-	CT	-	1.26796	103.80523	CT02	13:21:40	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0037.AVI	Incidental	-
19/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:55:46	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	11:53:26	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0030.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:05:48	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0031.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:06:38	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0032.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:07:32	Mammal	*Sus scrofa*	Wild pig	Least Concern	Least Concern	No	Native	1	Seen	IMG_0033.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	8:21:40	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	7:27:28	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
18/1/2021	-	-	CT	-	1.26796	103.80523	CT02	7:50:10	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Targeted	-
17/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:06:40	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
17/1/2021	-	-	CT	-	1.26796	103.80523	CT02	7:25:40	Bird	*Unidentified Rallidae*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0028.AVI	Incidental	-
17/1/2021	-	-	CT	-	1.26796	103.80523	CT02	12:26:40	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0027.AVI	Incidental	-
15/1/2021	-	-	CT	-	1.26796	103.80523	CT02	16:59:40	Mammal	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
31/12/2020	-	-	CT	-	1.26916	103.80663	CT04	18:54:58	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0108.AVI	Targeted	-
30/1/2020	-	-	CT	-	1.26916	103.80663	CT04	3:19:38	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0106.AVI	Targeted	-
29/1/2020	-	-	CT	-	1.26916	103.80663	CT04	7:39:04	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0103.AVI	Incidental	-
27/1/2020	-	-	CT	-	1.26916	103.80663	CT04	7:58:58	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0098.AVI	Targeted	-
25/1/2020	-	-	CT	-	1.26916	103.80663	CT04	9:12:28	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0091.AVI	Targeted	-
23/1/2020	-	-	CT	-	1.26916	103.80663	CT04	5:46:44	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0089.AVI	Targeted	-
22/1/2020	-	-	CT	-	1.26916	103.80663	CT04	7:28:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0088.AVI	Targeted	-
21/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:13:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0083.AVI	Targeted	-
21/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:13:56	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0084.AVI	Targeted	-
21/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:14:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0085.AVI	Targeted	-
21/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:45:00	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0086.AVI	Incidental	-
20/1/2020	-	-	CT	-	1.26916	103.80663	CT04	8:05:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0082.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	22:01:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0072.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	22:02:50	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0073.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	22:07:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0074.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	22:07:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0075.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	0:31:18	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0078.AVI	Targeted	-
18/1/2020	-	-	CT	-	1.26916	103.80663	CT04	5:29:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0079.AVI	Targeted	-
17/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:06:18	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0071.AVI	Incidental	-
16/1/2020	-	-	CT	-	1.26916	103.80663	CT04	20:32:42	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0068.AVI	Targeted	-
15/1/2020	-	-	CT	-	1.26916	103.80663	CT04	23:13:16	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0066.AVI	Incidental	-
15/1/2020	-	-	CT	-	1.26916	103.80663	CT04	14:01:24	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0065.AVI	Targeted	-
14/1/2020	-	-	CT	-	1.26916	103.80663	CT04	0:37:18	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0064.AVI	Incidental	-
13/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:50:04	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0063.AVI	Targeted	-
10/1/2020	-	-	CT	-	1.26916	103.80663	CT04	0:06:24	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0057.AVI	Targeted	-
10/1/2020	-	-	CT	-	1.26916	103.80663	CT04	4:31:18	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0058.AVI	Targeted	-
9/1/2020	-	-	CT	-	1.26916	103.80663	CT04	11:54:52	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0047.AVI	Targeted	-
9/1/2020	-	-	CT	-	1.26916	103.80663	CT04	16:18:32	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen	IMG_0048.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	8:05:18	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0036.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	8:06:12	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0037.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:33:54	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0040.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:38:06	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0041.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:40:22	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0042.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	3:32:48	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0044.AVI	Targeted	-
8/1/2020	-	-	CT	-	1.26916	103.80663	CT04	5:42:28	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0045.AVI	Targeted	-
7/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:12:00	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0034.AVI	Targeted	-
7/1/2020	-	-	CT	-	1.26916	103.80663	CT04	2:13:14	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0035.AVI	Targeted	-
7/1/2020	-	-	CT	-	1.26916	103.80663	CT04	23:19:24	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0033.AVI	Incidental	-
6/1/2020	-	-	CT	-	1.26916	103.80663	CT04	0:28:30	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0029.AVI	Targeted	-
4/1/2020	-	-	CT	-	1.26916	103.80663	CT04	3:12:02	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0025.AVI	Targeted	-
4/1/2020	-	-	CT	-	1.26916	103.80663	CT04	3:14:16	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0026.AVI	Targeted	-
3/1/2020	-	-	CT	-	1.26916	103.80663	CT04	1:56:46	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen	IMG_0016.AVI	Targeted	-
2/1/2020	-	-	CT	-	1.26916	103.80663	CT04	6:50:36	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0012.AVI	Incidental	-
2/1/2020	-	-	CT	-	1.26916	103.80663	CT04	6:53:38	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0013.AVI	Incidental	-
2/1/2020	-	-	CT	-	1.26916	103.80663	CT04	6:54:08	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0014.AVI	Incidental	-
2/1/2020	-	-	CT	-	1.26916	103.80663	CT04	6:54:58	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0015.AVI	Incidental	-
1/1/2020	-	-	CT	-	1.26916	103.80663	CT04	20:59:32	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen	IMG_0007.AVI	Incidental	-
1/1/2020	-	-	CT	-	1.26916	103.80663	CT04	19:22:38	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0005.AVI	Targeted	-
1/1/2020	-	-	CT	-	1.26916	103.80663	CT04	19:58:28	Mammal	*Rattus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	IMG_0006.AVI	Targeted	-
4/1/2019	-	-	CT	-	1.26747	103.803	CT11	17:28:28	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0111.AVI	Incidental	-
1/1/2019	-	-	CT	-	1.26747	103.803	CT11	17:41:52	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen	IMG_0017.AVI	Incidental	-
10-May-21	2	-	Pond	-	-	-	AF3_02	920	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	1	Seen	2207	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF6_01	1025	Fish	*Megalops cyprinoides*	Indo-pacific tarpon	Data Deficient	Not Assessed	No	Native	1	Seen	-	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF6_02	1045	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF1_02	815	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	2	Seen	2203	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF3_03	920	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	2	Seen	2208-09	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF4_01	951	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	2210-15	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF3_01	920	Fish	*Pterygoplichthys disjunctivus*	Vermiculated sailfin sucker catfish	Not Assessed	Not Assessed	No	Non-native	3	Seen	2004-06	Targeted	-
10-May-21	-	-	Terrestrial	SH_4992	-	-	-	1138	Mammal	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Least Concern	Yes	Native	4	Seen	AL_9059-61	Incidental (flora)	
10-May-21	2	-	Pond	-	-	-	AF3_01	920	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	4	Seen	-	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF6_01	1025	Fish	*Oreochromis mossambicus × O. niloticus hybrid*	#N/A	#N/A	#N/A	#N/A	#N/A	4	Seen	-	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF1_01	815	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	6	Seen	2198-2201	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF4_01	951	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	6		2216-20	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF6_01	1025	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	10	Seen	-	Targeted	-

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
10-May-21	2	-	Pond	-	-	-	AF6_02	1045	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	12	Seen	-	Targeted	-
10-May-21	2	-	Pond	-	-	-	AF2_01	845	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
10-May-21	2	-	Pond	-	-	-	AF2_02	845	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
10-May-21	2	-	Pond	-	-	-	AF2_03	845	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
10-May-21	2	-	Pond	-	-	-	AF5	1030	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
17-May-21	-	-	Terrestrial	SH_4787	1.268218	103.813143	-	1120	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen	YY_885-886	Incidental (flora)	
18-May-21	-	-	Intertidal	NA	1.264915	103.808515	-	947	Mollusc	*Tayuva lilacina*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264929	103.809311	-	900	Crustacean	*Ashtoret lunaris*	Yellow moon crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264935	103.80834	-	915	Platyhelminthes	*Acotylea sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264947	103.808944	-	1025	Crustacean	*Myomenippe hardwickii*	Thunder crab	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264954	103.808396	-	909	Sipuncula	*Sipuncula sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265003	103.808331	-	827	Echinoderm	*Aquilonastra coronata*	Crown sea star / rock star	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265006	103.808291	-	940	Crustacean	*Dromildae sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265021	103.808177	-	1005	Mollusc	*Astralium calcar*	NA	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265093	103.807702	-	802	Platyhelminthes	*Pseudoceros concinnus*	Elegant lined flatworm	Not Assessed	Vulnerable	Yes	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265096	103.809412	-	745	Mollusc	*Mauritia arabica*	#N/A	Not Assessed	Vulnerable	Yes	#N/A	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265115	103.808002	-	803	Platyhelminthes	*Pseudoceros indicus*	Blue-dotted flatworm	Not Assessed	Vulnerable	Yes	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265127	103.808067	-	1007	Mollusc	*Bornella stellifer*	Starry bornella nudibranch	Not Assessed	Not Assessed	No	NA	1	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264901	103.808262	-	924	Platyhelminthes	*Pseudoceros cf. prudhoei*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264983	103.80834	-	800	Crustacean	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265084	103.808219	-	946	Crustacean	*Ozius guttatus*	Spotted-belly forceps crab	Not Assessed	Not Assessed	No	NA	2	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264944	103.808267	-	845	Crustacean	*Pilumnus vespertilio*	Hairy crab / bad hair day crab	Not Assessed	Not Assessed	No	NA	3	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265065	103.809322	-	905	Mollusc	*Erronea ovum*	Egg cowrie	Not Assessed	Not Assessed	No	NA	4	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264901	103.809065	-	902	Crustacean	*Gelasimus vocans*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.265071	103.808197	-	849	Echinoderm	*Afrocucumis africana*	#N/A	#N/A	#N/A	#N/A	#N/A	6	Seen	-	Incidental	-
18-May-21	-	-	Intertidal	NA	1.264926	103.808356	-	830	Echinoderm	*Cryptasterina sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	7	Seen	-	Incidental	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_02	1900	Fish	*Lactoria cornuta*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	P5192277-80	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_04	1900	Fish	*Megalaspis cordyla*	Torpedo scad / chencharu	Least Concern	Not Assessed	No	Native	1	Seen	P5192242-44	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_02	1900	Fish	*Megalaspis cordyla*	Torpedo scad / chencharu	Least Concern	Not Assessed	No	Native	1	Seen	P5192274-76	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_03	1900	Fish	*Choerodon oligacanthus*	#N/A	#N/A	#N/A	#N/A	#N/A	2	Seen	P5192257-67	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_03	1900	Fish	*Pelates quadrilineatus*	Tumpeter perch	Not Assessed	Not Assessed	No	Native	2	Seen	P5192251-56	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_04	1900	Fish	*Gerres erythrourus*	Deepbody mojarra / silverbiddy	Least Concern	Not Assessed	No	NA	4	Seen	P5192235-41	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_03	1900	Fish	*Gerres erythrourus*	Deepbody mojarra / silverbiddy	Least Concern	Not Assessed	No	NA	5	Seen	P5192245-46	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_03	1900	Fish	*Gerres filamentosus*	#N/A	#N/A	#N/A	#N/A	#N/A	5	Seen	P5192247-51	Targeted	-
19-May-21	2	-	Seine netting	-	1.26505	103.80945	SN_02	1900	Fish	*Gerres erythrourus*	Deepbody mojarra / silverbiddy	Least Concern	Not Assessed	No	NA	7	Seen	-	Targeted	-
4-Oct-21	1	T3	Terrestrial	SS2457	1.267001024	103.806117	-	722	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	8	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2457	1.267001024	103.806117	-	722	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2457	1.267001024	103.806117	-	722	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2457	1.267001024	103.806117	-	722	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2457	1.267001024	103.806117	-	722	Bird	*Actitis hypoleucos*	Common sandpiper	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2458	1.267434033	103.805693	-	729	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2458	1.267434033	103.805693	-	729	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2458	1.267434033	103.805693	-	729	Bird	*Hirundo rustica*	Barn swallow	Least Concern	Not Assessed	No	Winter visitor	5	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2458	1.267434033	103.805693	-	729	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2458	1.267434033	103.805693	-	729	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	730	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	730	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	4	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	730	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	733	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	733	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	733	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	733	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	733	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	52	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Lonchura leucogastroides*	Javan munia	Least Concern	Not Assessed	No	Introduced resident breeder	5	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2459	1.268332992	103.804808	-	737	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	6	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	2	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2460	1.270460989	103.803149	-	744	Bird	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2461	1.271327008	103.803072	-	748	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2461	1.271327008	103.803072	-	748	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	50	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2461	1.271327008	103.803072	-	748	Bird	*Lanius sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Mammal	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Native	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	9	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2462	1.272226973	103.803445	-	752	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	2	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	9	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2463	1.272082971	103.804295	-	756	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2464	1.271589026	103.805645	-	802	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2464	1.271589026	103.805645	-	802	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	8	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2464	1.271589026	103.805645	-	802	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2465	1.271359026	103.806333	-	804	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2465	1.271359026	103.806333	-	804	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2465	1.271359026	103.806333	-	804	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2465	1.271359026	103.806333	-	804	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2466	1.270638015	103.807038	-	808	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2466	1.270638015	103.807038	-	808	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2466	1.270638015	103.807038	-	808	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2466	1.270638015	103.807038	-	808	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2466	1.270638015	103.807038	-	808	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2467	1.270450009	103.807962	-	811	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2467	1.270450009	103.807962	-	811	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2467	1.270450009	103.807962	-	811	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2468	1.269986993	103.808927	-	814	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2468	1.269986993	103.808927	-	814	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2468	1.269986993	103.808927	-	814	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2469	1.269692034	103.810104	-	817	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2469	1.269692034	103.810104	-	817	Reptile	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Native	1	Seen		Incidental	
4-Oct-21	1	T3	Terrestrial	SS2469	1.269692034	103.810104	-	817	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2470	1.268065022	103.811337	-	824	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2470	1.268065022	103.811337	-	824	Reptile	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Non-native	1	Seen		Incidental	
4-Oct-21	1	T3	Terrestrial	SS2470	1.268065022	103.811337	-	824	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2470	1.268065022	103.811337	-	824	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Corvus splendens*	House crow	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Ducula bicolor*	Pied imperial pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
4-Oct-21	1	T3	Terrestrial	SS2471	1.436582012	103.737855	-	826	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW515	1.269655991	103.801731	-	700	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW515	1.269655991	103.801731	-	700	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	14	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW515	1.269655991	103.801731	-	700	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW516	1.269379975	103.801733	-	706	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW517	1.269180989	103.801848	-	709	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW517	1.269180989	103.801848	-	709	Bird	*Chrysophlegma miniaceum*	Banded woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW517	1.269180989	103.801848	-	709	Bird	*Picus vittatus*	Laced woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW517	1.269180989	103.801848	-	709	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW518	1.26889701	103.801887	-	712	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW518	1.26889701	103.801887	-	712	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW518	1.26889701	103.801887	-	712	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW518	1.26889701	103.801887	-	712	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW518	1.26889701	103.801887	-	712	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW519	1.268435	103.802272	-	717	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW519	1.268435	103.802272	-	717	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW520	1.268255962	103.802456	-	720	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW520	1.268255962	103.802456	-	720	Bird	*Halcyon smyrnensis*	White-throated kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW521	1.267947005	103.802638	-	723	Bird	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW521	1.267947005	103.802638	-	723	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW521	1.267947005	103.802638	-	723	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW521	1.267947005	103.802638	-	723	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW521	1.267947005	103.802638	-	723	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW522	1.267641988	103.802982	-	726	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW522	1.267641988	103.802982	-	726	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW522	1.267641988	103.802982	-	726	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW522	1.267641988	103.802982	-	726	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Ducula bicolor*	Pied imperial pigeon	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW523	1.267427998	103.803148	-	728	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	45	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW524	1.267202022	103.80346	-	734	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW524	1.267202022	103.80346	-	734	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW524	1.267202022	103.80346	-	734	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW524	1.267202022	103.80346	-	734	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW524	1.267202022	103.80346	-	734	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW525	1.267000018	103.803786	-	739	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	5	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW526	1.266793991	103.803942	-	745	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW527	1.266495008	103.804238	-	751	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW527	1.266495008	103.804238	-	751	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW527	1.266495008	103.804238	-	751	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW527	1.266495008	103.804238	-	751	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW528	1.266329968	103.804377	-	754	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW530	1.266036015	103.80432	-	758	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	5	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW531	1.265617004	103.804329	-	803	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW531	1.265617004	103.804329	-	803	Bird	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Introduced	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW532	1.264399029	103.804539	-	807	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW532	1.264399029	103.804539	-	807	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW532	1.264399029	103.804539	-	807	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW532	1.264399029	103.804539	-	807	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW532	1.264399029	103.804539	-	807	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW533	1.264131982	103.804674	-	809	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW533	1.264131982	103.804674	-	809	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW533	1.264131982	103.804674	-	809	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW533	1.264131982	103.804674	-	809	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	10	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Corvus splendens*	House crow	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW534	1.263753036	103.805142	-	814	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
15-Sep-21	1	T1	Terrestrial	JW535	1.262943009	103.805404	-	823	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW535	1.262943009	103.805404	-	823	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	5	Heard		Targeted	
15-Sep-21	1	T1	Terrestrial	JW535	1.262943009	103.805404	-	823	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC961	1.272518998	103.802476	-	711	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC961	1.272518998	103.802476	-	711	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	4	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC961	1.272518998	103.802476	-	711	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC961	1.272518998	103.802476	-	711	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	27	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC962	1.272080038	103.802912	-	713	Bird	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC963	1.271936037	103.80304	-	714	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC964	1.271745013	103.803012	-	715	Bird	*Capsychus saularis*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC965	1.271581985	103.802976	-	716	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC966	1.271580979	103.802819	-	719	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	3	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC966	1.271580979	103.802819	-	719	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC966	1.271580979	103.802819	-	719	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC967	1.271312004	103.802683	-	721	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
28-Sep-21	1	T2	Terrestrial	CC967	1.271312004	103.802683	-	721	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC967	1.271312004	103.802683	-	721	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC968	1.271091979	103.802737	-	723	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC969	1.27082401	103.802701	-	727	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC970	1.270657964	103.802708	-	728	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC970	1.270657964	103.802708	-	728	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC971	1.270334003	103.802727	-	731	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC971	1.270334003	103.802727	-	731	Bird	*Chrysophlegma miniaceum*	Banded woodpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC971	1.270334003	103.802727	-	736	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen		Incidental	
28-Sep-21	1	T2	Terrestrial	CC971	1.270334003	103.802727	-	736	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC972	1.270029992	103.802861	-	735	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC972	1.270029992	103.802861	-	735	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC973	1.269907029	103.802888	-	739	Bird	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC973	1.269907029	103.802888	-	739	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC974	1.269573011	103.803093	-	743	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	11	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC974	1.269573011	103.803093	-	743	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC974	1.269573011	103.803093	-	743	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	10	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC974	1.269573011	103.803093	-	743	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC974	1.269573011	103.803093	-	744	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC975	1.269259024	103.803431	-	747	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC975	1.269259024	103.803431	-	747	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC976	1.269064983	103.803523	-	748	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC977	1.268935986	103.80365	-	750	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC977	1.268935986	103.80365	-	750	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC979	1.268288987	103.804538	-	750	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC979	1.268288987	103.804538	-	753	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC979	1.268288987	103.804538	-	753	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC979	1.268288987	103.804538	-	756	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	11	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC980	1.267951028	103.804697	-	756	Bird	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC981	1.267893026	103.804725	-	800	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC982	1.267449036	103.805195	-	801	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC982	1.267449036	103.805195	-	805	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC983	1.267159022	103.805401	-	805	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC984	1.266647978	103.806127	-	806	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC984	1.266647978	103.806127	-	810	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	3	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC984	1.266647978	103.806127	-	810	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC985	1.26648101	103.806101	-	811	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC985	1.26648101	103.806101	-	812	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC986	1.266226982	103.806228	-	814	Mammal	*Rattus tanezumi*	Oriental house rat	Least Concern	Least Concern	No	Native	1	Seen		Incidental	
28-Sep-21	1	T2	Terrestrial	CC986	1.266245982	103.806228	-	817	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC987	1.266081026	103.806497	-	818	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC987	1.266081026	103.806497	-	818	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC988	1.265967032	103.806537	-	819	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC989	1.265813978	103.806737	-	821	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC990	1.26562899	103.806993	-	823	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC991	1.265176032	103.807866	-	827	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC992	1.265100008	103.808132	-	829	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC993	1.26528	103.809523	-	837	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC994	1.265686993	103.810139	-	840	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC994	1.265686993	103.810139	-	840	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC994	1.265686993	103.810139	-	840	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC994	1.265686993	103.810139	-	840	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC994	1.265686993	103.810139	-	840	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC995	1.266628029	103.809569	-	843	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
28-Sep-21	1	T2	Terrestrial	CC996	1.266777981	103.809584	-	845	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC996	1.266777981	103.809584	-	845	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC996	1.266777981	103.809584	-	845	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
28-Sep-21	1	T2	Terrestrial	CC997	1.26559102	103.807178	-	859	Bird	*Pelargopsis capensis*	Stork-billed kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2542	1.266835984	103.808868	-	725	Bird	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2543	1.266722996	103.809327	-	728	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2543	1.266722996	103.809327	-	728	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2544	1.26596896	103.809803	-	732	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2545	1.265072012	103.809479	-	738	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2545	1.265072012	103.809479	-	738	Bird	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2545	1.265072012	103.809479	-	738	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2545	1.265072012	103.809479	-	738	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	23	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2545	1.265072012	103.809479	-	738	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2546	1.26497101	103.808823	-	741	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2547	1.265015015	103.808284	-	744	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	3	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2547	1.265015015	103.808284	-	744	Bird	*Corvus splendens*	House crow	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2548	1.265277034	103.807429	-	747	Bird	*Hirundo rustica*	Barn swallow	Least Concern	Not Assessed	No	Winter visitor	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2548	1.265277034	103.807429	-	747	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2548	1.265277034	103.807429	-	747	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2549	1.265607029	103.807133	-	749	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	10	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2549	1.265607029	103.807133	-	749	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2549	1.265607029	103.807133	-	749	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2550	1.265954962	103.806544	-	755	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2550	1.265954962	103.806544	-	755	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2551	1.266233996	103.80629	-	759	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2552	1.266570026	103.806095	-	802	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2553	1.266969005	103.806823	-	804	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2554	1.267553978	103.80506	-	807	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2554	1.267553978	103.80506	-	807	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2554	1.267553978	103.80506	-	807	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2555	1.268457966	103.804205	-	814	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2556	1.269660015	103.803054	-	822	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	4	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2557	1.269967966	103.802891	-	825	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Terpsiphone incei*	Amur paradise flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen	1771	Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	835	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	839	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
14-Oct-21	2	T2	Terrestrial	SS2558	1.271525994	103.802733	-	839	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1361	1.26253196	103.805373	-	723	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1362	1.263281973	103.805683	-	724	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	6	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1363	1.263258001	103.805254	-	729	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1364	1.263395967	103.805266	-	730	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1365	1.263907012	103.804974	-	736	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1366	1.264026035	103.804792	-	742	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1366	1.264026035	103.804792	-	742	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1367	1.264457032	103.804537	-	744	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1367	1.264457032	103.804537	-	744	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	2790 active raptor nest	1.269204961	103.805387	-	752	Bird	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Assessed	No	Resident breeder	2	Seen	HB3195	Targeted	
12-Oct-21	2	T1	Terrestrial	RS1368	1.265967032	103.804281	-	757	Bird	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1368	1.265967032	103.804281	-	757	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	15	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1368	1.265967032	103.804281	-	757	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1368	1.265967032	103.804281	-	757	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1369	1.266052024	103.804385	-	800	Bird	*Trichoglossus haematodus*	Coconut lorikeet	Least Concern	Not Assessed	No	Introduced resident breeder	7	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1369	1.266052024	103.804385	-	800	Bird	*Aethopyga siparaja*	Crimson sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1369	1.266052024	103.804385	-	800	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1370	1.267186012	103.804434	-	801	Bird	*Ardeola sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Seen	HB3202	Targeted	
12-Oct-21	2	T1	Terrestrial	RS1371	1.266075997	103.805326	-	804	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1373	1.267193975	103.803428	-	807	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1373	1.267193975	103.803428	-	807	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1373	1.267193975	103.803428	-	807	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1373	1.267193975	103.803428	-	807	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1373	1.267193975	103.803428	-	807	Butterfly	*Jamides bochus nabonassar*	Dark cerulean	Not Assessed	Not Assessed	No	Resident	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1374	1.267676548	103.802864	-	817	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1375	1.268718978	103.802099	-	822	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
12-Oct-21	2	T1	Terrestrial	RS1375	1.268718978	103.802099	-	827	Bird	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Assessed	No	Resident breeder	1	Seen	HB3214	Targeted	
12-Oct-21	2	T1	Terrestrial	RS1376	1.269213008	103.801822	-	840	Bird	*Hirundo rustica*	Barn swallow	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1494	1.267921021	103.812897	-	729	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	2	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1496	1.267914986	103.812821	-	731	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	4	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1497	1.267925967	103.812785	-	732	Bird	*Psittacula krameri*	Rose-ringed parakeet	Least Concern	Not Assessed	No	Introduced resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1498	1.267790012	103.812531	-	733	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	10	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1499	1.26772698	103.812419	-	733	Bird	*Aerodramus sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	10	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1499	1.26772698	103.812419	-	734	Bird	*Geopelia striata*	Zebra dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1500	1.267677024	103.812263	-	734	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1501	1.267708037	103.811961	-	735	Bird	*Haliastur indus*	Brahminy kite	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1502	1.267510979	103.811717	-	735	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1503	1.267641988	103.811567	-	736	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1504	1.267719017	103.811504	-	737	Bird	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1505	1.267881962	103.811428	-	737	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1506	1.26804499	103.811319	-	740	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1507	1.268005	103.811013	-	741	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1508	1.268427959	103.811115	-	742	Bird	*Psilopogon lineatus*	Lineated barbet	Least Concern	Not Assessed	No	Introduced resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1509	1.268848982	103.810609	-	744	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1510	1.268966999	103.810978	-	748	Bird	*Lanius sp.*	#N/A	#N/A	#N/A	#N/A	#N/A	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1511	1.268971022	103.81096	-	749	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1512	1.269078981	103.810523	-	751	Bird	*Dinopium javanense*	Common flameback	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1513	1.26917596	103.81037	-	751	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1513	1.26917596	103.81037	-	751	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1513	1.26917596	103.81037	-	751	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1514	1.269346022	103.811028	-	753	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1515	1.269493969	103.810209	-	754	Bird	*Butorides striata*	Striated heron	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1516	1.269545015	103.810191	-	754	Bird	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1517	1.269632019	103.810147	-	755	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1518	1.270057987	103.809228	-	757	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1519	1.269990941	103.809041	-	758	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1520	1.269917004	103.808895	-	759	Bird	*Dicaeum trigonostigma*	Orange-bellied flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1521	1.270104004	103.808445	-	801	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1522	1.270138035	103.808372	-	801	Bird	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1523	1.270389995	103.807911	-	802	Bird	*Acridotheres javanicus*	Javan myna	Least Concern	Not Assessed	No	Introduced resident breeder	10	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1524	1.270400975	103.807732	-	802	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1525	1.270453027	103.807284	-	804	Bird	*Halcyon smyrnensis*	White-throated kingfisher	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1525	1.270453027	103.807284	-	804	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1526	1.270560985	103.807033	-	805	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1527	1.271230029	103.806628	-	809	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB3175	Targeted	
11-Oct-21	2	T3	Terrestrial	SG1528	1.271264981	103.80654	-	810	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1529	1.271362966	103.805894	-	812	Bird	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1530	1.27135098	103.805889	-	813	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	3	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1531	1.271362966	103.805846	-	813	Bird	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1532	1.271382999	103.805798	-	814	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1532	1.271382999	103.805798	-	814	Bird	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1533	1.27161501	103.805558	-	815	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1534	1.271695979	103.805268	-	817	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1535	1.271720035	103.805149	-	817	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1536	1.271991022	103.804463	-	820	Bird	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1537	1.272133011	103.803923	-	824	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1538	1.272224961	103.803667	-	825	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1540	1.27163301	103.803117	-	829	Bird	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Assessed	No	Resident breeder	20	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1541	1.271533035	103.803154	-	831	Bird	*Lanius tigrinus*	Tiger shrike	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB3179	Targeted	
11-Oct-21	2	T3	Terrestrial	SG1542	1.271476038	103.803196	-	831	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1542	1.271476038	103.803196	-	831	Bird	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Assessed	No	Resident breeder	7	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1542	1.271476038	103.803196	-	831	Bird	*Aegithina tiphia*	Common iora	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1542	1.271476038	103.803196	-	831	Bird	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1543	1.271356009	103.803138	-	834	Bird	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1544	1.271491041	103.803201	-	837	Bird	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1545	1.271346034	103.803134	-	838	Bird	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Assessed	No	Winter visitor	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1546	1.27124021	103.803143	-	838	Bird	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1546	1.271243021	103.803143	-	838	Bird	*Terpsiphone incei*	Amur paradise flycatcher	Least Concern	Not Assessed	No	Winter visitor	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1547	1.271152999	103.803121	-	841	Bird	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Assessed	No	Migrant breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1548	1.271116035	103.803133	-	841	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	3	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1549	1.271079993	103.803122	-	846	Bird	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Assessed	No	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1550	1.270821998	103.803158	-	851	Bird	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1551	1.27055998	103.803187	-	852	Bird	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Assessed	No	Resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1552	1.270200983	103.80327	-	855	Bird	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Assessed	No	Introduced resident breeder	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1553	1.270070979	103.803299	-	857	Bird	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1554	1.270021023	103.80338	-	858	Bird	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1555	1.269775014	103.803534	-	859	Bird	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1555	1.269775014	103.803534	-	859	Bird	*Ficedula zanthopygia*	Yellow-rumped flycatcher	Least Concern	Not Assessed	No	Passage migrant	1	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1556	1.269640988	103.803555	-	900	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	4	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1557	1.269563036	103.803592	-	901	Bird	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Assessed	No	Resident breeder	2	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1558	1.269280985	103.803861	-	905	Bird	*Gracula religiosa*	Common hill myna	Least Concern	Not Assessed	No	Resident breeder	1	Heard		Targeted	

Date	Cycle	Route	Type	Waypoint	Latitude	Longitude	Sampling Point	Time (24H)	Taxon	Scientific Name	Common Name	Global Status	Local Status	Threatened	Migratory	Quantity	Observation Type (Seen/Heard)	Photo No.	Survey Method (Incidental/Incidental/Point Count/Trapping)	Perpendicular Distance (for distance sampling only)
11-Oct-21	2	T3	Terrestrial	SG1559	1.269017961	103.804123	-	906	Bird	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Assessed	No	Resident breeder	4	Heard		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1559	1.269017961	103.804123	-	906	Bird	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Resident breeder	2	Seen		Targeted	
11-Oct-21	2	T3	Terrestrial	SG1560	1.267954968	103.805281	-	912	Bird	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Resident breeder	1	Seen	HB3181	Targeted	
11-Oct-21	2	T3	Terrestrial	SG1561	1.267901994	103.805337	-	914	Bird	*Alcedo atthis*	Common kingfisher	Least Concern	Not Assessed	No	Winter visitor	1	Seen	HB3183, 3187	Targeted	
11-Oct-21	2	T3	Terrestrial	SG1562	1.267767968	103.805445	-	915	Bird	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Resident breeder	1	Heard		Targeted	
4-Oct-21	-	-	Minnow Trapping	-	-	-	AF_01	1800	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	4	Seen	-	Incidental	-
4-Oct-21	-	-	Minnow Trapping	-	-	-	AF_02	1800	Reptile	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Non-native	1	Seen	-	Incidental	-
4-Oct-21	-	-	Minnow Trapping	-	-	-	AF_03	1800	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
4-Oct-21	-	-	Minnow Trapping	-	-	-	AF_04	1800	NA	-	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-	-	-
4-Oct-21	-	-	Minnow Trapping	-	-	-	AF_06	1800	Fish	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Assessed	No	Non-native	7	Seen	-	Incidental	-

Appendix K
Camera Trap Data

Delivering a better world

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT01	20210308	3/3/2021	18:42:34	3/3/2021 18:42	IMG_0011.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210308	6/3/2021	11:09:44	6/3/2021 11:09	IMG_0016.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210308	6/3/2021	11:10:22	6/3/2021 11:10	IMG_0017.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210308	7/3/2021	22:27:14	7/3/2021 22:27	IMG_0018.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT01	20210405	17/3/2021	16:53:36	17/3/2021 16:53	IMG_0025.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210405	17/3/2021	16:54:14	17/3/2021 16:54	IMG_0026.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210405	22/3/2021	16:24:24	22/3/2021 16:24	IMG_0035.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210405	22/3/2021	16:29:16	22/3/2021 16:29	IMG_0036.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210405	22/3/2021	16:29:52	22/3/2021 16:29	IMG_0037.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT01	20210405	1/4/2021	13:25:06	1/4/2021 13:25	IMG_0070.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT01	20210405	31/3/2021	11:56:36	31/3/2021 11:56	IMG_0066.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT01	20210405	28/3/2021	16:04:08	28/3/2021 16:04	IMG_0049.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:04:30	28/3/2021 16:04	IMG_0050.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:04:52	28/3/2021 16:04	IMG_0051.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:05:30	28/3/2021 16:05	IMG_0052.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:05:54	28/3/2021 16:05	IMG_0053.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:06:24	28/3/2021 16:06	IMG_0054.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:07:08	28/3/2021 16:07	IMG_0056.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:07:34	28/3/2021 16:07	IMG_0057.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:08:32	28/3/2021 16:08	IMG_0058.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:10:36	28/3/2021 16:10	IMG_0059.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:11:02	28/3/2021 16:11	IMG_0060.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:11:42	28/3/2021 16:11	IMG_0061.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:12:20	28/3/2021 16:12	IMG_0062.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	28/3/2021	16:12:40	28/3/2021 16:12	IMG_0063.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT01	20210405	9/3/2021	1:57:10	10/3/2021 1:57	IMG_0010.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	15/3/2021	1:24:20	16/3/2021 1:24	IMG_0022.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	16/3/2021	1:11:00	17/3/2021 1:11	IMG_0024.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	21/3/2021	5:58:06	22/3/2021 5:58	IMG_0031.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	22/3/2021	22:00:08	22/3/2021 22:00	IMG_0042.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	24/3/2021	21:40:02	24/3/2021 21:40	IMG_0045.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	4/4/2021	5:00:30	5/4/2021 5:00	IMG_0075.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	14/3/2021	21:04:34	14/3/2021 21:04	IMG_0015.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	14/3/2021	21:05:52	14/3/2021 21:05	IMG_0016.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	15/3/2021	21:39:50	15/3/2021 21:39	IMG_0018.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	15/3/2021	21:41:18	15/3/2021 21:41	IMG_0019.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT01	20210405	15/3/2021	21:43:50	15/3/2021 21:43	IMG_0020.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	2	NA
CT01	20210405	15/3/2021	1:23:58	16/3/2021 1:23	IMG_0021.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT01	20210405	16/3/2021	1:10:02	17/3/2021 1:10	IMG_0023.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT01	20210405	18/3/2021	21:44:12	18/3/2021 21:44	IMG_0029.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	2	NA
CT01	20210405	22/3/2021	21:54:50	22/3/2021 21:54	IMG_0039.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	3	NA
CT01	20210405	22/3/2021	21:57:26	22/3/2021 21:57	IMG_0040.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	4	NA
CT01	20210405	22/3/2021	21:58:04	22/3/2021 21:58	IMG_0041.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	5	NA
CT01	20210405	23/3/2021	20:58:04	23/3/2021 20:58	IMG_0044.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	6	NA
CT01	20210405	26/3/2021	22:41:12	26/3/2021 22:41	IMG_0048.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	7	NA
CT01	20210405	29/3/2021	23:16:04	29/3/2021 23:16	IMG_0064.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	8	NA
CT01	20210405	31/3/2021	20:23:52	31/3/2021 20:23	IMG_0068.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	9	NA
CT01	20210405	1/4/2021	0:22:00	2/4/2021 0:22	IMG_0071.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	10	NA
CT01	20210405	4/4/2021	19:48:38	4/4/2021 19:48	IMG_0074.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	11	NA
CT01	20210405	12/3/2021	2:48:26	13/3/2021 2:48	IMG_0013.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	1	NA
CT01	20210405	13/3/2021	9:31:46	13/3/2021 9:31	IMG_0014.AVI	Bird	Collared kingfisher	*Todiramphus chloris*	Least concern	Not assessed	No	1	NA
CT01	20210405	15/3/2021	20:30:00	15/3/2021 20:30	IMG_0017.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT01	20210405	31/3/2021	20:36:02	31/3/2021 20:36	IMG_0069.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT01	20210405	10/3/2021	11:22:36	10/3/2021 11:22	IMG_0011.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	18/3/2021	16:51:26	18/3/2021 16:51	IMG_0028.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	20/3/2021	13:59:50	20/3/2021 13:59	IMG_0030.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	24/3/2021	7:31:24	25/3/2021 7:31	IMG_0047.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	30/3/2021	10:55:30	30/3/2021 10:55	IMG_0065.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	31/3/2021	13:41:58	31/3/2021 13:41	IMG_0067.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	3/4/2021	13:21:06	3/4/2021 13:21	IMG_0072.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210405	3/4/2021	16:11:04	3/4/2021 16:11	IMG_0073.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210510	5/4/2021	18:52:22	5/4/2021 18:52	IMG_0003.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT01	20210510	8/4/2021	22:13:40	8/4/2021 22:13	IMG_0004.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	12	NA
CT01	20210510	8/4/2021	22:14:26	8/4/2021 22:14	IMG_0005.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	13	NA
CT01	20210510	8/4/2021	22:16:44	8/4/2021 22:16	IMG_0006.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	14	NA
CT01	20210510	10/4/2021	13:31:48	10/4/2021 13:31	IMG_0007.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT01	20210510	12/4/2021	12:50:12	12/4/2021 12:50	IMG_0008.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT02	20210308	1/3/2021	16:29:52	1/3/2021 16:29	IMG_0014.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210308	4/3/2021	14:55:58	4/3/2021 14:55	IMG_0023.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	13:24:52	6/3/2021 13:24	IMG_0027.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	21:54:24	6/3/2021 21:54	IMG_0028.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210308	8/3/2021	2:49:08	8/3/2021 2:49	IMG_0042.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210308	8/3/2021	2:49:50	8/3/2021 2:49	IMG_0043.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210308	8/3/2021	3:02:52	8/3/2021 3:02	IMG_0044.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210308	2/3/2021	0:55:24	2/3/2021 0:55	IMG_0015.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	3/3/2021	2:57:54	3/3/2021 2:57	IMG_0021.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	5/3/2021	0:15:42	5/3/2021 0:15	IMG_0024.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	2:34:28	6/3/2021 2:34	IMG_0026.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	21:54:24	6/3/2021 21:54	IMG_0028.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	21:54:58	6/3/2021 21:54	IMG_0029.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	21:55:56	6/3/2021 21:55	IMG_0030.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	21:57:54	6/3/2021 21:57	IMG_0031.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	6/3/2021	22:01:32	6/3/2021 22:01	IMG_0032.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	7/3/2021	5:42:38	7/3/2021 5:42	IMG_0033.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	7/3/2021	5:50:32	7/3/2021 5:50	IMG_0034.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	1	NA
CT02	20210308	2/3/2021	13:02:06	2/3/2021 13:02	IMG_0017.AVI	Bird	Collared kingfisher	*Todiramphus chloris*	Least concern	Not assessed	No	1	NA
CT02	20210308	2/3/2021	15:22:44	2/3/2021 15:22	IMG_0018.AVI	Bird	Collared kingfisher	*Todiramphus chloris*	Least concern	Not assessed	No	1	NA
CT02	20210308	1/3/2021	12:27:32	1/3/2021 12:27	IMG_0013.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT02	20210308	3/3/2021	14:46:06	3/3/2021 14:46	IMG_0022.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT02	20210308	5/3/2021	12:51:52	5/3/2021 12:51	IMG_0025.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT02	20210405	12/3/2021	14:02:38	12/3/2021 14:02	IMG_0105.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT02	20210405	13/3/2021	11:19:14	13/3/2021 11:19	IMG_0111.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT02	20210405	27/3/2021	15:31:54	27/3/2021 15:31	IMG_0209.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	13:03:40	9/3/2021 13:03	IMG_0077.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:39:48	9/3/2021 14:39	IMG_0078.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:40:24	9/3/2021 14:40	IMG_0079.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:41:02	9/3/2021 14:41	IMG_0080.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:42:16	9/3/2021 14:42	IMG_0081.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:43:20	9/3/2021 14:43	IMG_0082.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	9/3/2021	14:44:16	9/3/2021 14:44	IMG_0083.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	10/3/2021	8:29:50	10/3/2021 8:29	IMG_0090.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	10/3/2021	12:37:54	10/3/2021 12:37	IMG_0093.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	10/3/2021	13:31:36	10/3/2021 13:31	IMG_0094.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	10/3/2021	13:35:34	10/3/2021 13:35	IMG_0095.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	11/3/2021	8:58:40	11/3/2021 8:58	IMG_0097.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	13/3/2021	7:51:02	14/3/2021 7:51	IMG_0112.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	15/3/2021	15:46:22	15/3/2021 15:46	IMG_0117.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	17/3/2021	10:27:30	17/3/2021 10:27	IMG_0122.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	17/3/2021	11:00:06	17/3/2021 11:00	IMG_0123.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	17/3/2021	11:00:44	17/3/2021 11:00	IMG_0124.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	18/3/2021	9:14:10	18/3/2021 9:14	IMG_0127.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	18/3/2021	12:45:14	18/3/2021 12:45	IMG_0129.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	18/3/2021	13:25:36	18/3/2021 13:25	IMG_0130.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	19/3/2021	11:24:36	19/3/2021 11:24	IMG_0134.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	20/3/2021	9:04:54	20/3/2021 9:04	IMG_0150.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	21/3/2021	12:35:16	21/3/2021 12:35	IMG_0160.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	25/3/2021	13:22:38	25/3/2021 13:22	IMG_0195.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	25/3/2021	14:10:40	25/3/2021 14:10	IMG_0196.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	25/3/2021	15:59:34	25/3/2021 15:59	IMG_0197.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	29/3/2021	8:43:22	29/3/2021 8:43	IMG_0212.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	1/4/2021	9:29:20	1/4/2021 9:29	IMG_0221.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	1/4/2021	9:29:54	1/4/2021 9:29	IMG_0222.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	3/4/2021	12:45:48	3/4/2021 12:45	IMG_0226.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	3/4/2021	12:48:12	3/4/2021 12:48	IMG_0227.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210405	15/3/2021	7:56:12	16/3/2021 7:56	IMG_0118.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT02	20210405	16/3/2021	7:13:54	17/3/2021 7:13	IMG_0119.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT02	20210405	16/3/2021	7:30:06	17/3/2021 7:30	IMG_0120.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT02	20210405	16/3/2021	7:30:42	17/3/2021 7:30	IMG_0121.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT02	20210405	19/1/2021	13:21:40	19/1/2021 13:21	IMG_0037.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT02	20210405	20/1/2021	8:22:54	20/1/2021 8:22	IMG_0038.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT02	20210405	1/4/2021	15:11:42	1/4/2021 15:11	IMG_0223.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210405	17/3/2021	6:32:38	18/3/2021 6:32	IMG_0126.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT02	20210405	8/3/2021	6:52:32	9/3/2021 6:52	IMG_0076.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	11/3/2021	21:37:26	11/3/2021 21:37	IMG_0099.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	11/3/2021	23:16:22	11/3/2021 23:16	IMG_0100.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	11/3/2021	23:47:12	11/3/2021 23:47	IMG_0102.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	11/3/2021	6:20:44	12/3/2021 6:20	IMG_0104.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT02	20210405	12/3/2021	0:44:18	13/3/2021 0:44	IMG_0106.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	12/3/2021	3:06:46	13/3/2021 3:06	IMG_0109.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	12/3/2021	3:18:44	13/3/2021 3:18	IMG_0110.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	17/3/2021	23:35:36	17/3/2021 23:35	IMG_0125.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	18/3/2021	6:51:56	19/3/2021 6:51	IMG_0133.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	19/3/2021	0:27:58	20/3/2021 0:27	IMG_0137.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	19/3/2021	4:20:28	20/3/2021 4:20	IMG_0141.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	19/3/2021	7:07:36	20/3/2021 7:07	IMG_0148.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	20/3/2021	21:56:42	20/3/2021 21:56	IMG_0153.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	20/3/2021	22:38:00	20/3/2021 22:38	IMG_0154.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	20/3/2021	22:59:34	20/3/2021 22:59	IMG_0155.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	20/3/2021	7:02:06	21/3/2021 7:02	IMG_0159.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	21/3/2021	6:43:40	22/3/2021 6:43	IMG_0161.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	22/3/2021	22:18:58	22/3/2021 22:18	IMG_0162.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	22/3/2021	22:44:56	22/3/2021 22:44	IMG_0163.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	23/3/2021	0:09:16	24/3/2021 0:09	IMG_0165.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	19:33:46	24/3/2021 19:33	IMG_0167.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	19:35:48	24/3/2021 19:35	IMG_0168.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	22:17:48	24/3/2021 22:17	IMG_0170.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	22:18:16	24/3/2021 22:18	IMG_0171.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	23:48:40	24/3/2021 23:48	IMG_0173.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	23:59:00	24/3/2021 23:59	IMG_0174.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	0:07:12	25/3/2021 0:07	IMG_0175.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	0:09:20	25/3/2021 0:09	IMG_0176.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	0:10:40	25/3/2021 0:10	IMG_0177.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	0:28:50	25/3/2021 0:28	IMG_0178.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	1:08:04	25/3/2021 1:08	IMG_0180.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	2:15:26	25/3/2021 2:15	IMG_0182.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	2:54:32	25/3/2021 2:54	IMG_0183.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:04:30	25/3/2021 3:04	IMG_0185.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:19:34	25/3/2021 3:19	IMG_0186.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:21:32	25/3/2021 3:21	IMG_0187.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:23:08	25/3/2021 3:23	IMG_0188.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:35:20	25/3/2021 3:35	IMG_0189.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:41:18	25/3/2021 3:41	IMG_0190.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:45:00	25/3/2021 3:45	IMG_0191.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:46:32	25/3/2021 3:46	IMG_0192.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	3:49:14	25/3/2021 3:49	IMG_0193.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	24/3/2021	4:37:14	25/3/2021 4:37	IMG_0194.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	22:46:24	25/3/2021 22:46	IMG_0198.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	22:47:36	25/3/2021 22:47	IMG_0199.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	2	NA
CT02	20210405	25/3/2021	22:49:12	25/3/2021 22:49	IMG_0201.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	22:51:32	25/3/2021 22:51	IMG_0202.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	22:56:16	25/3/2021 22:56	IMG_0203.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	1:14:12	26/3/2021 1:14	IMG_0205.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	1:28:48	26/3/2021 1:28	IMG_0206.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	1:30:40	26/3/2021 1:30	IMG_0207.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	25/3/2021	2:28:06	26/3/2021 2:28	IMG_0208.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210405	9/3/2021	21:01:22	9/3/2021 21:01	IMG_0087.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	15	NA
CT02	20210405	9/3/2021	21:05:08	9/3/2021 21:05	IMG_0088.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	16	NA
CT02	20210405	10/3/2021	22:22:46	10/3/2021 22:22	IMG_0096.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	17	NA
CT02	20210405	11/3/2021	21:36:28	11/3/2021 21:36	IMG_0098.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	18	NA
CT02	20210405	11/3/2021	23:28:42	11/3/2021 23:28	IMG_0101.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	19	NA
CT02	20210405	11/3/2021	23:57:16	11/3/2021 23:57	IMG_0103.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	20	NA
CT02	20210405	12/3/2021	2:46:58	13/3/2021 2:46	IMG_0108.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	21	NA
CT02	20210405	14/3/2021	2:11:22	15/3/2021 2:11	IMG_0113.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	22	NA
CT02	20210405	14/3/2021	2:16:40	15/3/2021 2:16	IMG_0114.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	23	NA
CT02	20210405	14/3/2021	2:31:12	15/3/2021 2:31	IMG_0115.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	24	NA
CT02	20210405	18/3/2021	2:52:50	19/3/2021 2:52	IMG_0131.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	25	NA
CT02	20210405	18/3/2021	6:50:04	19/3/2021 6:50	IMG_0132.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	26	NA
CT02	20210405	19/3/2021	0:19:02	20/3/2021 0:19	IMG_0135.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	27	NA
CT02	20210405	19/3/2021	0:20:34	20/3/2021 0:20	IMG_0136.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	28	NA
CT02	20210405	19/3/2021	1:36:00	20/3/2021 1:36	IMG_0138.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	29	NA
CT02	20210405	19/3/2021	1:39:44	20/3/2021 1:39	IMG_0139.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	30	NA
CT02	20210405	19/3/2021	4:18:40	20/3/2021 4:18	IMG_0140.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	31	NA
CT02	20210405	19/3/2021	4:28:38	20/3/2021 4:28	IMG_0142.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	32	NA
CT02	20210405	19/3/2021	6:42:00	20/3/2021 6:42	IMG_0143.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	33	NA
CT02	20210405	19/3/2021	6:54:12	20/3/2021 6:54	IMG_0145.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	34	NA
CT02	20210405	19/3/2021	6:54:44	20/3/2021 6:54	IMG_0146.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	35	NA
CT02	20210405	19/3/2021	7:02:50	20/3/2021 7:02	IMG_0147.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	36	NA
CT02	20210405	19/3/2021	7:09:14	20/3/2021 7:09	IMG_0149.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	37	NA
CT02	20210405	20/3/2021	20:26:32	20/3/2021 20:26	IMG_0151.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	38	NA
CT02	20210405	20/3/2021	21:47:16	20/3/2021 21:47	IMG_0152.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	39	NA
CT02	20210405	20/3/2021	23:39:36	20/3/2021 23:39	IMG_0157.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	40	NA
CT02	20210405	20/3/2021	0:27:50	21/3/2021 0:27	IMG_0158.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	41	NA
CT02	20210405	23/3/2021	6:17:18	24/3/2021 6:17	IMG_0166.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	42	NA
CT02	20210405	24/3/2021	22:13:56	24/3/2021 22:13	IMG_0169.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	43	NA
CT02	20210405	24/3/2021	1:07:14	25/3/2021 1:07	IMG_0179.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	44	NA
CT02	20210405	24/3/2021	1:09:22	25/3/2021 1:09	IMG_0181.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	45	NA
CT02	20210405	24/3/2021	2:56:06	25/3/2021 2:56	IMG_0184.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	46	NA
CT02	20210405	25/3/2021	22:48:48	25/3/2021 22:48	IMG_0200.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	47	NA
CT02	20210405	25/3/2021	23:21:00	25/3/2021 23:21	IMG_0204.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	48	NA
CT02	20210405	31/3/2021	19:51:32	31/3/2021 19:51	IMG_0220.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	49	NA
CT02	20210405	1/4/2021	6:42:20	2/4/2021 6:42	IMG_0224.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	50	NA
CT02	20210405	18/1/2021	11:53:26	18/1/2021 11:53	IMG_0030.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	12:05:48	18/1/2021 12:05	IMG_0031.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	12:06:38	18/1/2021 12:06	IMG_0032.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	12:07:32	18/1/2021 12:07	IMG_0033.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	21/1/2021	12:05:30	21/1/2021 12:05	IMG_0040.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	21/1/2021	15:43:24	21/1/2021 15:43	IMG_0041.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	21/1/2021	15:44:18	21/1/2021 15:44	IMG_0042.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	24/1/2021	12:02:12	24/1/2021 12:02	IMG_0045.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	24/1/2021	13:56:52	24/1/2021 13:56	IMG_0046.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	25/1/2021	10:19:56	25/1/2021 10:19	IMG_0048.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	25/1/2021	12:15:56	25/1/2021 12:15	IMG_0050.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	26/1/2021	10:31:38	26/1/2021 10:31	IMG_0051.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	26/1/2021	10:33:12	26/1/2021 10:33	IMG_0052.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	27/1/2021	16:38:14	27/1/2021 16:38	IMG_0054.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	29/1/2021	11:16:32	29/1/2021 11:16	IMG_0060.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210405	25/1/2021	11:00:04	25/1/2021 11:00	IMG_0049.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	29/1/2021	10:55:28	29/1/2021 10:55	IMG_0057.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	29/1/2021	10:56:14	29/1/2021 10:56	IMG_0058.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	29/1/2021	10:56:38	29/1/2021 10:56	IMG_0059.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	1/2/2021	8:03:08	1/2/2021 8:03	IMG_0061.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	15/1/2021	16:59:40	15/1/2021 16:59	IMG_0025.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	8:21:40	18/1/2021 8:21	IMG_0029.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	7:27:28	19/1/2021 7:27	IMG_0034.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	18/1/2021	7:50:10	19/1/2021 7:50	IMG_0035.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	19/1/2021	12:55:46	19/1/2021 12:55	IMG_0036.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	21/1/2021	10:49:14	21/1/2021 10:49	IMG_0039.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	29/1/2021	9:43:32	29/1/2021 9:43	IMG_0056.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	1/2/2021	8:17:30	1/2/2021 8:17	IMG_0062.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	17/1/2021	12:06:40	17/1/2021 12:06	IMG_0026.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210405	24/1/2021	18:57:06	24/1/2021 18:57	IMG_0047.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT02	20210405	26/1/2021	7:12:20	27/1/2021 7:12	IMG_0053.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT02	20210405	28/1/2021	7:12:48	29/1/2021 7:12	IMG_0055.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT02	20210405	17/1/2021	7:25:40	18/1/2021 7:25	IMG_0028.AVI	Bird	NA	*Unidentified Rallidae*	NA	NA	NA	1	NA
CT02	20210405	17/1/2021	12:26:40	17/1/2021 12:26	IMG_0027.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT02	20210405	23/1/2021	15:20:08	23/1/2021 15:20	IMG_0044.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT02	20210510	2/2/2021	18:58:48	2/2/2021 18:58	IMG_0016.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	2/2/2021	19:02:44	2/2/2021 19:02	IMG_0017.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	2/2/2021	19:03:18	2/2/2021 19:03	IMG_0018.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	7/2/2021	13:16:06	7/2/2021 13:16	IMG_0026.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	10/2/2021	8:56:52	10/2/2021 8:56	IMG_0032.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	18/2/2021	18:55:08	18/2/2021 18:55	IMG_0046.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	18/2/2021	19:18:52	18/2/2021 19:18	IMG_0047.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	22/2/2021	19:16:20	22/2/2021 19:16	IMG_0059.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	5/4/2021	11:34:16	5/4/2021 11:34	IMG_0076.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	5/4/2021	12:55:46	5/4/2021 12:55	IMG_0078.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	5/4/2021	12:59:44	5/4/2021 12:59	IMG_0079.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT02	20210510	12/2/2021	13:47:58	12/2/2021 13:47	IMG_0035.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT02	20210510	12/2/2021	13:48:26	12/2/2021 13:48	IMG_0036.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT02	20210510	13/2/2021	16:17:34	13/2/2021 16:17	IMG_0037.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT02	20210510	2/2/2021	14:43:56	2/2/2021 14:43	IMG_0006.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:46:46	2/2/2021 14:46	IMG_0007.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:47:22	2/2/2021 14:47	IMG_0008.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:47:46	2/2/2021 14:47	IMG_0009.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT02	20210510	2/2/2021	14:48:06	2/2/2021 14:48	IMG_0010.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	2	NA
CT02	20210510	2/2/2021	14:48:44	2/2/2021 14:48	IMG_0011.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:50:56	2/2/2021 14:50	IMG_0012.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:51:16	2/2/2021 14:51	IMG_0013.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	2/2/2021	14:54:32	2/2/2021 14:54	IMG_0015.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT02	20210510	9/2/2021	8:00:38	9/2/2021 8:00	IMG_0028.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	3	NA
CT02	20210510	19/2/2021	5:25:24	20/2/2021 5:25	IMG_0052.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT02	20210510	19/2/2021	5:26:12	20/2/2021 5:26	IMG_0053.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT02	20210510	19/2/2021	5:26:56	20/2/2021 5:26	IMG_0054.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT02	20210510	22/2/2021	0:27:38	23/2/2021 0:27	IMG_0061.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT02	20210510	5/2/2021	23:34:56	5/2/2021 23:34	IMG_0023.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT02	20210510	9/2/2021	1:21:22	10/2/2021 1:21	IMG_0030.AVI	Mammal	Malaysian wood rat	*Rattus tiomanicus*	Least Concern	Not Assessed	No	1	NA
CT02	20210510	20/2/2021	6:41:28	21/2/2021 6:41	IMG_0057.AVI	Mammal	Malaysian wood rat	*Rattus tiomanicus*	Least Concern	Not Assessed	No	1	NA
CT02	20210510	20/2/2021	6:41:52	21/2/2021 6:41	IMG_0058.AVI	Mammal	Malaysian wood rat	*Rattus tiomanicus*	Least Concern	Not Assessed	No	1	NA
CT02	20210510	6/2/2021	16:46:40	6/2/2021 16:46	IMG_0024.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	18/2/2021	7:33:08	19/2/2021 7:33	IMG_0051.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	20/2/2021	18:47:38	20/2/2021 18:47	IMG_0055.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	20/2/2021	20:56:10	20/2/2021 20:56	IMG_0056.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	22/2/2021	0:05:20	23/2/2021 0:05	IMG_0060.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	23/2/2021	8:17:24	23/2/2021 8:17	IMG_0063.AVI	Mammal	Wild pig	*Sus scrofa*	Least concern	Not assessed	No	1	NA
CT02	20210510	2/2/2021	19:26:24	2/2/2021 19:26	IMG_0019.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	2/2/2021	7:07:20	3/2/2021 7:07	IMG_0020.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	4/2/2021	7:04:48	5/2/2021 7:04	IMG_0021.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	5/2/2021	19:27:18	5/2/2021 19:27	IMG_0022.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	6/2/2021	19:25:10	6/2/2021 19:25	IMG_0025.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	9/2/2021	7:05:48	10/2/2021 7:05	IMG_0031.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	10/2/2021	7:09:32	11/2/2021 7:09	IMG_0033.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	16/2/2021	19:18:56	16/2/2021 19:18	IMG_0039.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	16/2/2021	19:20:34	16/2/2021 19:20	IMG_0040.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	16/2/2021	19:24:30	16/2/2021 19:24	IMG_0041.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	16/2/2021	19:26:14	16/2/2021 19:26	IMG_0042.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	16/2/2021	7:09:34	17/2/2021 7:09	IMG_0044.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	18/2/2021	19:22:42	18/2/2021 19:22	IMG_0048.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	18/2/2021	19:32:56	18/2/2021 19:32	IMG_0049.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	18/2/2021	7:05:26	19/2/2021 7:05	IMG_0050.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	23/2/2021	19:17:32	23/2/2021 19:17	IMG_0065.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	23/2/2021	19:27:22	23/2/2021 19:27	IMG_0066.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	23/2/2021	7:08:00	24/2/2021 7:08	IMG_0067.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	24/2/2021	7:07:18	25/2/2021 7:07	IMG_0068.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	9/2/2021	18:59:00	9/2/2021 18:59	IMG_0029.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	11/2/2021	7:05:44	12/2/2021 7:05	IMG_0034.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT02	20210510	7/2/2021	21:38:06	7/2/2021 21:38	IMG_0027.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT02	20210510	22/2/2021	7:03:12	23/2/2021 7:03	IMG_0062.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT02	20210510	23/2/2021	9:44:14	23/2/2021 9:44	IMG_0064.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	8/3/2021	14:36:02	8/3/2021 14:36	IMG_0019.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT03	20210308	2/3/2021	12:03:18	2/3/2021 12:03	IMG_0007.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	2/3/2021	12:03:40	2/3/2021 12:03	IMG_0008.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	2/3/2021	12:04:04	2/3/2021 12:04	IMG_0009.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	3/3/2021	11:49:08	3/3/2021 11:49	IMG_0011.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	3/3/2021	11:49:38	3/3/2021 11:49	IMG_0012.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	5/3/2021	8:19:52	5/3/2021 8:19	IMG_0014.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	5/3/2021	8:29:14	5/3/2021 8:29	IMG_0015.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	6/3/2021	13:36:10	6/3/2021 13:36	IMG_0016.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	7/3/2021	8:30:12	7/3/2021 8:30	IMG_0017.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210308	8/3/2021	12:49:44	8/3/2021 12:49	IMG_0018.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	17:27:20	9/3/2021 17:27	IMG_0017.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210405	17/3/2021	10:15:38	17/3/2021 10:15	IMG_0046.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210405	20/3/2021	12:30:16	20/3/2021 12:30	IMG_0055.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210405	31/3/2021	18:48:08	31/3/2021 18:48	IMG_0087.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210405	31/3/2021	18:48:32	31/3/2021 18:48	IMG_0088.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210405	23/3/2021	9:37:52	23/3/2021 9:37	IMG_0061.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT03	20210405	5/4/2021	9:56:14	5/4/2021 9:56	IMG_0101.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT03	20210405	1/4/2021	14:22:12	1/4/2021 14:22	IMG_0092.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT03	20210405	27/3/2021	10:29:08	27/3/2021 10:29	IMG_0067.AVI	Bird	Common tailorbird	*Orthotomus sutorius*	Least concern	Not assessed	No	1	NA
CT03	20210405	19/3/2021	19:09:16	19/3/2021 19:09	IMG_0050.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT03	20210405	19/3/2021	19:09:36	19/3/2021 19:09	IMG_0051.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:08:44	9/3/2021 9:08	IMG_0008.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:09:10	9/3/2021 9:09	IMG_0009.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:09:34	9/3/2021 9:09	IMG_0010.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:10:00	9/3/2021 9:10	IMG_0011.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:10:30	9/3/2021 9:10	IMG_0012.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:10:56	9/3/2021 9:10	IMG_0013.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	9/3/2021	9:11:26	9/3/2021 9:11	IMG_0014.AVI	Bird	Blue-winged pitta	*Pitta moluccensis*	Least concern	Not assessed	No	1	NA
CT03	20210405	16/3/2021	9:34:46	16/3/2021 9:34	IMG_0042.AVI	Bird	Yellow-vented bulbul	*Pycnonotus goiavier*	Least concern	Not assessed	No	1	NA
CT03	20210405	11/3/2021	19:47:30	11/3/2021 19:47	IMG_0023.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	11/3/2021	22:11:50	11/3/2021 22:11	IMG_0031.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	11/3/2021	22:43:32	11/3/2021 22:43	IMG_0032.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	19/3/2021	5:59:50	20/3/2021 5:59	IMG_0054.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	26/3/2021	19:17:18	26/3/2021 19:17	IMG_0064.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	27/3/2021	23:48:22	27/3/2021 23:48	IMG_0069.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	27/3/2021	5:01:46	28/3/2021 5:01	IMG_0072.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	27/3/2021	5:02:12	28/3/2021 5:02	IMG_0073.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	27/3/2021	5:18:46	28/3/2021 5:18	IMG_0074.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	28/3/2021	3:45:50	29/3/2021 3:45	IMG_0080.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	28/3/2021	6:14:28	29/3/2021 6:14	IMG_0082.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	29/3/2021	21:07:28	29/3/2021 21:07	IMG_0085.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	8/3/2021	2:29:00	9/3/2021 2:29	IMG_0007.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	11/3/2021	22:46:06	11/3/2021 22:46	IMG_0035.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	20/3/2021	0:07:18	21/3/2021 0:07	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	26/3/2021	5:57:08	27/3/2021 5:57	IMG_0066.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	1/4/2021	2:33:06	2/4/2021 2:33	IMG_0095.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	4/4/2021	3:28:08	5/4/2021 3:28	IMG_0100.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210405	10/3/2021	22:51:40	10/3/2021 22:51	IMG_0018.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	51	NA
CT03	20210405	11/3/2021	19:48:00	11/3/2021 19:48	IMG_0024.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	52	NA
CT03	20210405	11/3/2021	19:52:24	11/3/2021 19:52	IMG_0025.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	53	NA
CT03	20210405	11/3/2021	19:52:46	11/3/2021 19:52	IMG_0026.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	54	NA
CT03	20210405	11/3/2021	19:53:20	11/3/2021 19:53	IMG_0027.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	55	NA
CT03	20210405	11/3/2021	19:53:42	11/3/2021 19:53	IMG_0028.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	56	NA
CT03	20210405	11/3/2021	19:55:06	11/3/2021 19:55	IMG_0029.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	57	NA
CT03	20210405	11/3/2021	19:55:38	11/3/2021 19:55	IMG_0030.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	58	NA
CT03	20210405	11/3/2021	22:44:24	11/3/2021 22:44	IMG_0033.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	59	NA
CT03	20210405	11/3/2021	22:45:20	11/3/2021 22:45	IMG_0034.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	60	NA
CT03	20210405	11/3/2021	6:33:56	12/3/2021 6:33	IMG_0036.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	61	NA
CT03	20210405	16/3/2021	21:37:34	16/3/2021 21:37	IMG_0044.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	62	NA
CT03	20210405	16/3/2021	21:42:42	16/3/2021 21:42	IMG_0045.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	63	NA
CT03	20210405	18/3/2021	22:44:36	18/3/2021 22:44	IMG_0047.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	64	NA
CT03	20210405	19/3/2021	5:59:26	20/3/2021 5:59	IMG_0053.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	65	NA
CT03	20210405	20/3/2021	19:50:24	20/3/2021 19:50	IMG_0056.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	66	NA
CT03	20210405	21/3/2021	19:19:48	21/3/2021 19:19	IMG_0058.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	67	NA
CT03	20210405	21/3/2021	2:26:00	22/3/2021 2:26	IMG_0059.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	68	NA
CT03	20210405	22/3/2021	2:12:36	23/3/2021 2:12	IMG_0060.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	69	NA
CT03	20210405	25/3/2021	8:02:22	25/3/2021 8:02	IMG_0062.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	70	NA
CT03	20210405	25/3/2021	8:02:46	25/3/2021 8:02	IMG_0063.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	71	NA
CT03	20210405	27/3/2021	23:48:48	27/3/2021 23:48	IMG_0070.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	72	NA
CT03	20210405	27/3/2021	23:49:10	27/3/2021 23:49	IMG_0071.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	73	NA
CT03	20210405	28/3/2021	20:56:38	28/3/2021 20:56	IMG_0076.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	74	NA
CT03	20210405	28/3/2021	22:02:50	28/3/2021 22:02	IMG_0077.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	75	NA
CT03	20210405	28/3/2021	22:19:34	28/3/2021 22:19	IMG_0078.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	76	NA
CT03	20210405	28/3/2021	3:45:16	29/3/2021 3:45	IMG_0079.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	77	NA
CT03	20210405	28/3/2021	4:26:42	29/3/2021 4:26	IMG_0081.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	78	NA
CT03	20210405	28/3/2021	6:43:22	29/3/2021 6:43	IMG_0083.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	79	NA
CT03	20210405	29/3/2021	20:14:22	29/3/2021 20:14	IMG_0084.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	80	NA
CT03	20210405	31/3/2021	18:52:52	31/3/2021 18:52	IMG_0089.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	81	NA
CT03	20210405	31/3/2021	18:56:54	31/3/2021 18:56	IMG_0090.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	82	NA
CT03	20210405	31/3/2021	18:57:34	31/3/2021 18:57	IMG_0091.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	83	NA
CT03	20210405	1/4/2021	19:32:46	1/4/2021 19:32	IMG_0093.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	84	NA
CT03	20210405	1/4/2021	19:33:14	1/4/2021 19:33	IMG_0094.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	85	NA
CT03	20210405	2/4/2021	20:53:34	2/4/2021 20:53	IMG_0096.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	86	NA
CT03	20210405	2/4/2021	0:22:48	3/4/2021 0:22	IMG_0097.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	87	NA
CT03	20210405	4/4/2021	0:47:40	5/4/2021 0:47	IMG_0099.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	88	NA
CT03	20210405	18/3/2021	23:05:06	18/3/2021 23:05	IMG_0048.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	1	NA
CT03	20210405	12/3/2021	3:02:38	13/3/2021 3:02	IMG_0040.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	1	NA
CT03	20210405	12/3/2021	0:03:42	13/3/2021 0:03	IMG_0039.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT03	20210405	12/3/2021	4:42:02	13/3/2021 4:42	IMG_0041.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT03	20210405	30/3/2021	9:25:30	30/3/2021 9:25	IMG_0086.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT03	20210405	11/3/2021	9:15:24	11/3/2021 9:15	IMG_0019.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210405	11/3/2021	9:16:00	11/3/2021 9:16	IMG_0020.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT03	20210405	11/3/2021	9:16:22	11/3/2021 9:16	IMG_0021.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210405	11/3/2021	9:47:20	11/3/2021 9:47	IMG_0022.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210405	28/3/2021	11:55:08	28/3/2021 11:55	IMG_0075.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210405	4/4/2021	13:00:58	4/4/2021 13:00	IMG_0098.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210510	8/4/2021	18:19:44	8/4/2021 18:19	IMG_0009.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	22/4/2021	11:46:34	22/4/2021 11:46	IMG_0044.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	23/4/2021	15:39:32	23/4/2021 15:39	IMG_0045.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	23/4/2021	16:10:06	23/4/2021 16:10	IMG_0046.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	1/5/2021	7:39:50	2/5/2021 7:39	IMG_0052.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	2/5/2021	7:20:20	3/5/2021 7:20	IMG_0053.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	3/5/2021	8:14:04	3/5/2021 8:14	IMG_0054.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	3/5/2021	8:14:52	3/5/2021 8:14	IMG_0055.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	3/5/2021	10:53:34	3/5/2021 10:53	IMG_0056.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	3/5/2021	10:54:02	3/5/2021 10:54	IMG_0057.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	4/5/2021	14:54:56	4/5/2021 14:54	IMG_0058.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	5/5/2021	13:09:28	5/5/2021 13:09	IMG_0060.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT03	20210510	10/4/2021	16:50:42	10/4/2021 16:50	IMG_0019.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT03	20210510	6/4/2021	1:20:58	7/4/2021 1:20	IMG_0005.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	6/4/2021	1:22:14	7/4/2021 1:22	IMG_0006.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	3:40:12	9/4/2021 3:40	IMG_0010.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	3:40:58	9/4/2021 3:40	IMG_0011.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	5:52:06	9/4/2021 5:52	IMG_0013.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	6:11:08	9/4/2021 6:11	IMG_0014.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	9/4/2021	2:56:34	10/4/2021 2:56	IMG_0016.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	10/4/2021	4:32:52	11/4/2021 4:32	IMG_0020.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	10/4/2021	5:24:22	11/4/2021 5:24	IMG_0021.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	12/4/2021	23:56:00	12/4/2021 23:56	IMG_0023.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	12/4/2021	5:07:34	13/4/2021 5:07	IMG_0027.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	14/4/2021	4:21:22	15/4/2021 4:21	IMG_0032.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	15/4/2021	4:40:14	16/4/2021 4:40	IMG_0034.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	16/4/2021	3:01:16	17/4/2021 3:01	IMG_0036.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	19/4/2021	23:09:02	19/4/2021 23:09	IMG_0041.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	1/5/2021	5:22:18	2/5/2021 5:22	IMG_0049.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	1/5/2021	5:25:02	2/5/2021 5:25	IMG_0050.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	7/5/2021	3:13:06	8/5/2021 3:13	IMG_0061.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	3:50:32	9/4/2021 3:50	IMG_0012.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	89	NA
CT03	20210510	11/4/2021	3:18:56	12/4/2021 3:18	IMG_0022.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	90	NA
CT03	20210510	12/4/2021	2:47:00	13/4/2021 2:47	IMG_0024.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	91	NA
CT03	20210510	12/4/2021	4:20:32	13/4/2021 4:20	IMG_0025.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	92	NA
CT03	20210510	12/4/2021	4:21:22	13/4/2021 4:21	IMG_0026.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	93	NA
CT03	20210510	18/4/2021	3:23:50	19/4/2021 3:23	IMG_0040.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	94	NA
CT03	20210510	1/5/2021	5:25:26	2/5/2021 5:25	IMG_0051.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	95	NA
CT03	20210510	4/5/2021	20:43:50	4/5/2021 20:43	IMG_0059.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	96	NA
CT03	20210510	18/4/2021	12:10:26	18/4/2021 12:10	IMG_0039.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT03	20210510	8/4/2021	16:29:20	8/4/2021 16:29	IMG_0008.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT03	20210510	14/4/2021	23:20:52	14/4/2021 23:20	IMG_0031.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT03	20210510	13/4/2021	12:20:22	13/4/2021 12:20	IMG_0028.AVI	Mammal	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT03	20210510	10/4/2021	9:47:02	10/4/2021 9:47	IMG_0017.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210510	15/4/2021	13:12:58	15/4/2021 13:12	IMG_0033.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT03	20210510	16/4/2021	9:24:56	16/4/2021 9:24	IMG_0035.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT04	20210308	7/3/2021	12:18:32	7/3/2021 12:18	IMG_0028.AVI	Bird	Yellow-vented bulbul	*Pycnonotus goiavier*	Least concern	Not assessed	No	1	NA
CT04	20210405	17/3/2021	9:49:08	17/3/2021 9:49	IMG_0043.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	17/3/2021	14:53:26	17/3/2021 14:53	IMG_0044.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	21/3/2021	10:50:58	21/3/2021 10:50	IMG_0054.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	25/3/2021	15:08:36	25/3/2021 15:08	IMG_0059.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	25/3/2021	15:09:20	25/3/2021 15:09	IMG_0060.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	25/3/2021	15:12:08	25/3/2021 15:12	IMG_0061.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	1/4/2021	12:16:26	1/4/2021 12:16	IMG_0095.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	1/4/2021	13:21:32	1/4/2021 13:21	IMG_0096.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	2/4/2021	9:43:50	2/4/2021 9:43	IMG_0108.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	2/4/2021	13:07:22	2/4/2021 13:07	IMG_0109.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	2/4/2021	13:08:34	2/4/2021 13:08	IMG_0110.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	3/4/2021	12:06:24	3/4/2021 12:06	IMG_0114.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210405	4/4/2021	7:02:32	5/4/2021 7:02	IMG_0118.AVI	Mammal	Smooth-coated otter	*Lutrogale perspicillata*	Vulnerable	Critically endangered	Yes	4	NA
CT04	20210405	11/3/2021	16:29:38	11/3/2021 16:29	IMG_0024.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT04	20210405	11/3/2021	16:30:00	11/3/2021 16:30	IMG_0025.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT04	20210405	10/3/2021	6:41:54	11/3/2021 6:41	IMG_0021.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	11/3/2021	0:00:34	12/3/2021 0:00	IMG_0026.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	12/3/2021	19:47:34	12/3/2021 19:47	IMG_0029.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	12/3/2021	3:32:50	13/3/2021 3:32	IMG_0030.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	12/3/2021	3:40:24	13/3/2021 3:40	IMG_0031.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	28/3/2021	23:34:42	28/3/2021 23:34	IMG_0067.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	28/3/2021	1:17:46	29/3/2021 1:17	IMG_0070.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	13/3/2021	3:13:14	14/3/2021 3:13	IMG_0034.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210405	20/3/2021	1:55:48	21/3/2021 1:55	IMG_0053.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210510	15/1/2020	23:13:16	15/1/2020 23:13	IMG_0066.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT04	20210510	17/1/2020	1:06:18	18/1/2020 1:06	IMG_0071.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT04	20210510	3/1/2020	1:56:46	4/1/2020 1:56	IMG_0016.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	4/1/2020	3:12:02	5/1/2020 3:12	IMG_0025.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	4/1/2020	3:14:16	5/1/2020 3:14	IMG_0026.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	6/1/2020	0:28:30	7/1/2020 0:28	IMG_0029.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	7/1/2020	2:12:00	8/1/2020 2:12	IMG_0034.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	7/1/2020	2:13:14	8/1/2020 2:13	IMG_0035.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	8:05:18	8/1/2020 8:05	IMG_0036.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	8:06:12	8/1/2020 8:06	IMG_0037.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	2:33:54	9/1/2020 2:33	IMG_0040.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	2:38:06	9/1/2020 2:38	IMG_0041.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	2:40:22	9/1/2020 2:40	IMG_0042.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	3:32:48	9/1/2020 3:32	IMG_0044.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	8/1/2020	5:42:28	9/1/2020 5:42	IMG_0045.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	10/1/2020	0:06:24	11/1/2020 0:06	IMG_0057.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	10/1/2020	4:31:18	11/1/2020 4:31	IMG_0058.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	13/1/2020	2:50:04	14/1/2020 2:50	IMG_0063.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	16/1/2020	20:32:42	16/1/2020 20:32	IMG_0068.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	22:01:28	18/1/2020 22:01	IMG_0072.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	22:02:50	18/1/2020 22:02	IMG_0073.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	22:07:00	18/1/2020 22:07	IMG_0074.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	22:07:54	18/1/2020 22:07	IMG_0075.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	0:31:18	19/1/2020 0:31	IMG_0078.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	18/1/2020	5:29:00	19/1/2020 5:29	IMG_0079.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	20/1/2020	8:05:14	20/1/2020 8:05	IMG_0082.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	21/1/2020	1:13:22	22/1/2020 1:13	IMG_0083.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	21/1/2020	1:13:56	22/1/2020 1:13	IMG_0084.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	21/1/2020	1:14:50	22/1/2020 1:14	IMG_0085.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	22/1/2020	7:28:14	23/1/2020 7:28	IMG_0088.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	23/1/2020	5:46:44	24/1/2020 5:46	IMG_0089.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	27/1/2020	7:58:58	28/1/2020 7:58	IMG_0098.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	30/1/2020	3:19:38	31/1/2020 3:19	IMG_0106.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT04	20210510	1/1/2020	20:59:32	1/1/2020 20:59	IMG_0007.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	2/1/2020	6:50:36	3/1/2020 6:50	IMG_0012.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	2/1/2020	6:53:38	3/1/2020 6:53	IMG_0013.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	2/1/2020	6:54:08	3/1/2020 6:54	IMG_0014.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	2/1/2020	6:54:58	3/1/2020 6:54	IMG_0015.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	7/1/2020	23:19:24	7/1/2020 23:19	IMG_0033.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	14/1/2020	0:37:18	15/1/2020 0:37	IMG_0064.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	29/1/2020	7:39:04	30/1/2020 7:39	IMG_0103.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT04	20210510	1/1/2020	19:22:38	1/1/2020 19:22	IMG_0005.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210510	1/1/2020	19:58:28	1/1/2020 19:58	IMG_0006.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210510	9/1/2020	11:54:52	9/1/2020 11:54	IMG_0047.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210510	15/1/2020	14:01:24	15/1/2020 14:01	IMG_0065.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT04	20210510	9/1/2020	16:16:32	9/1/2020 16:16	IMG_0048.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	97	NA
CT04	20210510	25/1/2020	9:12:28	25/1/2020 9:12	IMG_0091.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	98	NA
CT04	20210510	31/1/2020	18:54:58	31/1/2020 18:54	IMG_0108.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	99	NA
CT04	20210510	21/1/2020	1:45:00	22/1/2020 1:45	IMG_0086.AVI	Bird	Spotted dove	*Spilopelia chinensis*	Least concern	Not assessed	No	1	NA
CT05	20210308	6/3/2021	13:29:20	6/3/2021 13:29	IMG_0035.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT05	20210308	6/3/2021	13:33:20	6/3/2021 13:33	IMG_0036.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT05	20210308	6/3/2021	13:39:58	6/3/2021 13:39	IMG_0037.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT05	20210308	3/3/2021	9:12:06	3/3/2021 9:12	IMG_0007.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	2	NA
CT05	20210308	6/3/2021	13:55:02	6/3/2021 13:55	IMG_0038.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210405	26/3/2021	15:14:12	26/3/2021 15:14	IMG_0090.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210405	26/3/2021	15:14:34	26/3/2021 15:14	IMG_0091.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210405	26/3/2021	15:15:00	26/3/2021 15:15	IMG_0092.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210405	12/3/2021	10:40:06	12/3/2021 10:40	IMG_0025.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT05	20210405	20/3/2021	10:43:24	20/3/2021 10:43	IMG_0076.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210405	22/3/2021	10:29:18	22/3/2021 10:29	IMG_0078.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210405	2/4/2021	11:04:30	2/4/2021 11:04	IMG_0117.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210405	2/4/2021	10:40:40	2/4/2021 10:40	IMG_0116.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT05	20210405	3/4/2021	10:22:10	3/4/2021 10:22	IMG_0119.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210405	2/4/2021	8:24:50	2/4/2021 8:24	IMG_0114.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210405	2/4/2021	8:25:12	2/4/2021 8:25	IMG_0115.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210405	16/3/2021	21:36:18	16/3/2021 21:36	IMG_0053.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	16/3/2021	21:36:40	16/3/2021 21:36	IMG_0054.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:35:46	19/3/2021 19:35	IMG_0063.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:36:24	19/3/2021 19:36	IMG_0064.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	Feeding
CT05	20210405	19/3/2021	19:36:50	19/3/2021 19:36	IMG_0065.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:40:08	19/3/2021 19:40	IMG_0066.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:40:30	19/3/2021 19:40	IMG_0067.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:41:10	19/3/2021 19:41	IMG_0068.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:41:32	19/3/2021 19:41	IMG_0069.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:42:46	19/3/2021 19:42	IMG_0071.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:43:10	19/3/2021 19:43	IMG_0072.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:43:32	19/3/2021 19:43	IMG_0073.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	19/3/2021	19:43:56	19/3/2021 19:43	IMG_0074.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT05	20210405	10/3/2021	21:16:40	10/3/2021 21:16	IMG_0020.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	11/3/2021	19:55:42	11/3/2021 19:55	IMG_0024.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	12/3/2021	6:55:30	13/3/2021 6:55	IMG_0028.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	14/3/2021	20:29:34	14/3/2021 20:29	IMG_0033.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	14/3/2021	21:07:40	14/3/2021 21:07	IMG_0034.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	14/3/2021	22:16:42	14/3/2021 22:16	IMG_0036.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	15/3/2021	19:21:14	15/3/2021 19:21	IMG_0039.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	15/3/2021	19:25:38	15/3/2021 19:25	IMG_0040.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	15/3/2021	19:35:48	15/3/2021 19:35	IMG_0041.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	16/3/2021	21:16:08	16/3/2021 21:16	IMG_0051.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	16/3/2021	21:16:44	16/3/2021 21:16	IMG_0052.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	16/3/2021	22:11:24	16/3/2021 22:11	IMG_0055.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	16/3/2021	22:13:28	16/3/2021 22:13	IMG_0056.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	16/3/2021	22:13:52	16/3/2021 22:13	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	17/3/2021	6:51:52	18/3/2021 6:51	IMG_0062.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	19/3/2021	20:25:46	19/3/2021 20:25	IMG_0075.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	21/3/2021	21:23:58	21/3/2021 21:23	IMG_0077.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	22/3/2021	20:21:32	22/3/2021 20:21	IMG_0080.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	24/3/2021	4:30:42	25/3/2021 4:30	IMG_0086.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	25/3/2021	23:32:52	25/3/2021 23:32	IMG_0087.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	25/3/2021	23:38:04	25/3/2021 23:38	IMG_0089.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	26/3/2021	0:16:34	27/3/2021 0:16	IMG_0095.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	26/3/2021	0:20:30	27/3/2021 0:20	IMG_0096.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	28/3/2021	20:19:22	28/3/2021 20:19	IMG_0100.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	29/3/2021	19:52:34	29/3/2021 19:52	IMG_0106.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	1/4/2021	20:55:48	1/4/2021 20:55	IMG_0112.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	2/4/2021	6:01:56	3/4/2021 6:01	IMG_0118.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	4/4/2021	6:58:02	5/4/2021 6:58	IMG_0120.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210405	9/3/2021	3:04:32	10/3/2021 3:04	IMG_0013.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	100	NA
CT05	20210405	9/3/2021	3:05:04	10/3/2021 3:05	IMG_0014.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	101	NA
CT05	20210405	9/3/2021	3:05:44	10/3/2021 3:05	IMG_0015.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	102	NA
CT05	20210405	9/3/2021	5:21:08	10/3/2021 5:21	IMG_0016.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	103	NA
CT05	20210405	9/3/2021	6:54:24	10/3/2021 6:54	IMG_0017.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	104	NA
CT05	20210405	9/3/2021	6:55:00	10/3/2021 6:55	IMG_0018.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	105	NA
CT05	20210405	9/3/2021	6:56:30	10/3/2021 6:56	IMG_0019.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	106	NA
CT05	20210405	10/3/2021	22:33:22	10/3/2021 22:33	IMG_0021.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	107	NA
CT05	20210405	10/3/2021	1:24:44	11/3/2021 1:24	IMG_0022.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	108	NA
CT05	20210405	10/3/2021	3:22:42	11/3/2021 3:22	IMG_0023.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	109	NA
CT05	20210405	12/3/2021	6:18:14	13/3/2021 6:18	IMG_0026.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	110	NA
CT05	20210405	12/3/2021	6:40:24	13/3/2021 6:40	IMG_0027.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	111	NA
CT05	20210405	12/3/2021	6:55:52	13/3/2021 6:55	IMG_0029.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	112	NA
CT05	20210405	13/3/2021	2:27:44	14/3/2021 2:27	IMG_0030.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	113	NA
CT05	20210405	13/3/2021	2:41:22	14/3/2021 2:41	IMG_0031.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	114	NA
CT05	20210405	14/3/2021	20:28:54	14/3/2021 20:28	IMG_0032.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	115	NA
CT05	20210405	14/3/2021	22:21:24	14/3/2021 22:21	IMG_0037.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	116	NA
CT05	20210405	15/3/2021	0:00:44	16/3/2021 0:00	IMG_0042.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	117	NA
CT05	20210405	16/3/2021	19:52:16	16/3/2021 19:52	IMG_0044.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	118	NA
CT05	20210405	16/3/2021	20:52:54	16/3/2021 20:52	IMG_0045.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	119	NA
CT05	20210405	16/3/2021	21:00:36	16/3/2021 21:00	IMG_0046.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	120	NA
CT05	20210405	16/3/2021	21:01:06	16/3/2021 21:01	IMG_0047.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	121	NA
CT05	20210405	16/3/2021	21:09:30	16/3/2021 21:09	IMG_0048.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	122	NA
CT05	20210405	16/3/2021	21:14:54	16/3/2021 21:14	IMG_0049.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	123	NA
CT05	20210405	16/3/2021	21:15:18	16/3/2021 21:15	IMG_0050.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	124	NA
CT05	20210405	16/3/2021	22:45:22	16/3/2021 22:45	IMG_0058.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	125	NA
CT05	20210405	16/3/2021	0:59:24	17/3/2021 0:59	IMG_0060.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	126	NA
CT05	20210405	22/3/2021	20:18:58	22/3/2021 20:18	IMG_0079.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	127	NA
CT05	20210405	22/3/2021	21:47:16	22/3/2021 21:47	IMG_0081.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	128	NA
CT05	20210405	23/3/2021	3:21:44	24/3/2021 3:21	IMG_0083.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	129	NA
CT05	20210405	23/3/2021	3:22:42	24/3/2021 3:22	IMG_0084.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	130	NA
CT05	20210405	25/3/2021	23:37:40	25/3/2021 23:37	IMG_0088.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	131	NA
CT05	20210405	26/3/2021	21:37:18	26/3/2021 21:37	IMG_0094.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	132	NA
CT05	20210405	27/3/2021	7:31:10	28/3/2021 7:31	IMG_0099.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	133	NA
CT05	20210405	28/3/2021	21:34:00	28/3/2021 21:34	IMG_0101.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	134	NA
CT05	20210405	28/3/2021	21:46:04	28/3/2021 21:46	IMG_0102.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	135	NA
CT05	20210405	28/3/2021	22:01:42	28/3/2021 22:01	IMG_0103.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	136	NA
CT05	20210405	28/3/2021	22:08:36	28/3/2021 22:08	IMG_0104.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	137	NA
CT05	20210405	30/3/2021	20:39:14	30/3/2021 20:39	IMG_0110.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	138	NA
CT05	20210405	8/3/2021	20:31:58	8/3/2021 20:31	IMG_0011.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	2	NA
CT05	20210405	16/3/2021	23:07:38	16/3/2021 23:07	IMG_0059.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	3	NA
CT05	20210405	16/3/2021	0:59:46	17/3/2021 0:59	IMG_0061.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	4	NA
CT05	20210405	1/4/2021	7:10:10	2/4/2021 7:10	IMG_0113.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	5	NA
CT05	20210405	15/3/2021	18:30:14	15/3/2021 18:30	IMG_0038.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT05	20210405	16/3/2021	13:00:12	16/3/2021 13:00	IMG_0043.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT05	20210405	24/3/2021	9:10:54	24/3/2021 9:10	IMG_0085.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT05	20210405	30/3/2021	18:48:22	30/3/2021 18:48	IMG_0109.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT05	20210510	9/4/2021	13:28:00	9/4/2021 13:28	IMG_0076.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT05	20210510	9/4/2021	13:28:56	9/4/2021 13:28	IMG_0077.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT05	20210510	9/4/2021	13:29:36	9/4/2021 13:29	IMG_0078.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT05	20210510	26/4/2021	7:34:40	27/4/2021 7:34	IMG_0196.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT05	20210510	26/4/2021	7:47:24	27/4/2021 7:47	IMG_0197.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT05	20210510	12/4/2021	12:20:22	12/4/2021 12:20	IMG_0110.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	12/4/2021	12:24:16	12/4/2021 12:24	IMG_0111.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	13/4/2021	9:33:56	13/4/2021 9:33	IMG_0120.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	13/4/2021	13:08:24	13/4/2021 13:08	IMG_0122.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	13/4/2021	13:08:56	13/4/2021 13:08	IMG_0123.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	13/4/2021	13:42:26	13/4/2021 13:42	IMG_0124.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:11:22	14/4/2021 9:11	IMG_0126.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:34:42	14/4/2021 9:34	IMG_0128.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:41:16	14/4/2021 9:41	IMG_0129.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:51:00	14/4/2021 9:51	IMG_0130.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:52:04	14/4/2021 9:52	IMG_0131.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	9:58:16	14/4/2021 9:58	IMG_0132.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:09:20	14/4/2021 10:09	IMG_0133.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:50:22	14/4/2021 10:50	IMG_0134.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:50:46	14/4/2021 10:50	IMG_0135.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:51:06	14/4/2021 10:51	IMG_0136.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:52:10	14/4/2021 10:52	IMG_0137.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:52:40	14/4/2021 10:52	IMG_0138.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:56:44	14/4/2021 10:56	IMG_0139.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	10:58:08	14/4/2021 10:58	IMG_0140.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:02:10	14/4/2021 11:02	IMG_0141.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:09:42	14/4/2021 11:09	IMG_0143.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:10:08	14/4/2021 11:10	IMG_0144.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:11:48	14/4/2021 11:11	IMG_0145.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:17:34	14/4/2021 11:17	IMG_0146.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:20:54	14/4/2021 11:20	IMG_0147.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:26:56	14/4/2021 11:26	IMG_0148.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	11:31:34	14/4/2021 11:31	IMG_0149.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	12:21:08	14/4/2021 12:21	IMG_0150.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	12:21:36	14/4/2021 12:21	IMG_0151.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	12:51:26	14/4/2021 12:51	IMG_0152.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	12:57:10	14/4/2021 12:57	IMG_0153.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	14/4/2021	13:13:50	14/4/2021 13:13	IMG_0154.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	16/4/2021	8:35:46	16/4/2021 8:35	IMG_0166.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	8/5/2021	8:47:40	8/5/2021 8:47	IMG_0242.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	9/5/2021	9:07:32	9/5/2021 9:07	IMG_0247.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	9/5/2021	12:26:34	9/5/2021 12:26	IMG_0248.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	9/5/2021	13:22:24	9/5/2021 13:22	IMG_0249.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	11/4/2021	9:27:34	11/4/2021 9:27	IMG_0094.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not assessed	No	1	NA
CT05	20210510	7/4/2021	10:14:26	7/4/2021 10:14	IMG_0008.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210510	7/4/2021	10:33:50	7/4/2021 10:33	IMG_0009.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT05	20210510	7/4/2021	10:36:10	7/4/2021 10:36	IMG_0010.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210510	7/4/2021	10:36:42	7/4/2021 10:36	IMG_0011.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210510	14/4/2021	11:08:26	14/4/2021 11:08	IMG_0142.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT05	20210510	9/4/2021	9:39:04	9/4/2021 9:39	IMG_0069.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	10:31:30	9/4/2021 10:31	IMG_0070.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	10:48:52	9/4/2021 10:48	IMG_0071.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	11:06:04	9/4/2021 11:06	IMG_0072.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	11:38:30	9/4/2021 11:38	IMG_0073.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	11:39:34	9/4/2021 11:39	IMG_0074.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	11:40:02	9/4/2021 11:40	IMG_0075.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	10:33:18	10/4/2021 10:33	IMG_0085.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	10:33:40	10/4/2021 10:33	IMG_0086.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	11:27:30	12/4/2021 11:27	IMG_0106.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	11:28:32	12/4/2021 11:28	IMG_0107.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	11:34:30	12/4/2021 11:34	IMG_0108.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	11:35:08	12/4/2021 11:35	IMG_0109.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	12:45:34	12/4/2021 12:45	IMG_0112.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	10:42:20	18/4/2021 10:42	IMG_0172.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	10:11:36	8/4/2021 10:11	IMG_0015.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:12:12	8/4/2021 10:12	IMG_0016.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:12:40	8/4/2021 10:12	IMG_0017.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	10:13:02	8/4/2021 10:13	IMG_0018.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	10:13:26	8/4/2021 10:13	IMG_0019.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:13:48	8/4/2021 10:13	IMG_0020.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:15:26	8/4/2021 10:15	IMG_0021.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:15:50	8/4/2021 10:15	IMG_0022.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:16:16	8/4/2021 10:16	IMG_0023.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:16:44	8/4/2021 10:16	IMG_0024.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:17:16	8/4/2021 10:17	IMG_0025.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:17:42	8/4/2021 10:17	IMG_0026.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:18:32	8/4/2021 10:18	IMG_0027.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:19:10	8/4/2021 10:19	IMG_0028.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	10:19:34	8/4/2021 10:19	IMG_0029.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:19:56	8/4/2021 10:19	IMG_0030.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	10:20:16	8/4/2021 10:20	IMG_0031.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	10:20:38	8/4/2021 10:20	IMG_0032.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	10:21:06	8/4/2021 10:21	IMG_0033.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:22:18	8/4/2021 10:22	IMG_0034.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:23:42	8/4/2021 10:23	IMG_0035.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:24:04	8/4/2021 10:24	IMG_0036.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:24:28	8/4/2021 10:24	IMG_0037.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	10:26:02	8/4/2021 10:26	IMG_0038.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:26:42	8/4/2021 11:26	IMG_0039.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:27:46	8/4/2021 11:27	IMG_0040.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:28:12	8/4/2021 11:28	IMG_0041.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:35:00	8/4/2021 11:35	IMG_0042.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:35:20	8/4/2021 11:35	IMG_0043.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:35:42	8/4/2021 11:35	IMG_0044.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:37:16	8/4/2021 11:37	IMG_0045.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:38:10	8/4/2021 11:38	IMG_0046.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:39:24	8/4/2021 11:39	IMG_0047.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:40:02	8/4/2021 11:40	IMG_0048.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:41:08	8/4/2021 11:41	IMG_0049.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:41:28	8/4/2021 11:41	IMG_0050.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	11:41:52	8/4/2021 11:41	IMG_0051.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	11:42:12	8/4/2021 11:42	IMG_0052.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	14:37:24	8/4/2021 14:37	IMG_0053.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	14:37:44	8/4/2021 14:37	IMG_0054.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	15:03:20	8/4/2021 15:03	IMG_0055.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	15:03:42	8/4/2021 15:03	IMG_0056.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	8/4/2021	15:04:40	8/4/2021 15:04	IMG_0057.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	8/4/2021	16:13:00	8/4/2021 16:13	IMG_0058.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	16:29:30	8/4/2021 16:29	IMG_0059.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	16:29:54	8/4/2021 16:29	IMG_0060.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT05	20210510	8/4/2021	18:24:50	8/4/2021 18:24	IMG_0061.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT05	20210510	14/4/2021	17:24:40	14/4/2021 17:24	IMG_0155.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT05	20210510	11/4/2021	9:22:22	11/4/2021 9:22	IMG_0093.AVI	Bird	Tailorbird sp.	*Orthotomus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	14:14:42	19/4/2021 14:14	IMG_0178.AVI	Bird	Tailorbird sp.	*Orthotomus sp.*	NA	NA	NA	1	NA
CT05	20210510	16/4/2021	15:40:28	16/4/2021 15:40	IMG_0167.AVI	Bird	Olive-winged bulbul	*Pycnonotus plumosus*	Least Concern	Not Assessed	No	1	NA
CT05	20210510	5/4/2021	21:17:02	5/4/2021 21:17	IMG_0004.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	6/4/2021	5:40:56	7/4/2021 5:40	IMG_0007.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	7/4/2021	3:27:48	8/4/2021 3:27	IMG_0012.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	7/4/2021	6:35:54	8/4/2021 6:35	IMG_0014.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	1:50:22	9/4/2021 1:50	IMG_0063.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	1:53:50	9/4/2021 1:53	IMG_0064.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	1:55:08	9/4/2021 1:55	IMG_0065.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	6:35:24	9/4/2021 6:35	IMG_0066.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	6:36:00	9/4/2021 6:36	IMG_0067.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	8/4/2021	6:50:00	9/4/2021 6:50	IMG_0068.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	23:35:30	9/4/2021 23:35	IMG_0079.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	2:52:20	10/4/2021 2:52	IMG_0080.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	6:06:26	10/4/2021 6:06	IMG_0081.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	6:07:18	10/4/2021 6:07	IMG_0083.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	9/4/2021	6:07:54	10/4/2021 6:07	IMG_0084.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	0:17:26	11/4/2021 0:17	IMG_0089.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	5:20:06	11/4/2021 5:20	IMG_0090.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	5:51:54	11/4/2021 5:51	IMG_0091.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	10/4/2021	6:48:02	11/4/2021 6:48	IMG_0092.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	11/4/2021	20:14:08	11/4/2021 20:14	IMG_0097.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	11/4/2021	5:34:08	12/4/2021 5:34	IMG_0103.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	11/4/2021	5:50:26	12/4/2021 5:50	IMG_0105.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	12/4/2021	5:35:16	13/4/2021 5:35	IMG_0119.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	14/4/2021	5:00:26	15/4/2021 5:00	IMG_0156.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	14/4/2021	5:08:36	15/4/2021 5:08	IMG_0158.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	14/4/2021	5:09:00	15/4/2021 5:09	IMG_0159.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	14/4/2021	5:10:02	15/4/2021 5:10	IMG_0161.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	15/4/2021	20:26:30	15/4/2021 20:26	IMG_0163.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	16/4/2021	5:36:24	17/4/2021 5:36	IMG_0168.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	17/4/2021	23:01:00	17/4/2021 23:01	IMG_0170.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	17/4/2021	5:41:26	18/4/2021 5:41	IMG_0171.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	22:01:20	18/4/2021 22:01	IMG_0173.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	0:08:00	19/4/2021 0:08	IMG_0174.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	0:08:34	19/4/2021 0:08	IMG_0175.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	0:08:58	19/4/2021 0:08	IMG_0176.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	18/4/2021	0:09:34	19/4/2021 0:09	IMG_0177.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	0:01:16	20/4/2021 0:01	IMG_0179.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	0:01:48	20/4/2021 0:01	IMG_0180.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	2:55:10	20/4/2021 2:55	IMG_0181.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	2:55:30	20/4/2021 2:55	IMG_0182.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	19/4/2021	6:44:54	20/4/2021 6:44	IMG_0183.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	21/4/2021	20:10:52	21/4/2021 20:10	IMG_0184.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	21/4/2021	6:41:10	22/4/2021 6:41	IMG_0186.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	23/4/2021	6:20:56	24/4/2021 6:20	IMG_0187.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	25/4/2021	22:51:46	25/4/2021 22:51	IMG_0190.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	25/4/2021	4:07:12	26/4/2021 4:07	IMG_0191.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	25/4/2021	6:32:56	26/4/2021 6:32	IMG_0192.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	25/4/2021	6:38:52	26/4/2021 6:38	IMG_0193.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	26/4/2021	20:25:54	26/4/2021 20:25	IMG_0194.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	26/4/2021	2:18:28	27/4/2021 2:18	IMG_0195.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	14:02:20	27/4/2021 14:02	IMG_0198.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	1:13:32	28/4/2021 1:13	IMG_0201.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:41:00	28/4/2021 3:41	IMG_0202.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:41:22	28/4/2021 3:41	IMG_0203.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:41:44	28/4/2021 3:41	IMG_0204.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:42:06	28/4/2021 3:42	IMG_0205.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:42:28	28/4/2021 3:42	IMG_0206.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:42:52	28/4/2021 3:42	IMG_0207.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	3:43:14	28/4/2021 3:43	IMG_0208.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	29/4/2021	18:49:48	29/4/2021 18:49	IMG_0219.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	29/4/2021	19:12:00	29/4/2021 19:12	IMG_0221.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	30/4/2021	3:12:54	1/5/2021 3:12	IMG_0223.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	30/4/2021	6:28:06	1/5/2021 6:28	IMG_0224.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	1/5/2021	5:39:58	2/5/2021 5:39	IMG_0225.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	4/5/2021	0:42:28	5/5/2021 0:42	IMG_0237.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT05	20210510	5/4/2021	21:16:10	5/4/2021 21:16	IMG_0003.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	139	NA
CT05	20210510	8/4/2021	1:50:00	9/4/2021 1:50	IMG_0062.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	140	NA
CT05	20210510	9/4/2021	6:06:48	10/4/2021 6:06	IMG_0082.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	141	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT05	20210510	11/4/2021	19:27:26	11/4/2021 19:27	IMG_0095.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	142	NA
CT05	20210510	11/4/2021	20:13:20	11/4/2021 20:13	IMG_0096.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	143	NA
CT05	20210510	11/4/2021	20:16:40	11/4/2021 20:16	IMG_0098.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	144	NA
CT05	20210510	11/4/2021	20:25:38	11/4/2021 20:25	IMG_0099.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	145	NA
CT05	20210510	11/4/2021	5:00:42	12/4/2021 5:00	IMG_0100.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	146	NA
CT05	20210510	11/4/2021	5:01:12	12/4/2021 5:01	IMG_0101.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	147	NA
CT05	20210510	11/4/2021	5:10:16	12/4/2021 5:10	IMG_0102.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	148	NA
CT05	20210510	11/4/2021	5:44:26	12/4/2021 5:44	IMG_0104.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	149	NA
CT05	20210510	12/4/2021	19:05:44	12/4/2021 19:05	IMG_0113.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	150	NA
CT05	20210510	12/4/2021	5:28:22	13/4/2021 5:28	IMG_0117.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	151	NA
CT05	20210510	12/4/2021	5:30:52	13/4/2021 5:30	IMG_0118.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	152	NA
CT05	20210510	14/4/2021	5:00:48	15/4/2021 5:00	IMG_0157.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	153	NA
CT05	20210510	14/4/2021	5:09:34	15/4/2021 5:09	IMG_0160.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	154	NA
CT05	20210510	14/4/2021	5:11:58	15/4/2021 5:11	IMG_0162.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	155	NA
CT05	20210510	17/4/2021	21:53:32	17/4/2021 21:53	IMG_0169.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	156	NA
CT05	20210510	25/4/2021	22:48:50	25/4/2021 22:48	IMG_0189.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	157	NA
CT05	20210510	27/4/2021	19:10:22	27/4/2021 19:10	IMG_0200.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	158	NA
CT05	20210510	27/4/2021	3:43:34	28/4/2021 3:43	IMG_0209.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	159	NA
CT05	20210510	27/4/2021	3:44:12	28/4/2021 3:44	IMG_0210.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	160	NA
CT05	20210510	3/5/2021	20:02:50	3/5/2021 20:02	IMG_0235.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	161	NA
CT05	20210510	9/5/2021	20:43:34	9/5/2021 20:43	IMG_0250.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	162	NA
CT05	20210510	12/4/2021	4:31:42	13/4/2021 4:31	IMG_0114.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	6	NA
CT05	20210510	12/4/2021	4:32:12	13/4/2021 4:32	IMG_0115.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	7	NA
CT05	20210510	15/4/2021	5:15:18	16/4/2021 5:15	IMG_0165.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	8	NA
CT05	20210510	21/4/2021	23:31:04	21/4/2021 23:31	IMG_0185.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	9	NA
CT05	20210510	2/5/2021	0:25:18	3/5/2021 0:25	IMG_0229.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	10	NA
CT05	20210510	8/5/2021	4:50:58	9/5/2021 4:50	IMG_0245.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	11	NA
CT05	20210510	9/5/2021	6:17:02	10/5/2021 6:17	IMG_0251.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	12	NA
CT05	20210510	9/5/2021	6:18:40	10/5/2021 6:18	IMG_0252.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	13	NA
CT05	20210510	28/4/2021	16:58:00	28/4/2021 16:58	IMG_0212.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT05	20210510	27/4/2021	15:53:46	27/4/2021 15:53	IMG_0199.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210308	5/3/2021	9:00:20	5/3/2021 9:00	IMG_0010.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210308	5/3/2021	9:43:52	5/3/2021 9:43	IMG_0011.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210308	2/3/2021	17:29:44	2/3/2021 17:29	IMG_0005.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210308	2/3/2021	17:30:12	2/3/2021 17:30	IMG_0006.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210308	2/3/2021	17:30:36	2/3/2021 17:30	IMG_0007.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210308	2/3/2021	17:41:08	2/3/2021 17:41	IMG_0008.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210308	7/3/2021	8:16:28	7/3/2021 8:16	IMG_0014.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT06	20210405	13/3/2021	11:23:56	13/3/2021 11:23	IMG_0007.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	13/3/2021	15:29:00	13/3/2021 15:29	IMG_0008.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	21/3/2021	10:13:50	21/3/2021 10:13	IMG_0043.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	21/3/2021	10:16:22	21/3/2021 10:16	IMG_0044.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	22/3/2021	10:34:02	22/3/2021 10:34	IMG_0045.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	22/3/2021	11:10:58	22/3/2021 11:10	IMG_0046.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	25/3/2021	16:50:02	25/3/2021 16:50	IMG_0047.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	28/3/2021	13:45:16	28/3/2021 13:45	IMG_0059.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	28/3/2021	7:51:46	29/3/2021 7:51	IMG_0069.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	29/3/2021	15:14:20	29/3/2021 15:14	IMG_0086.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	14/3/2021	10:05:52	14/3/2021 10:05	IMG_0010.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT06	20210405	9/3/2021	13:36:20	9/3/2021 13:36	IMG_0002.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT06	20210405	10/3/2021	10:09:06	10/3/2021 10:09	IMG_0004.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	2	fighting
CT06	20210405	9/3/2021	13:36:20	9/3/2021 13:36	IMG_0002.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210405	9/3/2021	13:53:52	9/3/2021 13:53	IMG_0003.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT06	20210405	15/3/2021	6:41:24	16/3/2021 6:41	IMG_0012.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT06	20210405	19/3/2021	6:44:52	20/3/2021 6:44	IMG_0017.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT06	20210405	25/3/2021	20:36:38	25/3/2021 20:36	IMG_0052.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT06	20210405	26/3/2021	20:32:46	26/3/2021 20:32	IMG_0055.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT06	20210405	27/3/2021	6:51:50	28/3/2021 6:51	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT06	20210405	20/3/2021	22:27:34	20/3/2021 22:27	IMG_0038.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	163	NA
CT06	20210405	20/3/2021	4:47:36	21/3/2021 4:47	IMG_0040.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	164	NA
CT06	20210405	27/3/2021	6:52:24	28/3/2021 6:52	IMG_0058.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	165	NA
CT06	20210405	20/3/2021	18:32:48	20/3/2021 18:32	IMG_0018.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	eating
CT06	20210405	20/3/2021	18:33:44	20/3/2021 18:33	IMG_0019.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	eating
CT06	20210405	20/3/2021	18:34:42	20/3/2021 18:34	IMG_0020.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	eating
CT06	20210405	20/3/2021	18:35:12	20/3/2021 18:35	IMG_0021.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:35:32	20/3/2021 18:35	IMG_0022.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:36:02	20/3/2021 18:36	IMG_0023.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:36:28	20/3/2021 18:36	IMG_0024.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:36:56	20/3/2021 18:36	IMG_0025.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:37:24	20/3/2021 18:37	IMG_0026.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	eating
CT06	20210405	20/3/2021	18:37:56	20/3/2021 18:37	IMG_0027.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	eating
CT06	20210405	20/3/2021	18:38:16	20/3/2021 18:38	IMG_0028.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:39:12	20/3/2021 18:39	IMG_0029.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:39:36	20/3/2021 18:39	IMG_0030.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:39:56	20/3/2021 18:39	IMG_0031.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:40:28	20/3/2021 18:40	IMG_0032.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:40:52	20/3/2021 18:40	IMG_0033.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:41:18	20/3/2021 18:41	IMG_0034.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:42:40	20/3/2021 18:42	IMG_0035.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	20/3/2021	18:47:32	20/3/2021 18:47	IMG_0036.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210405	21/3/2021	9:55:54	21/3/2021 9:55	IMG_0042.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT06	20210510	5/4/2021	13:52:16	5/4/2021 13:52	IMG_0006.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	3/3/2021	13:29:58	3/3/2021 13:29	IMG_0028.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210308	1/3/2021	20:10:14	1/3/2021 20:10	IMG_0008.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	1/3/2021	22:32:24	1/3/2021 22:32	IMG_0010.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	7:01:26	2/3/2021 7:01	IMG_0012.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	7:01:48	2/3/2021 7:01	IMG_0013.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	7:02:08	2/3/2021 7:02	IMG_0014.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	22:59:20	2/3/2021 22:59	IMG_0020.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	23:57:40	2/3/2021 23:57	IMG_0025.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	4/3/2021	5:09:48	4/3/2021 5:09	IMG_0029.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	4/3/2021	22:59:46	4/3/2021 22:59	IMG_0039.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	8/3/2021	0:03:20	8/3/2021 0:03	IMG_0045.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210308	1/3/2021	22:31:56	1/3/2021 22:31	IMG_0009.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	174	NA
CT07	20210308	2/3/2021	23:39:30	2/3/2021 23:39	IMG_0022.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	175	NA
CT07	20210308	2/3/2021	23:56:28	2/3/2021 23:56	IMG_0024.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	176	NA
CT07	20210308	7/3/2021	6:43:36	7/3/2021 6:43	IMG_0043.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	1	NA
CT07	20210308	7/3/2021	6:45:06	7/3/2021 6:45	IMG_0044.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	1	NA
CT07	20210308	5/3/2021	7:34:04	5/3/2021 7:34	IMG_0040.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least Concern	Not Assessed	No	1	NA
CT07	20210308	2/3/2021	4:19:18	2/3/2021 4:19	IMG_0011.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	20:49:28	2/3/2021 20:49	IMG_0018.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	2/3/2021	22:59:50	2/3/2021 22:59	IMG_0021.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	3/3/2021	5:59:52	3/3/2021 5:59	IMG_0026.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	4/3/2021	11:52:50	4/3/2021 11:52	IMG_0033.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	4/3/2021	11:53:26	4/3/2021 11:53	IMG_0034.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210308	8/3/2021	0:03:46	8/3/2021 0:03	IMG_0046.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210405	3/3/2021	18:42:24	3/3/2021 18:42	IMG_0011.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210405	6/3/2021	11:09:34	6/3/2021 11:09	IMG_0016.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210405	6/3/2021	11:10:12	6/3/2021 11:10	IMG_0017.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210405	11/3/2021	14:45:14	11/3/2021 14:45	IMG_0059.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210405	31/3/2021	11:58:44	31/3/2021 11:58	IMG_0205.AVI	Reptile	Many-lined sun skink	*Eutropis multifasciatus*	Least concern	Not assessed	No	1	NA
CT07	20210405	29/3/2021	7:59:02	30/3/2021 7:59	IMG_0197.AVI	Bird	Tiger shrike	*Lanius tigrinus*	Least Concern	Not Assessed	No	1	NA
CT07	20210405	9/3/2021	23:32:08	9/3/2021 23:32	IMG_0037.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	0:31:20	10/3/2021 0:31	IMG_0038.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	0:35:46	10/3/2021 0:35	IMG_0042.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	0:38:28	10/3/2021 0:38	IMG_0044.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	0:39:18	10/3/2021 0:39	IMG_0045.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	3:01:58	10/3/2021 3:01	IMG_0047.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	9/3/2021	3:46:50	10/3/2021 3:46	IMG_0048.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	10/3/2021	19:53:56	10/3/2021 19:53	IMG_0052.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	10/3/2021	2:10:10	11/3/2021 2:10	IMG_0053.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	10/3/2021	2:14:12	11/3/2021 2:14	IMG_0055.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	10/3/2021	2:14:38	11/3/2021 2:14	IMG_0056.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	13/3/2021	23:44:56	13/3/2021 23:44	IMG_0077.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	13/3/2021	3:22:48	14/3/2021 3:22	IMG_0079.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	13/3/2021	6:09:46	14/3/2021 6:09	IMG_0080.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	15/3/2021	19:46:46	15/3/2021 19:46	IMG_0087.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	15/3/2021	19:47:06	15/3/2021 19:47	IMG_0088.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	21/3/2021	21:53:08	21/3/2021 21:53	IMG_0107.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210405	7/3/2021	22:27:04	7/3/2021 22:27	IMG_0018.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	166	NA
CT07	20210405	9/3/2021	0:31:44	10/3/2021 0:31	IMG_0039.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	167	NA
CT07	20210405	9/3/2021	0:32:08	10/3/2021 0:32	IMG_0040.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	168	NA
CT07	20210405	9/3/2021	0:33:20	10/3/2021 0:33	IMG_0041.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	169	NA
CT07	20210405	9/3/2021	0:36:50	10/3/2021 0:36	IMG_0043.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	170	NA
CT07	20210405	9/3/2021	0:39:38	10/3/2021 0:39	IMG_0046.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	171	NA
CT07	20210405	10/3/2021	2:10:52	11/3/2021 2:10	IMG_0054.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	172	NA
CT07	20210405	13/3/2021	23:58:36	13/3/2021 23:58	IMG_0078.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	173	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT07	20210405	14/3/2021	20:00:54	14/3/2021 20:00	IMG_0085.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	177	NA
CT07	20210405	16/3/2021	23:57:00	16/3/2021 23:57	IMG_0089.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	178	NA
CT07	20210405	13/3/2021	17:19:38	13/3/2021 17:19	IMG_0075.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210405	14/3/2021	12:13:36	14/3/2021 12:13	IMG_0083.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210405	14/3/2021	12:43:18	14/3/2021 12:43	IMG_0084.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210405	17/3/2021	14:47:06	17/3/2021 14:47	IMG_0093.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210405	13/3/2021	13:34:02	13/3/2021 13:34	IMG_0074.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210405	17/3/2021	12:20:00	17/3/2021 12:20	IMG_0090.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210405	15/3/2021	19:19:28	15/3/2021 19:19	IMG_0086.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210405	12/3/2021	14:11:28	12/3/2021 14:11	IMG_0063.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:11:50	12/3/2021 14:11	IMG_0064.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:12:56	12/3/2021 14:12	IMG_0065.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:13:30	12/3/2021 14:13	IMG_0066.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:14:00	12/3/2021 14:14	IMG_0067.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:14:20	12/3/2021 14:14	IMG_0068.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:14:56	12/3/2021 14:14	IMG_0069.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:37:16	12/3/2021 14:37	IMG_0070.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:37:42	12/3/2021 14:37	IMG_0071.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	12/3/2021	14:38:04	12/3/2021 14:38	IMG_0072.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:39:02	19/3/2021 15:39	IMG_0095.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:39:24	19/3/2021 15:39	IMG_0096.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:40:12	19/3/2021 15:40	IMG_0097.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:40:50	19/3/2021 15:40	IMG_0098.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:43:20	19/3/2021 15:43	IMG_0099.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:44:18	19/3/2021 15:44	IMG_0100.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	19/3/2021	15:44:48	19/3/2021 15:44	IMG_0101.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	20/3/2021	16:18:42	20/3/2021 16:18	IMG_0104.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	1/4/2021	15:42:04	1/4/2021 15:42	IMG_0314.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210405	1/4/2021	15:42:26	1/4/2021 15:42	IMG_0315.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	8/4/2021	13:00:26	8/4/2021 13:00	IMG_0010.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210510	21/4/2021	15:51:26	21/4/2021 15:51	IMG_0032.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210510	1/5/2021	7:33:32	2/5/2021 7:33	IMG_0076.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210510	5/5/2021	11:13:54	5/5/2021 11:13	IMG_0086.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT07	20210510	8/4/2021	12:34:34	8/4/2021 12:34	IMG_0009.AVI	Reptile	Changeable lizard	*Calotes versicolor*	Not assessed	Not assessed	No	1	NA
CT07	20210510	26/4/2021	12:30:16	26/4/2021 12:30	IMG_0050.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	6	NA
CT07	20210510	26/4/2021	12:30:38	26/4/2021 12:30	IMG_0051.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT07	20210510	26/4/2021	12:31:00	26/4/2021 12:31	IMG_0052.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	6	NA
CT07	20210510	26/4/2021	12:31:20	26/4/2021 12:31	IMG_0053.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT07	20210510	8/4/2021	2:28:56	9/4/2021 2:28	IMG_0011.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT07	20210510	8/4/2021	2:29:18	9/4/2021 2:29	IMG_0012.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT07	20210510	9/4/2021	21:53:38	9/4/2021 21:53	IMG_0015.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT07	20210510	9/4/2021	21:54:00	9/4/2021 21:54	IMG_0016.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT07	20210510	26/4/2021	18:42:56	26/4/2021 18:42	IMG_0054.AVI	Bird	Red-legged crake	*Rallina fasciata*	Least Concern	Vulnerable	Yes	1	NA
CT07	20210510	12/4/2021	3:32:00	13/4/2021 3:32	IMG_0019.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	12/4/2021	3:38:44	13/4/2021 3:38	IMG_0021.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	21/4/2021	3:15:56	22/4/2021 3:15	IMG_0034.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	22/4/2021	21:47:52	22/4/2021 21:47	IMG_0035.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	22/4/2021	0:32:36	23/4/2021 0:32	IMG_0036.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	22/4/2021	1:25:22	23/4/2021 1:25	IMG_0038.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	23/4/2021	4:06:56	24/4/2021 4:06	IMG_0044.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	24/4/2021	4:48:50	25/4/2021 4:48	IMG_0045.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	25/4/2021	23:37:50	25/4/2021 23:37	IMG_0048.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	26/4/2021	3:27:34	27/4/2021 3:27	IMG_0055.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	27/4/2021	5:23:30	28/4/2021 5:23	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	28/4/2021	2:17:32	29/4/2021 2:17	IMG_0059.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	28/4/2021	6:29:24	29/4/2021 6:29	IMG_0060.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	29/4/2021	22:18:12	29/4/2021 22:18	IMG_0066.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	29/4/2021	2:23:46	30/4/2021 2:23	IMG_0067.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	29/4/2021	2:25:04	30/4/2021 2:25	IMG_0069.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	5/5/2021	5:02:10	6/5/2021 5:02	IMG_0087.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	7/5/2021	6:17:20	8/5/2021 6:17	IMG_0098.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT07	20210510	17/4/2021	22:26:12	17/4/2021 22:26	IMG_0024.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	179	NA
CT07	20210510	21/4/2021	22:54:40	21/4/2021 22:54	IMG_0033.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	180	NA
CT07	20210510	23/4/2021	4:02:40	24/4/2021 4:02	IMG_0042.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	181	NA
CT07	20210510	23/4/2021	4:05:54	24/4/2021 4:05	IMG_0043.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	182	NA
CT07	20210510	25/4/2021	23:38:12	25/4/2021 23:38	IMG_0049.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	183	NA
CT07	20210510	29/4/2021	19:27:44	29/4/2021 19:27	IMG_0063.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	184	NA
CT07	20210510	29/4/2021	22:17:32	29/4/2021 22:17	IMG_0065.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	185	NA
CT07	20210510	1/5/2021	21:00:32	1/5/2021 21:00	IMG_0075.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	186	NA
CT07	20210510	7/5/2021	6:16:44	8/5/2021 6:16	IMG_0097.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	187	NA
CT07	20210510	9/5/2021	2:39:58	10/5/2021 2:39	IMG_0104.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	188	NA
CT07	20210510	28/4/2021	6:29:48	29/4/2021 6:29	IMG_0061.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	14	NA
CT07	20210510	3/5/2021	2:38:46	4/5/2021 2:38	IMG_0083.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	15	NA
CT07	20210510	3/5/2021	6:02:30	4/5/2021 6:02	IMG_0084.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	16	NA
CT07	20210510	6/5/2021	20:14:14	6/5/2021 20:14	IMG_0090.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	17	NA
CT07	20210510	6/5/2021	1:16:24	7/5/2021 1:16	IMG_0093.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	18	NA
CT07	20210510	8/5/2021	3:52:02	9/5/2021 3:52	IMG_0100.AVI	Mammal	House shrew	*Suncus murinus*	Least Concern	Not Assessed	No	19	NA
CT07	20210510	9/4/2021	8:42:26	9/4/2021 8:42	IMG_0014.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	14/4/2021	9:24:00	14/4/2021 9:24	IMG_0022.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	20/4/2021	11:40:10	20/4/2021 11:40	IMG_0025.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	20/4/2021	17:11:26	20/4/2021 17:11	IMG_0026.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	20/4/2021	7:01:10	21/4/2021 7:01	IMG_0028.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	29/4/2021	13:24:40	29/4/2021 13:24	IMG_0062.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	30/4/2021	17:51:00	30/4/2021 17:51	IMG_0071.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	3/5/2021	10:54:56	3/5/2021 10:54	IMG_0078.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	3/5/2021	13:02:00	3/5/2021 13:02	IMG_0080.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	4/5/2021	11:37:54	4/5/2021 11:37	IMG_0085.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	7/5/2021	17:44:30	7/5/2021 17:44	IMG_0096.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	7/5/2021	6:54:26	8/5/2021 6:54	IMG_0099.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT07	20210510	24/4/2021	6:58:12	25/4/2021 6:58	IMG_0046.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT07	20210510	3/5/2021	10:57:40	3/5/2021 10:57	IMG_0079.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT07	20210510	14/4/2021	14:13:18	14/4/2021 14:13	IMG_0023.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210510	22/4/2021	7:17:36	23/4/2021 7:17	IMG_0040.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210510	6/5/2021	21:33:28	6/5/2021 21:33	IMG_0092.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT07	20210510	12/4/2021	14:58:04	12/4/2021 14:58	IMG_0018.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	20/4/2021	18:42:52	20/4/2021 18:42	IMG_0027.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	21/4/2021	8:47:24	21/4/2021 8:47	IMG_0029.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	21/4/2021	15:28:32	21/4/2021 15:28	IMG_0031.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	23/4/2021	15:20:40	23/4/2021 15:20	IMG_0041.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	25/4/2021	17:06:08	25/4/2021 17:06	IMG_0047.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	28/4/2021	8:59:36	28/4/2021 8:59	IMG_0058.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	30/4/2021	13:59:08	30/4/2021 13:59	IMG_0070.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	1/5/2021	8:57:52	1/5/2021 8:57	IMG_0072.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	1/5/2021	14:57:30	1/5/2021 14:57	IMG_0073.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	1/5/2021	14:58:00	1/5/2021 14:58	IMG_0074.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	1/5/2021	7:46:22	2/5/2021 7:46	IMG_0077.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	3/5/2021	14:33:48	3/5/2021 14:33	IMG_0081.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	3/5/2021	15:29:06	3/5/2021 15:29	IMG_0082.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	7/5/2021	10:41:04	7/5/2021 10:41	IMG_0094.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	7/5/2021	10:42:36	7/5/2021 10:42	IMG_0095.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT07	20210510	9/5/2021	9:00:12	9/5/2021 9:00	IMG_0101.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT07	20210510	9/5/2021	15:25:26	9/5/2021 15:25	IMG_0102.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	Climbing tree
CT08	20210308	5/3/2021	3:32:24	5/3/2021 3:32	IMG_0015.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT08	20210308	3/3/2021	2:37:50	3/3/2021 2:37	IMG_0010.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	3/3/2021	2:38:12	3/3/2021 2:38	IMG_0011.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	5/3/2021	2:17:58	5/3/2021 2:17	IMG_0014.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	5/3/2021	20:21:24	5/3/2021 20:21	IMG_0020.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	6/3/2021	4:24:34	6/3/2021 4:24	IMG_0021.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	6/3/2021	19:49:22	6/3/2021 19:49	IMG_0022.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210308	2/3/2021	22:49:22	2/3/2021 22:49	IMG_0008.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	189	NA
CT08	20210308	3/3/2021	2:36:00	3/3/2021 2:36	IMG_0009.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	190	NA
CT08	20210308	3/3/2021	19:58:10	3/3/2021 19:58	IMG_0012.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	191	NA
CT08	20210308	5/3/2021	19:27:22	5/3/2021 19:27	IMG_0019.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT08	20210308	5/3/2021	19:19:08	5/3/2021 19:19	IMG_0017.AVI		Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT08	20210308	5/3/2021	19:19:34	5/3/2021 19:19	IMG_0018.AVI		Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT08	20210308	5/3/2021	5:57:12	5/3/2021 5:57	IMG_0016.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT08	20210308	4/3/2021	10:44:00	4/3/2021 10:44	IMG_0013.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT08	20210308	7/3/2021	11:39:52	7/3/2021 11:39	IMG_0023.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT08	20210405	28/3/2021	14:12:16	28/3/2021 14:12	IMG_0038.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	16/3/2021	14:22:42	16/3/2021 14:22	IMG_0011.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	16/3/2021	7:58:20	17/3/2021 7:58	IMG_0012.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	21/3/2021	11:04:10	21/3/2021 11:04	IMG_0029.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	27/3/2021	17:56:48	27/3/2021 17:56	IMG_0036.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	2/4/2021	14:54:34	2/4/2021 14:54	IMG_0043.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	2/4/2021	17:35:12	2/4/2021 17:35	IMG_0044.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	2/4/2021	17:35:38	2/4/2021 17:35	IMG_0045.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210405	14/3/2021	12:26:34	14/3/2021 12:26	IMG_0004.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT08	20210405	14/3/2021	12:27:20	14/3/2021 12:27	IMG_0005.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	14/3/2021	12:28:24	14/3/2021 12:28	IMG_0006.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT08	20210405	14/3/2021	13:51:12	14/3/2021 13:51	IMG_0007.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	16/3/2021	11:18:04	16/3/2021 11:18	IMG_0008.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	16/3/2021	11:19:54	16/3/2021 11:19	IMG_0009.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	18/3/2021	10:35:38	18/3/2021 10:35	IMG_0022.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	18/3/2021	10:36:46	18/3/2021 10:36	IMG_0023.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	18/3/2021	14:17:44	18/3/2021 14:17	IMG_0024.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	18/3/2021	14:18:16	18/3/2021 14:18	IMG_0025.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT08	20210405	18/3/2021	14:18:52	18/3/2021 14:18	IMG_0026.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT08	20210405	22/3/2021	15:08:36	22/3/2021 15:08	IMG_0030.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	26/3/2021	11:29:00	26/3/2021 11:29	IMG_0032.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	31/3/2021	15:56:36	31/3/2021 15:56	IMG_0041.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210405	17/3/2021	13:03:54	17/3/2021 13:03	IMG_0013.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	17/3/2021	13:04:14	17/3/2021 13:04	IMG_0014.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	2	NA
CT08	20210405	17/3/2021	13:04:36	17/3/2021 13:04	IMG_0015.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	17/3/2021	13:05:06	17/3/2021 13:05	IMG_0016.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	17/3/2021	13:05:44	17/3/2021 13:05	IMG_0017.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	2	NA
CT08	20210405	17/3/2021	13:06:18	17/3/2021 13:06	IMG_0018.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	17/3/2021	13:06:38	17/3/2021 13:06	IMG_0019.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	17/3/2021	13:07:00	17/3/2021 13:07	IMG_0020.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	18/3/2021	8:16:22	18/3/2021 8:16	IMG_0021.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT08	20210405	30/3/2021	5:06:00	31/3/2021 5:06	IMG_0040.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT08	20210405	1/4/2021	19:52:38	1/4/2021 19:52	IMG_0042.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT08	20210405	19/3/2021	6:09:44	20/3/2021 6:09	IMG_0028.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210405	29/3/2021	21:45:12	29/3/2021 21:45	IMG_0039.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210405	27/3/2021	14:11:26	27/3/2021 14:11	IMG_0035.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT08	20210405	3/4/2021	11:19:48	3/4/2021 11:19	IMG_0046.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT08	20210510	8/4/2021	9:25:38	8/4/2021 9:25	IMG_0002.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210510	30/4/2021	9:09:20	30/4/2021 9:09	IMG_0012.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210510	1/5/2021	8:22:36	1/5/2021 8:22	IMG_0013.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210510	1/5/2021	9:22:38	1/5/2021 9:22	IMG_0014.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210510	2/5/2021	17:08:52	2/5/2021 17:08	IMG_0017.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT08	20210510	11/4/2021	14:10:48	11/4/2021 14:10	IMG_0003.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210510	19/4/2021	15:24:22	19/4/2021 15:24	IMG_0007.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210510	1/5/2021	11:08:38	1/5/2021 11:08	IMG_0015.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT08	20210510	24/4/2021	20:51:50	24/4/2021 20:51	IMG_0009.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210510	27/4/2021	6:36:20	28/4/2021 6:36	IMG_0011.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT08	20210510	5/4/2021	6:53:34	6/4/2021 6:53	IMG_0001.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT08	20210510	23/4/2021	18:52:34	23/4/2021 18:52	IMG_0008.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT08	20210510	1/5/2021	19:37:22	1/5/2021 19:37	IMG_0016.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210308	16/2/2021	13:31:30	16/2/2021 13:31	IMG_0027.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	16/2/2021	13:32:00	16/2/2021 13:32	IMG_0028.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	16/2/2021	18:00:10	16/2/2021 18:00	IMG_0029.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	17/2/2021	17:07:52	17/2/2021 17:07	IMG_0030.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	17/2/2021	17:22:22	17/2/2021 17:22	IMG_0031.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	23/2/2021	11:21:42	23/2/2021 11:21	IMG_0039.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	23/2/2021	11:22:44	23/2/2021 11:22	IMG_0040.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	25/2/2021	13:40:44	25/2/2021 13:40	IMG_0045.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	25/2/2021	13:41:14	25/2/2021 13:41	IMG_0046.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	1/3/2021	10:22:26	1/3/2021 10:22	IMG_0049.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	5/3/2021	9:54:22	5/3/2021 9:54	IMG_0067.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210308	12/2/2021	13:16:32	12/2/2021 13:16	IMG_0019.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT09	20210308	16/2/2021	6:36:58	16/2/2021 6:36	IMG_0024.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	16/2/2021	6:38:02	16/2/2021 6:38	IMG_0025.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	16/2/2021	6:39:34	16/2/2021 6:39	IMG_0026.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	3/3/2021	1:59:54	3/3/2021 1:59	IMG_0058.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	3/3/2021	4:44:38	3/3/2021 4:44	IMG_0059.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	4/3/2021	3:29:14	4/3/2021 3:29	IMG_0061.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210308	1/3/2021	18:01:58	1/3/2021 18:01	IMG_0051.AVI	Bird	Collared kingfisher	*Todiramphus chloris*	Least concern	Not assessed	No	1	NA
CT09	20210308	10/2/2021	7:33:06	10/2/2021 7:33	IMG_0017.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210308	10/2/2021	17:55:28	10/2/2021 17:55	IMG_0018.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT09	20210308	1/3/2021	10:27:10	1/3/2021 10:27	IMG_0050.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT09	20210308	3/3/2021	16:03:28	3/3/2021 16:03	IMG_0060.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210308	13/2/2021	11:14:14	13/2/2021 11:14	IMG_0021.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	13/2/2021	11:14:42	13/2/2021 11:14	IMG_0022.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	13/2/2021	11:15:14	13/2/2021 11:15	IMG_0023.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	21/2/2021	13:58:16	21/2/2021 13:58	IMG_0037.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	25/2/2021	10:57:46	25/2/2021 10:57	IMG_0043.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	28/2/2021	12:56:18	28/2/2021 12:56	IMG_0048.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210308	4/3/2021	11:20:00	4/3/2021 11:20	IMG_0062.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT09	20210408	6/3/2021	13:09:02	6/3/2021 13:09	IMG_0007.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	9/3/2021	8:02:20	9/3/2021 8:02	IMG_0009.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	11/3/2021	11:32:34	11/3/2021 11:32	IMG_0021.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	13/3/2021	10:46:38	13/3/2021 10:46	IMG_0030.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	17/3/2021	15:58:24	17/3/2021 15:58	IMG_0051.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	18/3/2021	14:42:08	18/3/2021 14:42	IMG_0053.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	18/3/2021	15:12:00	18/3/2021 15:12	IMG_0054.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	18/3/2021	15:12:22	18/3/2021 15:12	IMG_0055.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	23/3/2021	8:32:16	23/3/2021 8:32	IMG_0077.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	24/3/2021	12:44:58	24/3/2021 12:44	IMG_0080.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	24/3/2021	12:45:20	24/3/2021 12:45	IMG_0081.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	24/3/2021	12:45:42	24/3/2021 12:45	IMG_0082.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	24/3/2021	13:46:42	24/3/2021 13:46	IMG_0083.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	24/3/2021	13:49:08	24/3/2021 13:49	IMG_0084.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	2/4/2021	18:47:22	2/4/2021 18:47	IMG_0093.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	3/4/2021	14:09:12	3/4/2021 14:09	IMG_0095.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	3/4/2021	14:36:10	3/4/2021 14:36	IMG_0097.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT09	20210408	9/3/2021	14:26:54	9/3/2021 14:26	IMG_0010.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT09	20210408	21/3/2021	13:30:38	21/3/2021 13:30	IMG_0073.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT09	20210408	21/3/2021	16:03:28	21/3/2021 16:03	IMG_0074.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT09	20210408	22/3/2021	13:17:58	22/3/2021 13:17	IMG_0075.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT09	20210408	23/3/2021	10:03:08	23/3/2021 10:03	IMG_0078.AVI	Reptile	Unidentified skink	*Eutropis sp.*	NA	NA	NA	1	NA
CT09	20210408	11/3/2021	13:44:46	11/3/2021 13:44	IMG_0023.AVI	Bird	Black-naped oriole	*Oriolus chinensis*	Least concern	Not assessed	No	1	NA
CT09	20210408	20/3/2021	14:59:04	20/3/2021 14:59	IMG_0093.AVI	Bird	Tailorbird sp.	*Orthotomus sp.*	NA	NA	NA	1	NA
CT09	20210408	24/3/2021	9:36:28	24/3/2021 9:36	IMG_0079.AVI	Bird	Common tailorbird	*Orthotomus sutorius*	Least concern	Not assessed	No	1	NA
CT09	20210408	19/3/2021	21:13:34	19/3/2021 21:13	IMG_0058.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT09	20210408	19/3/2021	21:30:48	19/3/2021 21:30	IMG_0059.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT09	20210408	19/3/2021	22:38:18	19/3/2021 22:38	IMG_0061.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT09	20210408	19/3/2021	22:38:58	19/3/2021 22:38	IMG_0062.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT09	20210408	25/3/2021	10:44:58	25/3/2021 10:44	IMG_0085.AVI	Bird	Yellow-vented bulbul	*Pycnonotus goiavier*	Least concern	Not assessed	No	1	NA
CT09	20210408	7/3/2021	21:43:50	7/3/2021 21:43	IMG_0008.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	12/3/2021	20:09:08	12/3/2021 20:09	IMG_0028.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	12/3/2021	20:42:42	12/3/2021 20:42	IMG_0029.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	2:35:58	17/3/2021 2:35	IMG_0039.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	2:36:42	17/3/2021 2:36	IMG_0040.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	2:37:40	17/3/2021 2:37	IMG_0041.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	3:34:14	17/3/2021 3:34	IMG_0042.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	3:34:54	17/3/2021 3:34	IMG_0043.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	3:35:24	17/3/2021 3:35	IMG_0044.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	3:35:48	17/3/2021 3:35	IMG_0045.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	16/3/2021	3:36:12	17/3/2021 3:36	IMG_0046.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	18/3/2021	3:12:28	19/3/2021 3:12	IMG_0056.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	18/3/2021	3:12:52	19/3/2021 3:12	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	19/3/2021	6:07:00	20/3/2021 6:07	IMG_0064.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	19/3/2021	6:07:20	20/3/2021 6:07	IMG_0065.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	20/3/2021	6:05:48	21/3/2021 6:05	IMG_0069.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	29/3/2021	14:16:16	29/3/2021 14:16	IMG_0090.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	1/4/2021	4:00:06	2/4/2021 4:00	IMG_0091.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	1/4/2021	4:00:28	2/4/2021 4:00	IMG_0092.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	2/4/2021	21:26:12	2/4/2021 21:26	IMG_0094.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	5/4/2021	3:50:46	6/4/2021 3:50	IMG_0098.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT09	20210408	11/3/2021	19:13:40	11/3/2021 19:13	IMG_0024.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	11/3/2021	19:14:36	11/3/2021 19:14	IMG_0025.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	12/3/2021	17:11:14	12/3/2021 17:11	IMG_0027.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	16/3/2021	7:09:54	17/3/2021 7:09	IMG_0047.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	17/3/2021	13:12:18	17/3/2021 13:12	IMG_0048.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	6/4/2021	8:46:04	6/4/2021 8:46	IMG_0099.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT09	20210408	20/3/2021	7:01:30	21/3/2021 7:01	IMG_0072.AVI	Bird	NA	*Unidentified bird*	NA	NA	NA	1	NA
CT09	20210408	12/3/2021	16:27:24	12/3/2021 16:27	IMG_0026.AVI	Mammal	Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT09	20210408	15/3/2021	6:35:04	16/3/2021 6:35	IMG_0035.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210408	17/3/2021	13:12:44	17/3/2021 13:12	IMG_0049.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210408	17/3/2021	14:22:24	17/3/2021 14:22	IMG_0050.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210408	20/3/2021	7:00:56	21/3/2021 7:00	IMG_0071.AVI	NA	NA	*Unidentified sp.*	NA	NA	NA	1	NA
CT09	20210408	20/3/2021	10:13:28	20/3/2021 10:13	IMG_0066.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT10	20210305	4/3/2021	15:27:58	4/3/2021 15:27	IMG_0250.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT10	20210305	6/2/2021	12:13:14	6/2/2021 12:13	IMG_0096.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	3	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT10	20210305	3/3/2021	17:22:08	3/3/2021 17:22	IMG_0207.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210305	5/2/2021	13:40:44	5/2/2021 13:40	IMG_0062.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	6/2/2021	11:57:06	6/2/2021 11:57	IMG_0093.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	6/2/2021	12:00:16	6/2/2021 12:00	IMG_0094.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	9/2/2021	11:33:56	9/2/2021 11:33	IMG_0210.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	10/2/2021	12:50:46	10/2/2021 12:50	IMG_0211.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	12:42:14	16/2/2021 12:42	IMG_0214.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	12:42:34	16/2/2021 12:42	IMG_0215.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	13:23:28	16/2/2021 13:23	IMG_0216.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	13:28:46	16/2/2021 13:28	IMG_0217.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	14:39:00	16/2/2021 14:39	IMG_0221.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	15:48:42	16/2/2021 15:48	IMG_0222.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	16:58:10	16/2/2021 16:58	IMG_0223.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	17:09:10	16/2/2021 17:09	IMG_0225.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	17:10:38	16/2/2021 17:10	IMG_0226.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	18/2/2021	11:56:10	18/2/2021 11:56	IMG_0232.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	26/2/2021	11:36:58	26/2/2021 11:36	IMG_0240.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	26/2/2021	11:53:44	26/2/2021 11:53	IMG_0241.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	28/2/2021	11:27:16	28/2/2021 11:27	IMG_0243.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	28/2/2021	11:28:08	28/2/2021 11:28	IMG_0244.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210305	16/2/2021	13:51:54	16/2/2021 13:51	IMG_0220.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	2	NA
CT10	20210305	5/2/2021	14:10:38	5/2/2021 14:10	IMG_0067.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	16/2/2021	13:51:54	16/2/2021 13:51	IMG_0220.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	17/2/2021	7:24:50	17/2/2021 7:24	IMG_0227.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	17/2/2021	7:27:50	17/2/2021 7:27	IMG_0229.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	17/2/2021	7:28:10	17/2/2021 7:28	IMG_0230.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	19/2/2021	8:16:24	19/2/2021 8:16	IMG_0234.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	23/2/2021	13:16:14	23/2/2021 13:16	IMG_0238.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	1/3/2021	10:16:28	1/3/2021 10:16	IMG_0245.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	1/3/2021	12:30:04	1/3/2021 12:30	IMG_0248.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	1/3/2021	12:31:10	1/3/2021 12:31	IMG_0249.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210305	16/2/2021	13:49:46	16/2/2021 13:49	IMG_0219.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT10	20210305	19/2/2021	8:13:44	19/2/2021 8:13	IMG_0233.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT10	20210305	1/3/2021	12:29:14	1/3/2021 12:29	IMG_0246.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT10	20210305	1/3/2021	12:29:36	1/3/2021 12:29	IMG_0247.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT10	20210305	17/2/2021	7:27:24	17/2/2021 7:27	IMG_0228.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT10	20210305	15/2/2021	19:19:42	15/2/2021 19:19	IMG_0212.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT10	20210305	16/2/2021	13:23:28	16/2/2021 13:23	IMG_0216.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT10	20210305	26/2/2021	11:22:26	26/2/2021 11:22	IMG_0239.AVI		Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT10	20210305	28/2/2021	10:47:44	28/2/2021 10:47	IMG_0242.AVI		Unidentified shrew or squirrel	*Unidentified shrew or squirrel*	NA	NA	NA	1	NA
CT10	20210408	6/3/2021	11:16:56	6/3/2021 11:16	IMG_0002.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT10	20210408	15/3/2021	15:32:08	15/3/2021 15:32	IMG_0022.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	16/3/2021	12:21:20	16/3/2021 12:21	IMG_0024.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	18/3/2021	10:47:46	18/3/2021 10:47	IMG_0035.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	19/3/2021	18:25:12	19/3/2021 18:25	IMG_0039.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	23/3/2021	9:35:12	23/3/2021 9:35	IMG_0042.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	24/3/2021	12:07:58	24/3/2021 12:07	IMG_0044.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	24/3/2021	12:10:40	24/3/2021 12:10	IMG_0045.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	26/3/2021	12:42:42	26/3/2021 12:42	IMG_0046.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	26/3/2021	12:49:36	26/3/2021 12:49	IMG_0047.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	31/3/2021	8:19:08	31/3/2021 8:19	IMG_0049.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	7/4/2021	11:38:36	7/4/2021 11:38	IMG_0058.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT10	20210408	12/3/2021	12:15:40	12/3/2021 12:15	IMG_0012.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	12:33:42	17/3/2021 12:33	IMG_0028.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	12:34:44	17/3/2021 12:34	IMG_0029.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	14:59:06	17/3/2021 14:59	IMG_0030.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	15:09:28	17/3/2021 15:09	IMG_0031.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	15:10:16	17/3/2021 15:10	IMG_0032.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	15:10:36	17/3/2021 15:10	IMG_0033.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	17/3/2021	15:42:28	17/3/2021 15:42	IMG_0034.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	18/3/2021	10:58:36	18/3/2021 10:58	IMG_0036.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	18/3/2021	10:59:54	18/3/2021 10:59	IMG_0038.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	20/3/2021	16:45:52	20/3/2021 16:45	IMG_0040.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	3/4/2021	13:39:50	3/4/2021 13:39	IMG_0054.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	6/4/2021	11:09:22	6/4/2021 11:09	IMG_0055.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	7/4/2021	11:34:26	7/4/2021 11:34	IMG_0056.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	7/4/2021	11:35:26	7/4/2021 11:35	IMG_0057.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	7/4/2021	11:38:36	7/4/2021 11:38	IMG_0058.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT10	20210408	10/3/2021	17:44:14	10/3/2021 17:44	IMG_0005.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	10/3/2021	17:44:36	10/3/2021 17:44	IMG_0006.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	10/3/2021	19:25:54	10/3/2021 19:25	IMG_0007.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	10/3/2021	19:26:28	10/3/2021 19:26	IMG_0008.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	10/3/2021	19:26:50	10/3/2021 19:26	IMG_0009.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	12/3/2021	23:21:28	12/3/2021 23:21	IMG_0014.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	15/3/2021	1:35:20	16/3/2021 1:35	IMG_0023.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	16/3/2021	13:16:50	16/3/2021 13:16	IMG_0025.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	16/3/2021	14:34:56	16/3/2021 14:34	IMG_0026.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	28/3/2021	15:40:22	28/3/2021 15:40	IMG_0048.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	31/3/2021	9:49:46	31/3/2021 9:49	IMG_0050.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	31/3/2021	10:22:56	31/3/2021 10:22	IMG_0051.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	12/3/2021	23:16:46	12/3/2021 23:16	IMG_0013.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	16/3/2021	14:35:20	16/3/2021 14:35	IMG_0027.AVI	Mammal	Domesticated cat	*Felis silvestris*	Not assessed	Not assessed	No	1	NA
CT10	20210408	6/3/2021	11:28:46	6/3/2021 11:28	IMG_0003.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210408	11/3/2021	14:52:16	11/3/2021 14:52	IMG_0010.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210408	15/3/2021	12:45:46	15/3/2021 12:45	IMG_0021.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT10	20210408	15/3/2021	12:45:24	15/3/2021 12:45	IMG_0020.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT10	20210408	15/3/2021	12:45:46	15/3/2021 12:45	IMG_0021.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT10	20210408	11/3/2021	7:37:08	12/3/2021 7:37	IMG_0011.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT11	20210305	1/1/2019	17:41:52	1/1/2019 17:41	IMG_0017.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210305	4/1/2019	17:28:28	4/1/2019 17:28	IMG_0111.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	15/3/2021	17:19:44	15/3/2021 17:19	IMG_0030.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	16/3/2021	15:21:52	16/3/2021 15:21	IMG_0035.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	16/3/2021	15:22:48	16/3/2021 15:22	IMG_0036.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	17/3/2021	9:26:58	17/3/2021 9:26	IMG_0043.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	17/3/2021	11:39:30	17/3/2021 11:39	IMG_0044.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	18/3/2021	17:13:06	18/3/2021 17:13	IMG_0047.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	19/3/2021	11:47:42	19/3/2021 11:47	IMG_0050.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	19/3/2021	11:48:02	19/3/2021 11:48	IMG_0051.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	20/3/2021	12:48:08	20/3/2021 12:48	IMG_0054.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	21/3/2021	11:56:36	21/3/2021 11:56	IMG_0055.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	23/3/2021	8:27:38	23/3/2021 8:27	IMG_0060.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	26/3/2021	10:40:36	26/3/2021 10:40	IMG_0066.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	26/3/2021	10:49:48	26/3/2021 10:49	IMG_0067.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	28/3/2021	9:33:32	28/3/2021 9:33	IMG_0069.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	28/3/2021	11:45:28	28/3/2021 11:45	IMG_0070.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	4/4/2021	11:39:14	4/4/2021 11:39	IMG_0080.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	4/4/2021	12:01:30	4/4/2021 12:01	IMG_0081.AVI	Bird	White-breasted waterhen	*Amaurornis phoenicurus*	Least Concern	Not Assessed	No	1	NA
CT11	20210408	15/3/2021	12:41:36	15/3/2021 12:41	IMG_0029.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT11	20210408	4/4/2021	13:39:22	4/4/2021 13:39	IMG_0082.AVI	Bird	Greater coucal	*Centropus sinensis*	Least concern	Not assessed	No	1	NA
CT11	20210408	15/3/2021	11:31:56	15/3/2021 11:31	IMG_0028.AVI	Bird	Greater coucal	*Centropus sinensis*	Least concern	Not assessed	No	1	NA
CT11	20210408	16/3/2021	7:42:08	17/3/2021 7:42	IMG_0040.AVI	Bird	Common emerald dove	*Chalcophaps indica*	Least concern	Not Assessed	No	1	NA
CT11	20210408	16/3/2021	7:42:30	17/3/2021 7:42	IMG_0041.AVI	Bird	Common emerald dove	*Chalcophaps indica*	Least concern	Not Assessed	No	1	NA
CT11	20210408	16/3/2021	7:42:58	17/3/2021 7:42	IMG_0042.AVI	Bird	Common emerald dove	*Chalcophaps indica*	Least concern	Not Assessed	No	1	NA
CT11	20210408	4/4/2021	18:47:28	4/4/2021 18:47	IMG_0083.AVI	Bird	Oriental magpie-robin	*Copsychus saularis*	Least concern	Endangered	Yes	1	NA
CT11	20210408	6/3/2021	11:55:56	6/3/2021 11:55	IMG_0008.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	6/3/2021	12:09:18	6/3/2021 12:09	IMG_0009.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	6/3/2021	13:12:32	6/3/2021 13:12	IMG_0010.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	10/3/2021	14:15:54	10/3/2021 14:15	IMG_0021.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	10/3/2021	14:16:16	10/3/2021 14:16	IMG_0022.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	12/3/2021	11:59:40	12/3/2021 11:59	IMG_0024.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	23/3/2021	8:28:20	23/3/2021 8:28	IMG_0061.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	23/3/2021	8:28:42	23/3/2021 8:28	IMG_0062.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	23/3/2021	8:29:08	23/3/2021 8:29	IMG_0063.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	23/3/2021	8:29:34	23/3/2021 8:29	IMG_0064.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT11	20210408	8/3/2021	18:21:34	8/3/2021 18:21	IMG_0015.AVI	Bird	Siberian blue robin	*Larvivora cyane*	Least concern	Not assessed	No	1	NA
CT11	20210408	8/3/2021	18:21:56	8/3/2021 18:21	IMG_0016.AVI	Bird	Siberian blue robin	*Larvivora cyane*	Least concern	Not assessed	No	1	NA
CT11	20210408	17/3/2021	6:53:44	18/3/2021 6:53	IMG_0045.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT11	20210408	17/3/2021	6:54:52	18/3/2021 6:54	IMG_0046.AVI	Bird	Sunda scops owl	*Otus lempiji*	Least concern	Not assessed	No	1	NA
CT11	20210408	28/3/2021	19:20:50	28/3/2021 19:20	IMG_0071.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT11	20210408	28/3/2021	19:21:18	28/3/2021 19:21	IMG_0072.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT11	20210408	9/3/2021	20:22:14	9/3/2021 20:22	IMG_0017.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	6/3/2021	20:30:10	6/3/2021 20:30	IMG_0012.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	6/3/2021	0:30:58	7/3/2021 0:30	IMG_0013.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	6/3/2021	0:31:28	7/3/2021 0:31	IMG_0014.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	14/3/2021	21:24:10	14/3/2021 21:24	IMG_0027.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	15/3/2021	0:15:26	16/3/2021 0:15	IMG_0033.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	16/3/2021	22:03:20	16/3/2021 22:03	IMG_0037.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT11	20210408	16/3/2021	22:05:50	16/3/2021 22:05	IMG_0038.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	16/3/2021	22:06:36	16/3/2021 22:06	IMG_0039.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	22/3/2021	21:01:52	22/3/2021 21:01	IMG_0057.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	22/3/2021	21:02:18	22/3/2021 21:02	IMG_0058.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	29/3/2021	20:46:40	29/3/2021 20:46	IMG_0073.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	31/3/2021	21:18:54	31/3/2021 21:18	IMG_0076.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	31/3/2021	21:27:54	31/3/2021 21:27	IMG_0077.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	4/4/2021	20:38:20	4/4/2021 20:38	IMG_0084.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	5/4/2021	3:58:14	6/4/2021 3:58	IMG_0086.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	13/3/2021	5:56:14	14/3/2021 5:56	IMG_0025.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	15/3/2021	0:15:06	16/3/2021 0:15	IMG_0032.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	15/3/2021	0:15:52	16/3/2021 0:15	IMG_0034.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	21/3/2021	21:58:00	21/3/2021 21:58	IMG_0056.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	22/3/2021	21:02:38	22/3/2021 21:02	IMG_0059.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	26/3/2021	22:56:02	26/3/2021 22:56	IMG_0068.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	31/3/2021	21:15:36	31/3/2021 21:15	IMG_0075.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT11	20210408	20/3/2021	8:51:14	20/3/2021 8:51	IMG_0052.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT11	20210408	20/3/2021	9:40:44	20/3/2021 9:40	IMG_0053.AVI	Reptile	Malayan water monitor	*Varanus salvator*	Least concern	Not assessed	No	1	NA
CT12	20210305	21/2/2021	8:21:46	21/2/2021 8:21	IMG_0164.AVI	Bird	Javan myna	*Acridotheres javanicus*	Least concern	Not assessed	No	1	NA
CT12	20210305	3/3/2021	17:22:08	3/3/2021 17:22	IMG_0207.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT12	20210305	12/2/2021	16:55:44	12/2/2021 16:55	IMG_0076.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	16:56:06	12/2/2021 16:56	IMG_0077.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	16:59:30	12/2/2021 16:59	IMG_0078.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:00:14	12/2/2021 17:00	IMG_0079.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:22:34	12/2/2021 17:22	IMG_0088.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:23:00	12/2/2021 17:23	IMG_0089.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:23:22	12/2/2021 17:23	IMG_0090.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:24:06	12/2/2021 17:24	IMG_0091.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:24:32	12/2/2021 17:24	IMG_0092.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:24:54	12/2/2021 17:24	IMG_0093.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:25:18	12/2/2021 17:25	IMG_0094.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:25:40	12/2/2021 17:25	IMG_0095.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:31:56	12/2/2021 17:31	IMG_0097.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	14/2/2021	12:23:38	14/2/2021 12:23	IMG_0105.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	14/2/2021	12:31:12	14/2/2021 12:31	IMG_0106.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	14/2/2021	12:33:24	14/2/2021 12:33	IMG_0107.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	14/2/2021	12:33:46	14/2/2021 12:33	IMG_0108.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	18/2/2021	8:20:24	18/2/2021 8:20	IMG_0141.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	19/2/2021	11:39:18	19/2/2021 11:39	IMG_0151.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	16:54:20	22/2/2021 16:54	IMG_0177.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:01:34	22/2/2021 17:01	IMG_0181.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:01:56	22/2/2021 17:01	IMG_0182.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:02:18	22/2/2021 17:02	IMG_0183.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:02:40	22/2/2021 17:02	IMG_0184.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:04:50	22/2/2021 17:04	IMG_0190.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:05:12	22/2/2021 17:05	IMG_0191.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:05:32	22/2/2021 17:05	IMG_0192.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:05:54	22/2/2021 17:05	IMG_0193.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:06:16	22/2/2021 17:06	IMG_0194.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:06:38	22/2/2021 17:06	IMG_0195.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	22/2/2021	17:07:00	22/2/2021 17:07	IMG_0196.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	26/2/2021	7:42:46	26/2/2021 7:42	IMG_0203.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	27/2/2021	9:22:48	27/2/2021 9:22	IMG_0204.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	27/2/2021	14:44:50	27/2/2021 14:44	IMG_0205.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	27/2/2021	14:45:12	27/2/2021 14:45	IMG_0206.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	5/3/2021	7:44:52	5/3/2021 7:44	IMG_0208.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	5/3/2021	9:12:36	5/3/2021 9:12	IMG_0209.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210305	12/2/2021	17:19:42	12/2/2021 17:19	IMG_0081.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210305	12/2/2021	17:31:28	12/2/2021 17:31	IMG_0096.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210305	17/2/2021	13:13:48	17/2/2021 13:13	IMG_0136.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210305	21/2/2021	10:44:30	21/2/2021 10:44	IMG_0165.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210305	21/2/2021	10:44:50	21/2/2021 10:44	IMG_0166.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210305	12/2/2021	17:20:02	12/2/2021 17:20	IMG_0082.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:20:28	12/2/2021 17:20	IMG_0083.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:20:54	12/2/2021 17:20	IMG_0084.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:21:30	12/2/2021 17:21	IMG_0085.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:21:50	12/2/2021 17:21	IMG_0086.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:22:12	12/2/2021 17:22	IMG_0087.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	15/2/2021	11:13:04	15/2/2021 11:13	IMG_0131.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	17/2/2021	10:15:22	17/2/2021 10:15	IMG_0135.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210305	12/2/2021	17:00:14	12/2/2021 17:00	IMG_0079.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:20:54	12/2/2021 17:20	IMG_0084.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:21:30	12/2/2021 17:21	IMG_0085.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:21:50	12/2/2021 17:21	IMG_0086.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:22:34	12/2/2021 17:22	IMG_0088.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:23:00	12/2/2021 17:23	IMG_0089.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:23:22	12/2/2021 17:23	IMG_0090.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:24:06	12/2/2021 17:24	IMG_0091.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:24:32	12/2/2021 17:24	IMG_0092.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:24:54	12/2/2021 17:24	IMG_0093.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	12/2/2021	17:25:18	12/2/2021 17:25	IMG_0094.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	14/2/2021	12:34:16	14/2/2021 12:34	IMG_0109.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	15/2/2021	11:13:04	15/2/2021 11:13	IMG_0131.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	16/2/2021	8:17:12	16/2/2021 8:17	IMG_0134.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	19/2/2021	11:40:48	19/2/2021 11:40	IMG_0152.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	21/2/2021	12:37:44	21/2/2021 12:37	IMG_0168.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	16:55:56	22/2/2021 16:55	IMG_0178.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	16:56:18	22/2/2021 16:56	IMG_0179.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	16:56:44	22/2/2021 16:56	IMG_0180.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:01:56	22/2/2021 17:01	IMG_0182.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:02:18	22/2/2021 17:02	IMG_0183.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:02:40	22/2/2021 17:02	IMG_0184.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:03:00	22/2/2021 17:03	IMG_0185.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:03:22	22/2/2021 17:03	IMG_0186.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:03:46	22/2/2021 17:03	IMG_0187.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:04:06	22/2/2021 17:04	IMG_0188.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:04:28	22/2/2021 17:04	IMG_0189.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:04:50	22/2/2021 17:04	IMG_0190.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:05:12	22/2/2021 17:05	IMG_0191.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:05:32	22/2/2021 17:05	IMG_0192.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:05:54	22/2/2021 17:05	IMG_0193.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:06:16	22/2/2021 17:06	IMG_0194.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:06:38	22/2/2021 17:06	IMG_0195.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:07:00	22/2/2021 17:07	IMG_0196.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210305	14/2/2021	9:02:14	14/2/2021 9:02	IMG_0102.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	2	NA
CT12	20210305	14/2/2021	9:02:34	14/2/2021 9:02	IMG_0103.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	2	NA
CT12	20210305	15/2/2021	21:32:30	15/2/2021 21:32	IMG_0132.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	192	NA
CT12	20210305	15/2/2021	21:47:08	15/2/2021 21:47	IMG_0133.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	193	NA
CT12	20210305	23/2/2021	6:39:28	23/2/2021 6:39	IMG_0197.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	194	NA
CT12	20210305	23/2/2021	21:06:52	23/2/2021 21:06	IMG_0200.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	195	NA
CT12	20210305	23/2/2021	21:18:42	23/2/2021 21:18	IMG_0201.AVI	Mammal	Oriental house rat	*Rattus tanezumi*	Least Concern	Not Assessed	No	196	NA
CT12	20210305	9/2/2021	15:18:22	9/2/2021 15:18	IMG_0022.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT12	20210305	9/2/2021	15:18:54	9/2/2021 15:18	IMG_0023.AVI	Mammal	Common treeshrew	*Tupaia glis*	Least concern	Not assessed	No	1	NA
CT12	20210305	22/2/2021	17:06:38	22/2/2021 17:06	IMG_0195.AVI	Bird	Unidentified junglefowl	*Unidentified Gallus gallus*	NA	NA	NA	1	NA
CT12	20210305	22/2/2021	17:07:00	22/2/2021 17:07	IMG_0196.AVI	Bird	Unidentified junglefowl	*Unidentified Gallus gallus*	NA	NA	NA	1	NA
CT12	20210305	27/2/2021	14:45:12	27/2/2021 14:45	IMG_0206.AVI	Bird	Unidentified junglefowl	*Unidentified Gallus gallus*	NA	NA	NA	1	NA
CT12	20210408	19/3/2021	13:17:58	19/3/2021 13:17	IMG_0197.AVI	Mammal	Plantain squirrel	*Callosciurus notatus*	Least concern	Not Assessed	No	1	NA
CT12	20210408	6/3/2021	12:32:42	6/3/2021 12:32	IMG_0003.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	6/3/2021	12:33:42	6/3/2021 12:33	IMG_0004.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	9/3/2021	17:40:22	9/3/2021 17:40	IMG_0007.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	10/3/2021	18:39:40	10/3/2021 18:39	IMG_0010.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	10/3/2021	18:54:28	10/3/2021 18:54	IMG_0011.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	10/3/2021	18:54:48	10/3/2021 18:54	IMG_0012.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:39:58	11/3/2021 16:39	IMG_0013.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:40:18	11/3/2021 16:40	IMG_0014.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:40:40	11/3/2021 16:40	IMG_0015.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:41:08	11/3/2021 16:41	IMG_0016.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:41:30	11/3/2021 16:41	IMG_0017.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:41:52	11/3/2021 16:41	IMG_0018.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:42:50	11/3/2021 16:42	IMG_0019.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:44:00	11/3/2021 16:44	IMG_0020.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:44:22	11/3/2021 16:44	IMG_0021.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:46:44	11/3/2021 16:46	IMG_0022.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:47:06	11/3/2021 16:47	IMG_0023.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:48:22	11/3/2021 16:48	IMG_0025.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:48:48	11/3/2021 16:48	IMG_0026.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:49:12	11/3/2021 16:49	IMG_0027.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT12	20210408	11/3/2021	16:49:54	11/3/2021 16:49	IMG_0028.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	16:50:16	11/3/2021 16:50	IMG_0029.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:02:22	11/3/2021 17:02	IMG_0030.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:02:44	11/3/2021 17:02	IMG_0031.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:03:22	11/3/2021 17:03	IMG_0032.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:03:44	11/3/2021 17:03	IMG_0033.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:04:26	11/3/2021 17:04	IMG_0034.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:04:46	11/3/2021 17:04	IMG_0035.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:05:50	11/3/2021 17:05	IMG_0036.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:06:10	11/3/2021 17:06	IMG_0037.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:06:32	11/3/2021 17:06	IMG_0038.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:08:40	11/3/2021 17:08	IMG_0039.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:15:06	11/3/2021 17:15	IMG_0040.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	11/3/2021	17:15:34	11/3/2021 17:15	IMG_0041.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:15:56	11/3/2021 17:15	IMG_0042.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	11/3/2021	17:22:46	11/3/2021 17:22	IMG_0043.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	8:59:48	12/3/2021 8:59	IMG_0045.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:00:18	12/3/2021 9:00	IMG_0046.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:00:38	12/3/2021 9:00	IMG_0047.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	12/3/2021	9:01:00	12/3/2021 9:01	IMG_0048.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	12/3/2021	9:02:10	12/3/2021 9:02	IMG_0049.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:03:00	12/3/2021 9:03	IMG_0050.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:08:50	12/3/2021 9:08	IMG_0051.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:09:12	12/3/2021 9:09	IMG_0052.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:09:42	12/3/2021 9:09	IMG_0053.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	9:11:08	12/3/2021 9:11	IMG_0054.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	12/3/2021	9:11:28	12/3/2021 9:11	IMG_0055.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	12/3/2021	7:32:46	13/3/2021 7:32	IMG_0058.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	16:41:40	13/3/2021 16:41	IMG_0060.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	16:42:10	13/3/2021 16:42	IMG_0061.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	16:42:32	13/3/2021 16:42	IMG_0062.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	16:42:58	13/3/2021 16:42	IMG_0063.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:45:36	14/3/2021 7:45	IMG_0064.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:47:00	14/3/2021 7:47	IMG_0065.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:49:12	14/3/2021 7:49	IMG_0066.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:49:32	14/3/2021 7:49	IMG_0067.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:50:02	14/3/2021 7:50	IMG_0068.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:50:28	14/3/2021 7:50	IMG_0069.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:50:50	14/3/2021 7:50	IMG_0070.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	13/3/2021	7:51:12	14/3/2021 7:51	IMG_0071.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	13/3/2021	7:51:36	14/3/2021 7:51	IMG_0072.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:51:56	14/3/2021 7:51	IMG_0073.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	13/3/2021	7:56:04	14/3/2021 7:56	IMG_0074.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:43:36	14/3/2021 14:43	IMG_0075.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:44:42	14/3/2021 14:44	IMG_0076.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:45:44	14/3/2021 14:45	IMG_0077.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:46:04	14/3/2021 14:46	IMG_0078.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:46:26	14/3/2021 14:46	IMG_0079.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	14:48:12	14/3/2021 14:48	IMG_0080.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	14/3/2021	16:32:50	14/3/2021 16:32	IMG_0081.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	16:33:12	14/3/2021 16:33	IMG_0082.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	16:34:00	14/3/2021 16:34	IMG_0083.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	14/3/2021	16:34:32	14/3/2021 16:34	IMG_0084.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	16:36:58	14/3/2021 16:36	IMG_0085.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	14/3/2021	16:38:10	14/3/2021 16:38	IMG_0086.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	11:03:34	15/3/2021 11:03	IMG_0087.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	11:03:56	15/3/2021 11:03	IMG_0088.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	11:04:40	15/3/2021 11:04	IMG_0089.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	11:05:02	15/3/2021 11:05	IMG_0090.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:05:22	15/3/2021 11:05	IMG_0091.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:05:52	15/3/2021 11:05	IMG_0092.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	15/3/2021	11:06:20	15/3/2021 11:06	IMG_0093.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	4	NA
CT12	20210408	15/3/2021	11:09:16	15/3/2021 11:09	IMG_0094.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:09:44	15/3/2021 11:09	IMG_0095.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:11:28	15/3/2021 11:11	IMG_0096.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:13:22	15/3/2021 11:13	IMG_0097.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:13:44	15/3/2021 11:13	IMG_0098.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:14:22	15/3/2021 11:14	IMG_0099.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:14:44	15/3/2021 11:14	IMG_0100.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:15:08	15/3/2021 11:15	IMG_0101.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	11:17:40	15/3/2021 11:17	IMG_0102.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	11:39:08	15/3/2021 11:39	IMG_0103.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:24:28	15/3/2021 14:24	IMG_0104.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:24:54	15/3/2021 14:24	IMG_0105.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:28:10	15/3/2021 14:28	IMG_0106.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	14:29:26	15/3/2021 14:29	IMG_0107.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	14:29:56	15/3/2021 14:29	IMG_0108.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:30:28	15/3/2021 14:30	IMG_0109.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:30:54	15/3/2021 14:30	IMG_0110.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	15/3/2021	14:42:16	15/3/2021 14:42	IMG_0111.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:42:50	15/3/2021 14:42	IMG_0112.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	14:43:10	15/3/2021 14:43	IMG_0113.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	18:50:14	15/3/2021 18:50	IMG_0115.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	15/3/2021	18:51:22	15/3/2021 18:51	IMG_0116.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	9:56:04	16/3/2021 9:56	IMG_0117.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	9:56:24	16/3/2021 9:56	IMG_0118.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	10:16:40	16/3/2021 10:16	IMG_0120.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	10:17:52	16/3/2021 10:17	IMG_0121.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	10:18:44	16/3/2021 10:18	IMG_0122.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	10:26:18	16/3/2021 10:26	IMG_0124.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	11:14:00	16/3/2021 11:14	IMG_0125.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	11:15:24	16/3/2021 11:15	IMG_0126.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	11:15:48	16/3/2021 11:15	IMG_0127.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:09:22	16/3/2021 12:09	IMG_0128.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:28:40	16/3/2021 12:28	IMG_0129.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:29:00	16/3/2021 12:29	IMG_0130.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:29:22	16/3/2021 12:29	IMG_0131.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:31:08	16/3/2021 12:31	IMG_0132.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	12:31:44	16/3/2021 12:31	IMG_0133.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	13:00:32	16/3/2021 13:00	IMG_0134.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	16:19:22	16/3/2021 16:19	IMG_0135.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	16/3/2021	16:19:44	16/3/2021 16:19	IMG_0136.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	16/3/2021	16:20:12	16/3/2021 16:20	IMG_0137.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	16:20:48	16/3/2021 16:20	IMG_0138.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	16:37:14	16/3/2021 16:37	IMG_0139.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	16/3/2021	16:43:32	16/3/2021 16:43	IMG_0140.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	16:43:54	16/3/2021 16:43	IMG_0141.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	17/3/2021	8:46:04	17/3/2021 8:46	IMG_0142.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:46:26	17/3/2021 8:46	IMG_0143.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	17/3/2021	8:46:48	17/3/2021 8:46	IMG_0144.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:48:02	17/3/2021 8:48	IMG_0145.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:48:54	17/3/2021 8:48	IMG_0146.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:49:14	17/3/2021 8:49	IMG_0147.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:50:52	17/3/2021 8:50	IMG_0148.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	8:51:14	17/3/2021 8:51	IMG_0149.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	17/3/2021	8:51:40	17/3/2021 8:51	IMG_0150.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	17/3/2021	8:52:02	17/3/2021 8:52	IMG_0151.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	9:03:30	17/3/2021 9:03	IMG_0152.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	17/3/2021	9:03:58	17/3/2021 9:03	IMG_0153.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	9:05:26	17/3/2021 9:05	IMG_0154.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	9:29:16	17/3/2021 9:29	IMG_0155.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	17/3/2021	17:04:50	17/3/2021 17:04	IMG_0156.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:29:28	18/3/2021 11:29	IMG_0158.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:29:58	18/3/2021 11:29	IMG_0159.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:32:06	18/3/2021 11:32	IMG_0160.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:32:38	18/3/2021 11:32	IMG_0161.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:33:04	18/3/2021 11:33	IMG_0162.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:33:40	18/3/2021 11:33	IMG_0163.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	11:34:00	18/3/2021 11:34	IMG_0164.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	11:34:22	18/3/2021 11:34	IMG_0165.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	11:35:44	18/3/2021 11:35	IMG_0166.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	12:15:48	18/3/2021 12:15	IMG_0169.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	12:32:16	18/3/2021 12:32	IMG_0170.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	12:32:36	18/3/2021 12:32	IMG_0171.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	12:32:56	18/3/2021 12:32	IMG_0172.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	12:33:20	18/3/2021 12:33	IMG_0173.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	14:44:26	18/3/2021 14:44	IMG_0174.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT12	20210408	18/3/2021	14:44:46	18/3/2021 14:44	IMG_0175.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	14:45:08	18/3/2021 14:45	IMG_0176.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	3	NA
CT12	20210408	18/3/2021	14:45:36	18/3/2021 14:45	IMG_0177.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	14:46:34	18/3/2021 14:46	IMG_0178.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	18/3/2021	14:47:00	18/3/2021 14:47	IMG_0179.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	14:47:20	18/3/2021 14:47	IMG_0180.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	18:45:42	18/3/2021 18:45	IMG_0181.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:31:36	19/3/2021 7:31	IMG_0182.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:33:50	19/3/2021 7:33	IMG_0183.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:34:12	19/3/2021 7:34	IMG_0184.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:34:54	19/3/2021 7:34	IMG_0185.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:35:28	19/3/2021 7:35	IMG_0186.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:36:26	19/3/2021 7:36	IMG_0187.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:37:04	19/3/2021 7:37	IMG_0188.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:38:18	19/3/2021 7:38	IMG_0189.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:38:42	19/3/2021 7:38	IMG_0190.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:39:14	19/3/2021 7:39	IMG_0191.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:40:04	19/3/2021 7:40	IMG_0192.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:41:48	19/3/2021 7:41	IMG_0193.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	18/3/2021	7:42:34	19/3/2021 7:42	IMG_0194.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	19/3/2021	9:13:54	19/3/2021 9:13	IMG_0195.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	19/3/2021	15:53:02	19/3/2021 15:53	IMG_0198.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	19/3/2021	16:15:46	19/3/2021 16:15	IMG_0199.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	11:23:38	20/3/2021 11:23	IMG_0200.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	11:56:20	20/3/2021 11:56	IMG_0201.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:35:30	21/3/2021 7:35	IMG_0202.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:39:22	21/3/2021 7:39	IMG_0203.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:39:42	21/3/2021 7:39	IMG_0204.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:56:34	21/3/2021 7:56	IMG_0205.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:56:58	21/3/2021 7:56	IMG_0206.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	20/3/2021	7:57:20	21/3/2021 7:57	IMG_0207.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	20/3/2021	7:58:34	21/3/2021 7:58	IMG_0208.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	9:08:12	21/3/2021 9:08	IMG_0209.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	9:09:12	21/3/2021 9:09	IMG_0210.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	9:15:18	21/3/2021 9:15	IMG_0211.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	9:28:42	21/3/2021 9:28	IMG_0212.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	9:29:04	21/3/2021 9:29	IMG_0213.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	mating
CT12	20210408	21/3/2021	10:27:28	21/3/2021 10:27	IMG_0214.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:20:24	22/3/2021 7:20	IMG_0215.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:21:44	22/3/2021 7:21	IMG_0216.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:58:18	22/3/2021 7:58	IMG_0217.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:58:40	22/3/2021 7:58	IMG_0218.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:59:36	22/3/2021 7:59	IMG_0219.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	21/3/2021	7:59:56	22/3/2021 7:59	IMG_0220.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	10:15:38	22/3/2021 10:15	IMG_0222.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	10:16:24	22/3/2021 10:16	IMG_0223.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	10:17:02	22/3/2021 10:17	IMG_0224.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	22/3/2021	10:17:24	22/3/2021 10:17	IMG_0225.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	10:17:44	22/3/2021 10:17	IMG_0226.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	22/3/2021	10:36:18	22/3/2021 10:36	IMG_0227.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	10:36:40	22/3/2021 10:36	IMG_0228.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	22/3/2021	11:34:26	22/3/2021 11:34	IMG_0229.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	16:09:42	22/3/2021 16:09	IMG_0230.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	16:10:04	22/3/2021 16:10	IMG_0231.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	22/3/2021	16:10:26	22/3/2021 16:10	IMG_0232.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	22/3/2021	16:11:04	22/3/2021 16:11	IMG_0233.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	22/3/2021	16:11:26	22/3/2021 16:11	IMG_0234.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:13:44	25/3/2021 15:13	IMG_0239.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:19:56	25/3/2021 15:19	IMG_0240.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:20:18	25/3/2021 15:20	IMG_0241.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:20:40	25/3/2021 15:20	IMG_0242.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:21:04	25/3/2021 15:21	IMG_0243.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:21:24	25/3/2021 15:21	IMG_0244.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:21:52	25/3/2021 15:21	IMG_0245.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:22:14	25/3/2021 15:22	IMG_0246.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:22:34	25/3/2021 15:22	IMG_0247.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:22:56	25/3/2021 15:22	IMG_0248.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:23:18	25/3/2021 15:23	IMG_0249.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:23:46	25/3/2021 15:23	IMG_0250.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:24:08	25/3/2021 15:24	IMG_0251.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:25:40	25/3/2021 15:25	IMG_0252.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	25/3/2021	15:28:18	25/3/2021 15:28	IMG_0253.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	25/3/2021	15:28:40	25/3/2021 15:28	IMG_0254.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	26/3/2021	9:03:00	26/3/2021 9:03	IMG_0255.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	26/3/2021	9:03:32	26/3/2021 9:03	IMG_0256.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	26/3/2021	9:03:58	26/3/2021 9:03	IMG_0257.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	26/3/2021	9:06:08	26/3/2021 9:06	IMG_0258.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	27/3/2021	11:39:26	27/3/2021 11:39	IMG_0260.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	11:39:58	27/3/2021 11:39	IMG_0261.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	11:41:18	27/3/2021 11:41	IMG_0262.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	15:48:30	27/3/2021 15:48	IMG_0263.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	15:58:28	27/3/2021 15:58	IMG_0264.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:00:20	27/3/2021 16:00	IMG_0265.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:00:42	27/3/2021 16:00	IMG_0266.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:01:04	27/3/2021 16:01	IMG_0267.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:19:04	27/3/2021 16:19	IMG_0268.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:31:38	27/3/2021 16:31	IMG_0269.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	16:32:00	27/3/2021 16:32	IMG_0270.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	7:45:12	28/3/2021 7:45	IMG_0271.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	27/3/2021	7:45:34	28/3/2021 7:45	IMG_0272.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	28/3/2021	18:47:04	28/3/2021 18:47	IMG_0273.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	30/3/2021	8:39:56	30/3/2021 8:39	IMG_0276.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:17:06	1/4/2021 17:17	IMG_0277.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:17:26	1/4/2021 17:17	IMG_0278.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:17:48	1/4/2021 17:17	IMG_0279.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:18:08	1/4/2021 17:18	IMG_0280.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:18:30	1/4/2021 17:18	IMG_0281.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:18:56	1/4/2021 17:18	IMG_0282.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:19:24	1/4/2021 17:19	IMG_0283.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:20:10	1/4/2021 17:20	IMG_0284.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:20:48	1/4/2021 17:20	IMG_0285.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:22:04	1/4/2021 17:22	IMG_0286.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	1/4/2021	17:22:26	1/4/2021 17:22	IMG_0287.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	1/4/2021	17:23:04	1/4/2021 17:23	IMG_0288.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:24:22	1/4/2021 17:24	IMG_0289.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:25:36	1/4/2021 17:25	IMG_0290.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:31:12	1/4/2021 17:31	IMG_0291.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:32:16	1/4/2021 17:32	IMG_0292.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:32:42	1/4/2021 17:32	IMG_0293.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	1/4/2021	17:35:04	1/4/2021 17:35	IMG_0294.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	1/4/2021	17:35:24	1/4/2021 17:35	IMG_0295.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	2	NA
CT12	20210408	3/4/2021	12:40:12	3/4/2021 12:40	IMG_0296.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	3/4/2021	16:46:32	3/4/2021 16:46	IMG_0297.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	3/4/2021	18:40:08	3/4/2021 18:40	IMG_0298.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	10:55:52	4/4/2021 10:55	IMG_0299.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	10:56:14	4/4/2021 10:56	IMG_0300.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	10:59:02	4/4/2021 10:59	IMG_0301.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	11:01:56	4/4/2021 11:01	IMG_0302.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	11:10:28	4/4/2021 11:10	IMG_0303.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	4/4/2021	16:25:56	4/4/2021 16:25	IMG_0304.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	5/4/2021	8:49:34	5/4/2021 8:49	IMG_0305.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	5/4/2021	9:10:00	5/4/2021 9:10	IMG_0307.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	7/4/2021	10:26:36	7/4/2021 10:26	IMG_0309.AVI	Bird	Red junglefowl	*Gallus gallus*	Least concern	Endangered	Yes	1	NA
CT12	20210408	16/3/2021	9:57:56	16/3/2021 9:57	IMG_0119.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	18/3/2021	8:49:30	18/3/2021 8:49	IMG_0157.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	18/3/2021	11:59:44	18/3/2021 11:59	IMG_0167.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	18/3/2021	12:00:24	18/3/2021 12:00	IMG_0168.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	19/3/2021	13:16:28	19/3/2021 13:16	IMG_0196.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	22/3/2021	10:15:14	22/3/2021 10:15	IMG_0221.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	5/4/2021	9:00:48	5/4/2021 9:00	IMG_0306.AVI	Bird	Domestic chicken	*Gallus gallus (domestic)*	Not assessed	Not assessed	No	1	NA
CT12	20210408	12/3/2021	9:43:24	12/3/2021 9:43	IMG_0056.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT12	20210408	12/3/2021	9:43:46	12/3/2021 9:43	IMG_0057.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT12	20210408	13/3/2021	13:27:26	13/3/2021 13:27	IMG_0059.AVI	Mammal	Long-tailed macaque	*Macaca fascicularis*	Vulnerable	Not assessed	Yes	1	NA
CT12	20210408	11/3/2021	2:14:12	12/3/2021 2:14	IMG_0044.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT12	20210408	6/4/2021	5:50:14	7/4/2021 5:50	IMG_0308.AVI	Mammal	Common palm civet	*Paradoxurus musangus*	Least concern	Not assessed	No	1	NA
CT12	20210408	24/3/2021	21:05:44	24/3/2021 21:05	IMG_0235.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT12	20210408	24/3/2021	4:56:50	25/3/2021 4:56	IMG_0236.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA

Station	Sampling_date	Date	Time	DateTimeOriginal	File	Taxon	Common Name	Scientific name	Global Status	Local Status	Threatened	Abundance	Remarks
CT12	20210408	24/3/2021	4:57:14	25/3/2021 4:57	IMG_0237.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT12	20210408	26/3/2021	19:44:58	26/3/2021 19:44	IMG_0259.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT12	20210408	28/3/2021	19:46:20	28/3/2021 19:46	IMG_0274.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT12	20210408	28/3/2021	5:23:00	29/3/2021 5:23	IMG_0275.AVI	Mammal	Unidentified rat	*Rattus sp.*	NA	NA	NA	1	NA
CT12	20210408	7/4/2021	19:07:44	7/4/2021 19:07	IMG_0310.AVI	Bird	NA	*Unidentified Rallidae*	NA	NA	NA	1	NA

Appendix L
Impact Assessment on Habitat, Plants and Fauna Receptors

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Type	Site	Habitat	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Freshwater	Keppel Club	Waterbodies (man-made)	Construction	Change in species composition	Low	Negligible	Imperceptible	Unlikely	Negligible	Negligible	Imperceptible	Unlikely	Negligible
Freshwater	Keppel Club	Waterbodies (man-made)	Construction	Habitat degradation	Low	Negligible	Imperceptible	Less likely	Negligible	Negligible	Imperceptible	Less likely	Negligible
Freshwater	Keppel Club	Waterbodies (man-made)	Construction	Loss of vegetation	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Marine	Berlayer Marine Areas	Rocky shore	Construction	Change in species composition	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	Berlayer Marine Areas	Sandy seabed	Construction	Change in species composition	Medium	Low	Low	Unlikely	Negligible	Low	Low	Unlikely	Negligible
Marine	Berlayer Marine Areas	Seagrass meadow	Construction	Change in species composition	High	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Marine	Berlayer Marine Areas	Soft sediment seabed	Construction	Change in species composition	Medium	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	Berlayer Marine Areas	Rocky shore	Construction	Habitat degradation	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Marine	Berlayer Marine Areas	Sandy seabed	Construction	Habitat degradation	Medium	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Marine	Berlayer Marine Areas	Seagrass meadow	Construction	Habitat degradation	High	Negligible	Very Low	Less likely	Negligible	Negligible	Very Low	Less likely	Negligible
Marine	Berlayer Marine Areas	Soft sediment seabed	Construction	Habitat degradation	Medium	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Marine	Berlayer Marine Areas	Rocky shore	Construction	Loss of vegetation	High	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Marine	Berlayer Marine Areas	Sandy seabed	Construction	Loss of vegetation	Medium	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Marine	Berlayer Marine Areas	Seagrass meadow	Construction	Loss of vegetation	High	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Marine	Berlayer Marine Areas	Soft sediment seabed	Construction	Loss of vegetation	Medium	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Terrestrial	Berlayer Creek	Mangrove forest	Construction	Change in species composition	High	High	High	Unlikely	Negligible	High	High	Unlikely	Negligible
Terrestrial	Bukit Chermin	Native-dominated secondary forest	Construction	Change in species composition	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	Keppel Club/Former BP oil refinery	Urban vegetation	Construction	Change in species composition	Medium	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Terrestrial	Berlayer Creek	Mangrove forest	Construction	Habitat degradation	High	High	High	Less likely	Minor	High	High	Less likely	Minor
Terrestrial	Bukit Chermin	Native-dominated secondary forest	Construction	Habitat degradation	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	Keppel Club/Former BP oil refinery	Urban vegetation	Construction	Habitat degradation	Medium	Negligible	Very Low	Less likely	Negligible	Negligible	Very Low	Less likely	Negligible
Terrestrial	Berlayer Creek	Mangrove forest	Construction	Loss of vegetation	High	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Terrestrial	Bukit Chermin	Native-dominated secondary forest	Construction	Loss of vegetation	High	Negligible	Very Low	Unlikely	Negligible	Negligible	Very Low	Unlikely	Negligible
Terrestrial	Keppel Club/Former BP oil refinery	Urban vegetation	Construction	Loss of vegetation	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Marine	Berlayer Marine Areas	Rocky shore	Operation	Change in species composition	High	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Sandy seabed	Operation	Change in species composition	Medium	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Seagrass meadow	Operation	Change in species composition	High	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Soft sediment seabed	Operation	Change in species composition	Medium	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Rocky shore	Operation	Habitat degradation	High	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Sandy seabed	Operation	Habitat degradation	Medium	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Seagrass meadow	Operation	Habitat degradation	High	NA	NA	NA	NA	NA	NA	NA	NA
Marine	Berlayer Marine Areas	Soft sediment seabed	Operation	Habitat degradation	Medium	NA	NA	NA	NA	NA	NA	NA	NA
Terrestrial	Berlayer Creek	Mangrove forest	Operation	Change in species composition	High	Medium	Medium	Possible	**Moderate**	Low	Low	Possible	Minor
Terrestrial	Bukit Chermin	Native-dominated secondary forest	Operation	Change in species composition	High	Medium	Medium	Possible	**Moderate**	Low	Low	Possible	Minor
Terrestrial	Berlayer Creek	Mangrove forest	Operation	Habitat degradation	High	High	High	Likely	**Major**	Medium	Medium	Possible	Minor
Terrestrial	Bukit Chermin	Native-dominated secondary forest	Operation	Habitat degradation	High	High	High	Likely	**Major**	Medium	Medium	Possible	Minor

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Andira inermis	Fabaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Avicennia alba	Acanthaceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Construction	Mortality	High	High	High	Certain	**Major**	Negligible	Very low	Less likely	Negligible
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Construction	Mortality	High	High	High	Certain	**Major**	High	High	Certain	**Major**
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Construction	Mortality	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Construction	Mortality	High	High	High	Certain	**Major**	High	High	Certain	**Major**
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Construction	Mortality	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Construction	Mortality	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Construction	Mortality	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Mortality	High	High	High	Certain	**Major**	High	High	Certain	**Major**
Ficus globosa	Moraceae	Native	Endangered	Shrub	Construction	Mortality	High	High	High	Certain	**Major**	Negligible	Very low	Less likely	Negligible
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Construction	Mortality	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus microcarpa	Moraceae	Native	Common	Strangler	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Ficus punctata	Moraceae	Native	Common	Climber	Construction	Mortality	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	Low	Very low	Certain	Minor	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Construction	Mortality	High	High	High	Certain	**Major**	Negligible	Very low	Less likely	Negligible
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	Low	Very low	Certain	Minor	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Construction	Mortality	Medium	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Sonneratia alba	Lythraceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium grande	Myrtaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Construction	Mortality	High	Low	Low	Certain	**Moderate**	Negligible	Very low	Less likely	Negligible
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Construction	Mortality	Medium	High	High	Certain	**Major**	High	High	Certain	**Major**
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Construction	Mortality	Low	Medium	Very low	Certain	Minor	-	-	-	-
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Construction	Mortality	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Construction	Mortality	Low	Low	Very low	Certain	Minor	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Construction	Mortality	Medium	Low	Low	Certain	**Moderate**	Low	Low	Certain	**Moderate**
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Construction	Mortality	Low	High	Low	Certain	**Moderate**	High	Low	Certain	**Moderate**
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Construction	Mortality	High	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Construction	Mortality	Medium	Medium	Medium	Certain	**Major**	Medium	Medium	Certain	**Major**
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Construction	Mortality	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Avicennia alba	Acanthaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Certain	Minor	-	-	-	-
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	High	High	High	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	Medium	High	High	Possible	**Moderate**	High	High	Possible	**Moderate**
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus globosa	Moraceae	Native	Endangered	Shrub	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus microcarpa	Moraceae	Native	Common	Strangler	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Ficus punctata	Moraceae	Native	Common	Climber	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Medium	Very low	Possible	Minor	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	Medium	Medium	Medium	Possible	**Moderate**	-	-	-	-
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Construction	Impediment to seedling recruitment	High	Low	Low	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Sonneratia alba	Lythraceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Low	Very low	Possible	Minor	-	-	-	-
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Construction	Impediment to seedling recruitment	High	Low	Low	Possible	Minor	-	-	-	-
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Syzygium grande	Myrtaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Possible	Minor	-	-	-	-
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Construction	Impediment to seedling recruitment	Medium	Negligible	Very low	Possible	Minor	-	-	-	-
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Construction	Impediment to seedling recruitment	Low	Negligible	Imperceptible	Possible	Negligible	-	-	-	-
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Certain	Minor	-	-	-	-
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Construction	Impediment to seedling recruitment	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	Medium	Low	Low	Possible	Minor	-	-	-	-
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Construction	Impediment to seedling recruitment	High	Low	Low	Unlikely	Negligible	-	-	-	-
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Avicennia alba	Acanthaceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	High	High	High	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	Medium	High	High	Unlikely	Negligible	-	-	-	-
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus globosa	Moraceae	Native	Endangered	Shrub	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus microcarpa	Moraceae	Native	Common	Strangler	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus punctata	Moraceae	Native	Common	Climber	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Medium	Very low	Unlikely	Negligible	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	Medium	Medium	Medium	Unlikely	Negligible	-	-	-	-
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Sonneratia alba	Lythraceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium grande	Myrtaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Construction	Competition from exotic plant species	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Construction	Competition from exotic plant species	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Construction	Competition from exotic plant species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Construction	Competition from exotic plant species	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Construction	Competition from exotic plant species	High	Low	Low	Unlikely	Negligible	-	-	-	-
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Avicennia alba	Acanthaceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	High	High	High	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	Medium	High	High	Unlikely	Negligible	-	-	-	-
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus globosa	Moraceae	Native	Endangered	Shrub	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus microcarpa	Moraceae	Native	Common	Strangler	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus punctata	Moraceae	Native	Common	Climber	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Medium	Very low	Unlikely	Negligible	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	Medium	Medium	Medium	Unlikely	Negligible	-	-	-	-
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Sonneratia alba	Lythraceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Medium	Medium	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium grande	Myrtaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Construction	Decline in plant health and survival	Medium	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Construction	Decline in plant health and survival	Low	Negligible	Imperceptible	Unlikely	Negligible	-	-	-	-
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Construction	Decline in plant health and survival	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Construction	Decline in plant health and survival	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Construction	Decline in plant health and survival	High	Low	Low	Unlikely	Negligible	-	-	-	-
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Avicennia alba	Acanthaceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus fistulosa	Moraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Ficus fistulosa	Moraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus globosa	Moraceae	Native	Endangered	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus microcarpa	Moraceae	Native	Common	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus punctata	Moraceae	Native	Common	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Sonneratia alba	Lythraceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium grande	Myrtaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Operation	Mortality	Low	Low	Very low	Unlikely	Negligible	-	-	-	-
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Operation	Mortality	High	Low	Low	Possible	Minor	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Operation	Mortality	Medium	Low	Low	Unlikely	Negligible	-	-	-	-
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Operation	Mortality	High	Low	Low	Unlikely	Negligible	-	-	-	-
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Acacia mangium	Fabaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Acrostichum aureum	Pteridaceae	Native	Common	Herb	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Amphineuron opulentum	Thelypteridaceae	Native	Endangered	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Anacardium occidentale	Anacardiaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Ardisia elliptica	Myrsinaceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Arenga pinnata	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Asteromyrtus symphyocarpa	Myrtaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Averrhoa carambola	Oxalidaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Avicennia alba	Acanthaceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Avicennia officinalis	Acanthaceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Avicennia rumphiana	Acanthaceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Avrainvillea erecta	Udoteaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bambusa vulgaris	Poaceae	Exotic	Casual	Shrub	Operation	Competition from exotic species	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Barringtonia racemosa	Lecythidaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Bauhinia × blakeana	Fabaceae	Exotic	Not assessed	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Boergesenia forbesii	Siphonocladaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Bridelia stipularis	Phyllanthaceae	Native	Vulnerable	Shrub	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Bruguiera cylindrica	Rhizophoraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Bruguiera gymnorhiza	Rhizophoraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Bruguiera sexangula	Rhizophoraceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Bryopsis sp.	Bryopsidaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Buchanania arborescens	Anacardiaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Calophyllum inophyllum	Calophyllaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Calophyllum tetrapterum	Calophyllaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Canistrocarpus crispatus	Dictyotaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Casuarina equisetifolia	Casuarinaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Ceiba pentandra	Malvaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Cerbera odollam	Apocynaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Ceriops tagal	Rhizophoraceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Chaetomorpha gracilis	Cladophoraceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Cinnamomum iners	Lauraceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Citharexylum spinosum	Verbenaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Colpomenia sinuosa	Scytosiphonaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Couroupita guianensis	Lecythidaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Dalbergia junghunii	Fabaceae	Native	Critically Endangered	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Dillenia indica	Dilleniaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Dimocarpus longan	Sapindaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Diospyros blancoi	Ebenaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Dolichandrone spathacea	Bignoniaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Durio zibethinus	Malvaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Elaeis guineensis	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Elaeocarpus mastersii	Elaeocarpaceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Elaeocarpus pedunculatus	Elaeocarpaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Enhalus acoroides	Hydrocharitaceae	Native	Vulnerable	Herb	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Eucalyptus alba	Myrtaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Falcataria moluccana	Fabaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Ficus benghalensis	Moraceae	Exotic	Cultivated Only	Strangler	Operation	Competition from exotic species	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Ficus benjamina	Moraceae	Cryptogenic	-	Strangler	Operation	Competition from exotic species	High	Negligible	Very low	Likely	Minor	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Ficus caulocarpa	Moraceae	Native	Common	Strangler	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus elastica	Moraceae	Exotic	Casual	Strangler	Operation	Competition from exotic species	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Ficus fistulosa	Moraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus fistulosa	Moraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus globosa	Moraceae	Native	Endangered	Shrub	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus lyrata	Moraceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Ficus microcarpa	Moraceae	Native	Common	Strangler	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus punctata	Moraceae	Native	Common	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Ficus religiosa	Moraceae	Exotic	Naturalised	Strangler	Operation	Competition from exotic species	High	Negligible	Very low	Likely	Minor	-	-	-	-
Ficus vasculosa	Moraceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Filicium decipiens	Sapindaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Garcinia nigrolineata	Clusiaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Gnetum gnemon var. *gnemon*	Gnetaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Goniophlebium percussum	Polypodiaceae	Native	Vulnerable	Epiphyte	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Gracilaria salicornia	Gracilariaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Guioa pubescens	Sapindaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Halimeda sp.	Halimedaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Halodule sp.	Cymodoceaceae	Native	Critically Endangered	Herb	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Halophila ovalis	Hydrocharitaceae	Native	Vulnerable	Herb	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Heritiera littoralis	Malvaceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Hevea brasiliensis	Euphorbiaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Khaya grandifoliola	Meliaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Khaya senegalensis	Meliaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Lagerstroemia floribunda	Lythraceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Lagerstroemia speciosa	Lythraceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Lannea coromandelica	Anacardiaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Lepisanthes rubiginosa	Sapindaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Lindsaea orbiculata	Dennstaedtiaceae	Native	Presumed Extinct	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Livistona chinensis	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Lumnitzera littorea	Combretaceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Mangifera foetida	Anacardiaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Mangifera odorata	Anacardiaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Memecylon edule	Melastomataceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Mimusops elengi	Sapotaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Moringa drouhardii	Moringaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Neolitsea cassia	Lauraceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Neomeris sp.	Dasycladaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Nephelium lappaceum	Sapindaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Nypa fruticans	Arecaceae	Native	Vulnerable	Shrub	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Olea brachiata	Oleaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Oncosperma tigillarium	Arecaceae	Native	Vulnerable	Shrub	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Oxyceros longiflorus	Rubiaceae	Native	Vulnerable	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Padina sp.	Dictyotaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Palaquium obovatum	Sapotaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Parkia timoriana	Fabaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Peltophorum pterocarpum	Fabaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Pipturus argenteus	Urticaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Pisonia grandis	Nyctaginaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Pithecellobium dulce	Fabaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Planchonella obovata	Sapotaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Plumeria rubra	Apocynaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Polyalthia longifolia	Annonaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Rhizophora apiculata	Rhizophoraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Rhizophora mucronata	Rhizophoraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Rhizophora stylosa	Rhizophoraceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Rourea fulgens	Connaraceae	Native	Vulnerable	Climber	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Roystonea oleracea	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Roystonea regia	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Sabal palmetto	Arecaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Samanea saman	Fabaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Medium	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Sandoricum koetjape	Meliaceae	Native	Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Sargassum sp.	Sargassaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Senna siamea	Fabaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Sonneratia alba	Lythraceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	Operation	Competition from exotic species	Low	Negligible	Imperceptible	Likely	Negligible	-	-	-	-
Streblus elongatus	Moraceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Swietenia macrophylla	Meliaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-

Species	Family	Origin	Status	Habit	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Symplocos adenophylla	Symplocaceae	Native	Endangered	Shrub	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium claviflorum var. *claviflorum*	Myrtaceae	Native	Critically Endangered	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium grande	Myrtaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium lineatum	Myrtaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium myrtifolium	Myrtaceae	Native	Presumed Extinct	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium polyanthum	Myrtaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium syzygioides	Myrtaceae	Native	Vulnerable	Tree	Operation	Competition from exotic species	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Tabebuia rosea	Bignoniaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Hibiscus tiliaceus	Malvaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Tamarindus indica	Fabaceae	Exotic	Casual	Tree	Operation	Competition from exotic species	Low	Low	Very low	Likely	Minor	-	-	-	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Terminalia mantaly	Combretaceae	Exotic	Cultivated Only	Tree	Operation	Competition from exotic species	Low	Medium	Very low	Likely	Minor	-	-	-	-
Thyrsostachys siamensis	Poaceae	Exotic	Casual	Shrub	Operation	Competition from exotic species	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Udotea sp.	Udoteaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Ulva sp.	Ulvaceae	Not assessed	-	Herb	Operation	Competition from exotic species	High	Negligible	Very low	Unlikely	Negligible	-	-	-	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Operation	Competition from exotic species	Medium	High	High	Likely	**Major**	High	High	Less likely	Minor
Xylocarpus granatum	Meliaceae	Native	Common	Tree	Operation	Competition from exotic species	High	High	High	Unlikely	Negligible	-	-	-	-

Type	Species	Common name	Global status	National status	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Construction	Human disturbances	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Low	Low	Unlikely	Negligible	Low	Low	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Low	Low	Unlikely	Negligible	Low	Low	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Construction	Injury or mortality	High	Low	Low	Unlikely	Negligible	Low	Low	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Construction	Injury or mortality	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Low	Unlikely	Negligible	Negligible	Low	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Low	Unlikely	Negligible	Negligible	Low	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Construction	Light disturbances	High	Negligible	Low	Unlikely	Negligible	Negligible	Low	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Construction	Light disturbances	High	Negligible	Medium	Unlikely	Negligible	Negligible	Medium	Unlikely	Negligible
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Construction	Loss of/ reduction in habitats and food sources	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Haliaeetus leucogaster (nest)*	White-bellied sea eagle (nest)	Least Concern	Not Assessed	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Construction	Human disturbances	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Construction	Human disturbances	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Construction	Injury or mortality	High	Low	Low	Less Likely	Minor	Low	Low	Less Likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Construction	Injury or mortality	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor

Type	Species	Common name	Global status	National status	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Terrestrial	*Haliaeetus leucogaster (nest)*	White-bellied sea eagle (nest)	Least Concern	Not Assessed	Construction	Injury or mortality	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Construction	Injury or mortality	High	High	High	Possible	**Moderate**	High	High	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Construction	Injury or mortality	High	High	High	Possible	**Moderate**	High	High	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Construction	Injury or mortality	High	Medium	Medium	Less likely	Minor	Medium	Medium	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Construction	Injury or mortality	High	Low	Low	Less likely	Minor	Low	Low	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Haliaeetus leucogaster (nest)*	White-bellied sea eagle (nest)	Least Concern	Not Assessed	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Construction	Light disturbances	High	High	High	Unlikely	Negligible	High	High	Unlikely	Negligible
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Construction	Light disturbances	High	Medium	Medium	Unlikely	Negligible	Medium	Medium	Unlikely	Negligible
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Medium	Medium	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Medium	Medium	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	High	High	Certain	**Major**	High	High	Less likely	Minor
Terrestrial	*Haliaeetus leucogaster (nest)*	White-bellied sea eagle (nest)	Least Concern	Not Assessed	Construction	Loss of ecological connectivity for faunal movement	High	NA	NA	NA	NA	NA	NA	NA	NA
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Certain	Negligible	Negligible	Negligible	Less likely	Negligible
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Construction	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Certain	Negligible	Negligible	Negligible	Less likely	Negligible
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	High	High	Certain	**Major**	High	High	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Construction	Loss of ecological connectivity for faunal movement	High	High	High	Certain	**Major**	High	High	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Construction	Loss of ecological connectivity for faunal movement	High	High	High	Certain	**Major**	High	High	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Medium	Medium	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Construction	Loss of ecological connectivity for faunal movement	High	High	High	Certain	**Major**	High	High	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Haliaeetus leucogaster (nest)*	White-bellied sea eagle (nest)	Least Concern	Not Assessed	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Construction	Loss of/ reduction in habitats and food sources	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Operation	Human disturbances	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Operation	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor

Type	Species	Common name	Global status	National status	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Operation	Light disturbances	High	Negligible	Very low	Likely	Minor	Negligible	Very low	Less likely	Minor
Marine	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data Deficient	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Clithon oualaniensis*	Dubious nerite snail	Least Concern	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Hippocampus kuda*	Common seahorse	Vulnerable	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Mauritia arabica*	Arabian cowrie	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Murex trapa*	Rare-spined murex	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Nerita planospira*	Flat-spire nerite snail	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Strombus urceus*	Black-lipped conch	Not Assessed	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Marine	*Umbonium vestiarum*	Button snail	Not Assessed	Not Assessed	Operation	Loss of ecological connectivity for faunal movement	High	Negligible	Negligible	Unlikely	Negligible	Negligible	Negligible	Unlikely	Negligible
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Operation	Human disturbances	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie robin	Least Concern	Endangered	Operation	Human disturbances	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Operation	Human disturbances	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging parrot	Least Concern	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Operation	Human disturbances	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Operation	Human disturbances	High	Low	Low	Likely	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Operation	Human disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie robin	Least Concern	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Operation	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging parrot	Least Concern	Endangered	Operation	Injury or mortality	High	High	High	Possible	**Major**	High	High	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Operation	Injury or mortality	High	High	High	Possible	**Major**	High	High	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Operation	Injury or mortality	High	High	High	Possible	**Major**	High	High	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Operation	Injury or mortality	High	Low	Low	Possible	Minor	Low	Low	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Operation	Injury or mortality	High	High	High	Possible	Major	High	High	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Operation	Injury or mortality	High	Medium	Medium	Possible	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie robin	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging parrot	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Operation	Light disturbances	High	High	High	Likely	**Major**	High	High	Less likely	Minor
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Operation	Light disturbances	High	Medium	Medium	Likely	**Moderate**	Medium	Medium	Less likely	Minor
Terrestrial	*Accipiter trivirgatus*	Crested goshawk	Least Concern	Critically Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Low	Low	Certain	**Moderate**	Low	Low	Less likely	Minor
Terrestrial	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Copsychus saularis*	Oriental magpie robin	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Loriculus galgulus*	Blue-crowned hanging parrot	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically Endangered	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Rallina fasciata*	Red-legged crake	Least Concern	Vulnerable	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Strix seloputo*	Spotted wood owl	Least Concern	Critically Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor

Type	Species	Common name	Global status	National status	Phase	Impact type	Sensitivity (S)	Impact intensity (I)	Consequence (C = S × I)	Likelihood (L)	Impact significance (C × L)	Residual impact intensity	Residual consequence	Residual likelihood	Residual impact significance
Terrestrial	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
Terrestrial	*Vanellus indicus*	Red-wattled lapwing	Least Concern	Endangered	Operation	Loss of ecological connectivity for faunal movement	High	Medium	Medium	Certain	**Major**	Low	Low	Less likely	Minor
														Less likely	Minor

Appendix M
Baseline Surface Water Quality Report

Delivering a better world

TEST REPORT

Our Reference No.	:	**R211069**	Date Received	:	01/03/2021
Project Code / Ref.	:	Berlayer	Date Commenced	:	01/03/2021
			Date Reported	:	10/03/2021
Customer Ref. No.	:	60645518			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Ms Liang Liang			
Sample Description	:	9 Water Samples			
RESULTS:		Refer to Page 2			

Tan Thuan Piang
Technical Manager

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2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

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Branch (Site and Laboratory): 216 Tuas South Ave 2, West Point Bizhub Singapore 637213 : +65 6262 3736 (Lab) : +65 6262 3726 / 3776 (Site)
Website: www.mls.sg

R211069

RESULTS

Test Parameter	Unit	Test Method	Sampling Date: 01/03/2021					LOR
			Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	
			WQ1	WQ2	WQ3	WQ4	WQ6	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	0.61	0.43	0.36	0.60	0.58	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.019	0.010	0.010	0.028	0.013	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.056	<0.01	<0.01	<0.01	0.050	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.070	0.016	0.014	0.015	0.036	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.014	0.0064	0.0076	0.0079	0.0084	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	39.7	5.20	4.70	4.60	8.50	1
Total Organic Carbon,TOC	mg/L	APHA 5310B	1.26	1.00	<1	<1	1.47	1
Enterococcus	cfu/100mL	APHA 9230C	110	6	2	<1	47	1
Lead as Pb	µg/L	APHA 3125B	0.56	<0.5	<0.5	<0.5	<0.5	0.5

Test Parameter	Unit	Test Method	Sampling Date: 01/03/2021					LOR
			Sample 6	Sample 7	Sample 8	Sample 9		
			WQ6	WQ7	WQ8	WQ9		
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	0.40	1.63	1.95	0.53		0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.014	0.13	0.18	0.014		0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	<0.01	<0.01	<0.01	<0.01		0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.015	<0.005	<0.005	0.016		0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.0086	<0.005	0.014	0.0081		0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	2.30	46.0	44.0	4.60		1
Total Organic Carbon,TOC	mg/L	APHA 5310B	<1	9.75	7.10	<1		1
Enterococcus	cfu/100mL	APHA 9230C	3	7	29	1		1
Lead as Pb	µg/L	APHA 3125B	<0.5	0.54	<0.5	<0.5		0.5

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

TEST REPORT

Our Reference No.	:	**R212034**	Date Received	:	19/04/2021
Project Code / Ref.	:	Berlayer	Date Commenced	:	19/04/2021
			Date Reported	:	28/04/2021
Customer Ref. No.	:	60645518			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Ms Liang Liang			
Sample Description	:	10 Water Samples			
RESULTS:		Refer to Page 2			

Tan Thuan Piang
Technical Manager

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Website: www.mls.sg

R212034

RESULTS

Test Parameter	Unit	Test Method	Sampling Date: 13/04/2021					LOR
			Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	
			WQ1	WQ2	WQ3	WQ4	WQ5	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	0.98	1.05	1.01	0.21	1.79	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.11	0.11	0.071	0.021	0.11	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.10	0.25	0.21	0.037	0.18	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.75	0.65	0.51	0.040	1.44	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.051	0.085	0.056	0.012	0.058	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	7.38	17.2	16.8	30.6	8.40	1
Total Organic Carbon,TOC	mg/L	APHA 5310B	3.15	3.52	3.47	1.66	4.01	1
Enterococcus	cfu/100mL	APHA 9230C	3,600	2,400	1,300	100	800	1
Lead as Pb	µg/L	APHA 3125B	<0.5	<0.5	<0.5	<0.5	<0.5	0.5

Test Parameter	Unit	Test Method	Sampling Date: 13/04/2021					LOR
			Sample 6	Sample 7	Sample 8	Sample 9	Sample 10	
			WQ6	WQ7	WQ7A	WQ8	WQ9	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	0.89	1.87	1.72	1.66	0.67	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.085	0.18	0.21	0.16	0.017	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.13	0.34	0.39	0.48	0.047	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.61	0.40	0.42	0.64	0.039	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.052	0.014	0.014	0.043	0.0088	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	12.0	16.7	28.3	9.80	7.20	1
Total Organic Carbon,TOC	mg/L	APHA 5310B	2.70	7.23	4.71	4.33	1.67	1
Enterococcus	cfu/100mL	APHA 9230C	670	100	37	53	26	1
Lead as Pb	µg/L	APHA 3125B	<0.5	<0.5	<0.5	<0.5	<0.5	0.5

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

TEST REPORT

Our Reference No.	:	**R212830**	Date Received	: 31/05/2021
Project Code / Ref.	:	Berlayer	Date Commenced	: 31/05/2021
			Date Reported	: 08/06/2021
Customer Ref. No.	:	60645518		
Customer Name	:	AECOM Singapore Pte Ltd		
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555		
Attention To	:	Ms Liang Liang		
Sample Description	:	5 Water Samples		
RESULTS:		Refer to Page 2		

Tan Thuan Piang
Technical Manager

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Website: www.mls.sg

R212830

RESULTS

Test Parameter	Unit	Test Method	Sampling Date: 31/05/2021					LOR
			Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	
			WQ5	WQ6	WQ7	WQ7A	WQ8	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	1.59	0.75	1.33	1.32	1.56	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.098	0.047	0.025	0.019	0.031	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.12	0.017	<0.01	0.12	<0.01	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.85	0.36	0.24	0.10	0.064	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.059	0.032	<0.005	0.0050	0.0059	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	5.00	60.3	10.0	15.0	18.7	1
Total Organic Carbon,TOC	mg/L	APHA 5310B	4.62	2.75	4.34	4.65	5.08	1
Enterococcus	cfu/100mL	APHA 9230C	1,700	1,200	570	30	1,100	1
Lead as Pb	µg/L	APHA 3125B	<0.5	0.64	<0.5	<0.5	<0.5	0.5

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

TEST REPORT

Our Reference No.	:	**R212947**	Date Received	:	04/06/2021
Project Code / Ref.	:	Berlayer	Date Commenced	:	04/06/2021
			Date Reported	:	15/06/2021
Customer Ref. No.	:	60645518			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Ms Liang Liang			
Sample Description	:	4 Water Samples			
RESULTS:		Refer to Page 2			

Tan Thuan Piang
Technical Manager

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Website: www.mls.sg

R212947

RESULTS

Test Parameter	Unit	Test Method	Sampling Date: 04/06/2021				LOR
			Sample 1	Sample 2	Sample 3	Sample 4	
			WQ1	WQ2	WQ3	WQ4	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	1.41	1.27	0.99	0.95	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.032	0.033	0.028	0.031	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.069	0.097	0.081	0.11	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.70	0.56	0.39	0.30	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.024	0.023	0.021	0.027	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	45.0	91.5	68.4	48.4	1
Total Organic Carbon,TOC	mg/L	APHA 5310B	3.84	3.02	2.63	2.48	1
Enterococcus	cfu/100mL	APHA 9230C	25,000	24,000	26,000	19,000	1
Lead as Pb	µg/L	APHA 3125B	1.07	1.10	0.90	0.83	0.5

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

Appendix N
Soil Boring and Well Construction Details

Delivering a better world

MONITORING WELL LOG BC-BH1 / BC-MW1

PROJECT NUMBER	60645518	**DATE**	April 08, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 3.0 m
DRILLING METHOD	Hand Auger	**GRAVEL PACK**	0.3 - 3.0 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	2.100	**SURFACE ELEVATION**	2.696 m
STABILIZED WATER (m bgs)	2.194	**TOC ELEVATION**	2.737 m
LOGGED BY	RT / VG	**NORTHING**	27779.342
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	25578.591

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				TOPSOIL	Grass underlain by Topsoil	
BC-BH1 (0.5 m)	0.48	✳	0.5	CL-CH	Silty CLAY, dark brown, moist, firm, medium plasticity, no hydrocarbon odour, no staining	0.50
	0.60			CL-CH	Silty CLAY, yellow brown, moist, firm, low plasticity, no hydrocarbon odour, no staining	0.70
	0.29		1.0	CL-CH	Silty CLAY, yellowish brown with grey streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	1.00
	2.30			CL-CH	Silty CLAY, yellowish brown with grey streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	1.20
BC-BH1 (1.5 m)	3.73	✳	1.5	CL-CH	Silty CLAY, yellowish brown with grey streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	1.50
	1.47		2.0	CL-CH	Silty CLAY, yellowish brown with grey streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	2.00
	3.22		▽	CL-CH		2.10
					Silty CLAY, yellowish brown with grey streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	
	0.99		2.5			
			3.0		Total Depth: 3.00 m	3.00

WELL DIAGRAM: Bentonite; Filter Pack; Screen; Bottom Cap

URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH2 / BC-MW2

PROJECT NUMBER	60645518	**DATE**	April 08, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 3.5 m
DRILLING METHOD	Hand Auger	**GRAVEL PACK**	0.3 - 3.5 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	2.500	**SURFACE ELEVATION**	7.229 m
STABILIZED WATER (m bgs)	1.965	**TOC ELEVATION**	7.629 m
LOGGED BY	RT / VG	**NORTHING**	27730.427
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	25297.279

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				TOPSOIL	Grass underlain by Topsoil	
BC-BH2 (0.3 m)	0.0	✳		CL-ML	Silty CLAY, blackish brown, moist, firm, low plasticity, no hydrocarbon odour, no staining	0.30
	1.36		0.5	CL-ML	Silty CLAY, blackish brown, moist, firm, low plasticity, no hydrocarbon odour, no staining	0.50
	1.32		1.0	CL-ML	Silty CLAY, blackish brown, moist, firm, low plasticity, no hydrocarbon odour, no staining	1.00
BC-BH2 (1.3 m)	3.58	✳		CL-ML	Silty CLAY, blackish brown, moist, soft, low plasticity, no hydrocarbon odour, no staining	1.30
	3.11		1.5	CL-ML	Silty CLAY, greyish brown, moist, soft, low plasticity, no hydrocarbon odour, no staining	1.50
	2.72		2.0	CL-CH	Silty CLAY, grey with red brown streaks, moist, firm, low plasticity, no hydrocarbon odour, no staining	2.00
	1.21		2.5	CH	CLAY, grey, wet, very soft, high plasticity, no hydrocarbon odour, no staining	2.50
	4.04		3.0	CH	CLAY, grey, wet, very soft, high plasticity, no hydrocarbon odour, no staining	3.00
	1.01		3.5		Total Depth: 3.50 m	3.50

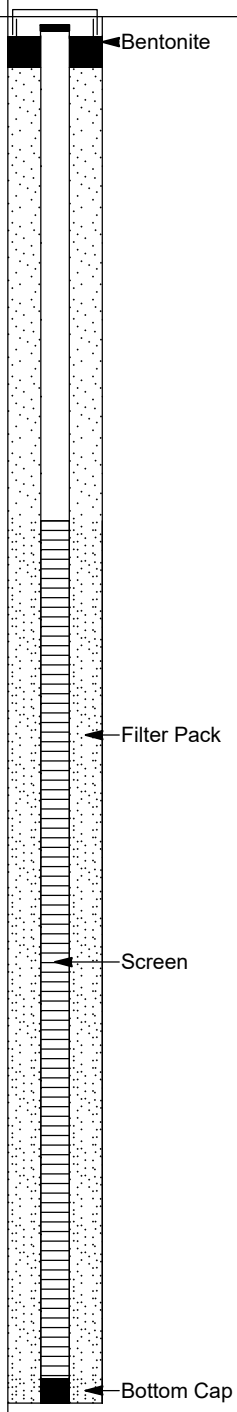
WELL DIAGRAM: Bentonite; Filter Pack; Screen; Bottom Cap

URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH3 / BC-MW3

PROJECT NUMBER	60645518	**DATE**	April 19, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	2.0 - 5.5 m
DRILLING METHOD	Hand Auger	**GRAVEL PACK**	0.2 - 5.5 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	3.200	**SURFACE ELEVATION**	6.357 m
STABILIZED WATER (m bgs)	1.516	**TOC ELEVATION**	6.365 m
LOGGED BY	JPB	**NORTHING**	28242.57
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	24656.307

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
			0.5	SW	SAND, light orangish brown, moist, loose, no hydrocarbon odour, no staining	0.50
BC-BH3 (0.5 m)	0.0	✳		CLS	Sandy CLAY, light orangish brown, moist, soft, low plasticity, no hydrocarbon odour, no staining	
	0		1.0	CL-CH	Silty CLAY, light orangish brown, moist, firm, medium plasticity, no hydrcarbon odour, no staining	1.00
	0		1.5	CL-CH	Silty CLAY, light orange, moist, stiff, medium plasticity, no hydrocarbon odour, no staining	1.50
	0		2.0	CL-CH	Silty CLAY, light orange, moist, stiff, medium plasticity, no hydrocarbon odour, no staining	2.00
	0		2.5	CL-CH	Silty CLAY, light orange, moist, stiff, medium plasticity, no hydrocarbon odour, no staining	2.50
	0		3.0	CL-CH	Silty CLAY, Light whitish grey, moist, stiff, medium plasticity, no hydrocarbon odour, no staining	3.00
BC-BH3 (3.2 m)	0	✳		CL-CH	Silty CLAY, light whitish grey, wet, stiff, medium plasticity, no hydrocarbon odour, no staining	3.20
	0		4.0	CL-CH	Silty CLAY, light whitish grey, wet, firm, medium plasticity, no hydrocarbon odour, no staining	4.00
	0		4.5	CL-CH	Silty CLAY, light whitish grey, wet, firm, medium plasticity, no hydrocarbon odour, no staining	4.50
	0		5.0	CL-CH	Silty CLAY, light whitish grey, wet, firm, medium plasticity, no hydrocarbon odour, no staining	5.00
	0		5.5		Total Depth: 5.50 m	5.50



URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH4 / BC-MW4

PROJECT NUMBER	60645518	**DATE**	April 26, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 4.0 m
DRILLING METHOD	Hand Auger, Rotary Drill	**GRAVEL PACK**	0.2 - 4.0 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	0.700	**SURFACE ELEVATION**	2.583 m
STABILIZED WATER (m bgs)	1.679	**TOC ELEVATION**	3.221 m
LOGGED BY	SAG	**NORTHING**	27979.673
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	24652.026

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				TOPSOIL	Grass underlain by Topsoil	
BC-BH4 (0.3 m)		✳				
BC-BH4 (0.5 m)	4.7	✳	0.5	CL-CH	Silty CLAY, light orangish brown, dry, firm, medium plasticity, no hydrocarbon odour, no staining	0.50
BC-BH4 (1.0 m)	3.8	✳	1.0	CL-ML	Silty CLAY, light brown, wet, soft, low plasticity, no hydrocarbon odour, no staining	1.00
	1.9		1.5	CL-CH	Silty CLAY, light brown, wet, firm, medium plasticity, no hydrocarbon odour, no staining	1.50
	1.3		2.0	CL-CH	Silty CLAY, light brown, wet, firm, medium plasticity, no hydrocarbon odour, no staining	2.00
	3.5		2.5	CL-CH	Silty CLAY, light brown, wet, firm, medium plasticity, no hydrocarbon odour, no staining	2.50
	3.7		3.0	CL-ML	Silty CLAY, brownish black, wet, soft, low plasticity, no hydrocarbon odour, no staining	3.00
	3.6		3.5	CL-ML	Silty CLAY, brownish black, wet, soft, low plasticity, no hydrocarbon odour, no staining	3.50
	6.23		4.0		Total Depth: 4.00 m	4.00

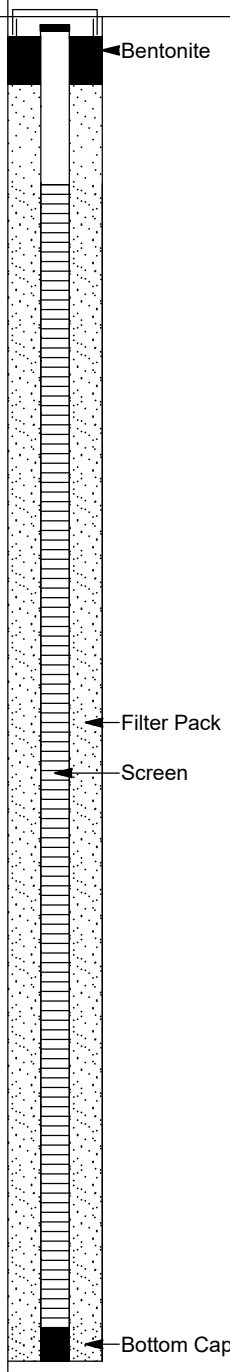
WELL DIAGRAM: Bentonite; Filter Pack; Screen; Bottom Cap

URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH5 / BC-MW5

PROJECT NUMBER	60645518	**DATE**	April 12, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 4.0 m
DRILLING METHOD	Hand Auger	**GRAVEL PACK**	0.3 - 4.0 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	1.800	**SURFACE ELEVATION**	3.745 m
STABILIZED WATER (m bgs)	2.017	**TOC ELEVATION**	3.771 m
LOGGED BY	MS	**NORTHING**	27829.429
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	24883.304

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				TOPSOIL	Turf	
	0.36			SW	SAND, dark brown, moist, well-graded, inclusion of stones/rocks (approximately 1-2 cm deep), no hydrocarbon odour, no staining	0.30
BC-BH5 (0.4 m)	0.78	✳		CL-ML		0.40
			0.5		Silty CLAY, reddish brown, moist, hard, low plasticity, inclusion of small rocks (1-2 cm), no hydrocarbon odour, no staining	
			1.0			
BC-BH5 (1.5 m)	2.72	✳	1.5	CL-CH	CLAY, black, moist, hard, medium plasticity, no hydrocarbon staining, no odour	1.50
	1.60			CL-CH	CLAY, black, wet, hard, medium plasticity, no hydrocarbon staining, no odour	1.80
			2.0			
	3.52		2.5	CL-CH	CLAY, black, wet, soft, high plasticity, no hydrocarbon staining, no odour	2.50
	1.71		3.0	CL-CH	CLAY, dark brown, wet, soft, high plasticity, no hydrocarbon staining, no odour	3.00
	2.14		3.5	CL-CH	CLAY, dark brown, wet, soft, high plasticity, no hydrocarbon staining, no odour	3.50
	1.11		4.0		Total Depth: 4.00 m	4.00



URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH6 / BC-MW6

PROJECT NUMBER	60645518	**DATE**	April 26, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 4.5 m
DRILLING METHOD	Hand Auger, Rotary Drill	**GRAVEL PACK**	0.2 - 4.5 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	1.500	**SURFACE ELEVATION**	2.916 m
STABILIZED WATER (m bgs)	0.080	**TOC ELEVATION**	3.404 m
LOGGED BY	SAG	**NORTHING**	27615.172
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	24995.439

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
			0.0	TOPSOIL	Grass underlain by Topsoil	
BC-BH6 (0.3 m)		✳				
BC-BH6 (0.5 m)	1.4	✳	0.5	CL-ML	Silty CLAY, orangish brown, moist, soft, low plasticity, no hydrocarbon staining, no odour	0.50
	2.2		1.0	CL-CH	Silty CLAY, blackish brown, moist, stiff, medium plasticity, no hydrocarbon odour, no staining	1.00
BC-BH6 (1.5 m)	3.6	✳	1.5 ▽	CL-CH	Silty CLAY, blackish brown, moist, stiff, medium plasticity, no hydrocarbon odour, no staining, with traces organic matter (e.g. roots, peat) up to 5%	1.50
	6.1			CL-CH	Silty CLAY, purpleish brown, wet, stiff, medium plasticity, no hydrocarbon odour, no staining, with traces organic matter (e.g. roots, peat) up to 5%	1.80
			2.0			
	14.3		2.5	CL-CH	Silty CLAY, purpleish brown, wet, stiff, medium plasticity, slight hydrocarbon odour, no staining, with traces organic matter (e.g. roots, peat) up to 5%	2.50
	5.3		3.0	CL-CH	Silty CLAY, purpleish brown, wet, stiff, medium plasticity, slight hydrocarbon odour, no staining, with traces organic matter (e.g. roots, peat) up to 5%	3.00
				FILL	Layer of small sawdust alike wood pieces	3.20
	3.5		3.5	CL-CH	Silty CLAY, brownish grey, wet, soft, medium plasticity, no hydrocarbon odour, no staining	3.50
	2.4		4.0	CL-CH	Silty CLAY, brownish grey, wet, soft, medium plasticity, no hydrocarbon odour, no staining	4.00
	0.5		4.5		Total Depth: 4.50 m	4.50

WELL DIAGRAM: Bentonite; Filter Pack; Screen; Bottom Cap

URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

MONITORING WELL LOG BC-BH7 / BC-MW7

PROJECT NUMBER	60645518	**DATE**	April 12, 2021
PROJECT NAME	URA EIS Berlayer Creek	**BLANK**	
LOCATION	Keppel Club, PSA Club, Former BP Oil Refinery	**SCREEN**	0.5 - 2.5 m
DRILLING METHOD	Hand Auger	**GRAVEL PACK**	0.3 - 2.5 m
SAMPLING METHOD	Grab	**SANITARY SEAL/BENTONITE**	0.0 - 0.2 m
WATER FIRST NOTICED (m bgs)	1.200	**SURFACE ELEVATION**	4.508 m
STABILIZED WATER (m bgs)	1.688	**TOC ELEVATION**	4.543 m
LOGGED BY	MS	**NORTHING**	28048.407
COMMENTS	Borehole Converted into Monitoring Well	**EASTING**	25364.668

SAMPLE ID	PID (ppm)	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				TOPSOIL	Turf	
				CL-CH	Silty CLAY, yellowish brown, moist to wet, soft, high plasticity, no hydrocarbon odour, no staining	0.20
BC-BH7 (0.5 m)	0.82	✳	0.5	CL-CH	Silty CLAY, yellowish brown, moist to wet, soft, high plasticity, no hydrocarbon odour, no staining	0.50
				CL-CH	Silty CLAY, brown, moist to wet, soft, high plasticity, no hydrocarbon odour, no staining	0.80
BC-BH7 (1.0 m)	6.23	✳	1.0	CL-CH	Silty CLAY, brown, moist to wet, soft, high plasticity, no hydrocarbon odour, no staining	1.00
				CL-CH	Silty CLAY, brown, wet, soft, high plasticity, no hydrocarbon odour, no staining	1.20
	1.42		1.5	CL-CH	Silty CLAY, brown, wet, soft, high plasticity, no hydrocarbon odour, no staining, inclusion of small rocks (1 cm)	1.50
	2.77		2.5	CL-CH	Silty CLAY, brown, wet, soft, high plasticity, no hydrocarbon odour, no staining	2.50
	1.86		3.0	CL-CH	Silty CLAY, brown, wet, soft, high plasticity, no hydrocarbon odour, no staining	3.00
	0.33		3.5		Total Depth: 3.50 m	3.50

WELL DIAGRAM: Bentonite; Filter Pack; Screen; Bottom Cap

URA BERLAYER EIS_BORING LOGS.GPJ 12/10/21

Appendix O
Soil Boring and Well Construction Details from Previous Study

Delivering a better world

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Singapore 068913
Tel. +65 6324 9636
Fax. +65 6226 1636

SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 31
Logged by: DL
Reviewed by: JK
Approved by: DD
Page: 1/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**SM -- Silty sand with gravel:** dark reddish brown (2.5YR 4/4), (20,60,20), fine to coarse sand, medium to coarse gravel and cobbles, dry, loose. *Fill materials observed.				Grout
0.5			SB31-0.5	0.60	Yes	
0.8						Bentonite
1.0		**SP-SM -- Poorly graded sand with silt & gravel**: reddish brown (2.5YR 4/3), (10,80,10),fine to coarse sand, fine to medium gravel, moist, loose		0.40	No	
1.5						
1.6		**SM -- Silty sand with gravel:** brown, (7.SYR 4/2), (15, 65, 20), fine to coarse sand, medium to coarse gravel, moist to wet, loose	SB31-1.5	0.15	Yes	
2.0		**SM -- Silty sand with gravel**: brown, (7.SYR 4/2), (15, 65, 20), fine to coarse sand, medium to coarse gravel, wet, loose		0.00	No	
2.5				0.05	No	
3.0				0.00	No	
3.5				0.00	No	Sand
4.0		**OL -- Sandy organic soil**, brown (7.5YR 2.5/2), (10, 80, 10), fine sand,wet, loose, odour and decomposed wood observed. Presence of odour.		0.00	No	
4.5				0.00	No	
5.0				0.15	No	
5.2		**CL -- Lean Clay**, grayish green, (5GY 5/2), (0, 0, 100), low plasticity, low dry strength, low toughness, wet, soft, odour and decomposed material observed.		0.20	No	
5.5						
6.0		**CL -- Lean Clay**, grayish green, (5GY 5/2), (0, 0, 100), medium plasticity, low dry strength, low toughness, wet, firm.		0.20	No	
6.3						
7.0						
8.0						
8.7						
9.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	1.6 m bgl	Drill Date:	3-6 Dec 2016
End of Borehole:	8.7 m bgl	Static Water Level:	1.417 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
GM: Silty Gravel
GC: Clayey Gravel
SW: Well-graded Sand
SP: Poorly-graded Sand

SM: Silty Sand
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CL: Clay with low plasticity
OL: Organic Silt/Organic Clay of low plasticity
MH: Silt with high plasticity

CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
PT: Peat
FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 32
Logged by: LO
Reviewed by: JK
Approved by: DD
Page: 2/10

Depth (m)	Symbol	SUBSURFACE PROFILE	SAMPLE: Sample ID	SAMPLE: PID (ppm)	SAMPLE: Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CL -- Lean clay with sand**, dark brown (10YR 2/2), (0, 15, 85), low to medium plasticity, medium dry strength, no dilatancy, medium toughness, fine sand, trace of fine gravel, dry, soft to firm.*Slight hydrocarbon smell present.	SB32-0.5	0.00	Yes	Grout
0.5						
0.7						Bentonite
0.8		**GP -- Poorly graded gravel** with sand, grey (10YR 6/1), (90, 10, 0), angular range graveil with medium grain of sand, dry		40.00	No	
1.0		**CL --Lean clay**, reddish brown (2.5YR 4/3), (0, 0, 100), medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained, sand dry, firm.	SB32-1.5	80.00	Yes	
1.5						
1.6		**CL --Sandy lean clay,** reddish brown (2.5YR 4/3), (0, 40, 60), medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand, dry, firm.				
1.8						
2.0		**CL --Lean clay,** reddish brown (2.5YR 4/3), (0, 0, 100), medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand dry, firm.		225.00	No	
2.5				0.80	No	
2.7						
2.8		**CL --Lean clay**, reddish brown (2.5YR 4/3), (0, 30, 70), medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand, moist, firm.		0.00	No	
3.0						
3.1		**CL --Lean clay with sand**, reddish brown (2.5YR 4/3), (0, 15, 85), medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand, wet, soft to firm.		0.05	No	Sand
3.5						
4.0				0.30	No	
4.5				0.00	No	
4.8						
5.0		**OL-OH -- Organic soil**, black, (5Y 2.5/1), (0, 10, 90), medium to high plasticity, medium to high dry strength, no dilatancy, medium to high toughness, fine grained sand, trace of fine gravel, slightly moist, firm to hard. *Organic odour.		0.00	No	
5.2						
5.5				3.05	No	
6.0				0.00	No	
6.3						
6.5				0.50	No	
7.0				0.20	No	
7.3		**CL --Sandy lean clay**, light greenish grey (10Y 5/2), (0, 30, 70), low to medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand, moist, soft.				
7.5		**CL --Sandy lean clay**, olive yellow (2.5Y 6/6), (0, 30, 70), low to medium plasticity, medium dry strength, low dilatancy, low toughness,fine grained sand, moist, soft.		0.00	No	
8.0				0.00	No	
8.5				0.00	No	
8.7						
9.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	3.1 m bgl	Drill Date:	3-10 Dec 2016
End of Borehole:	8.7 m bgl	Static Water Level:	1.518 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
GM: Silty Gravel
GC: Clayey Gravel
SW: Well-graded Sand
SP: Poorly-graded Sand

SM: Silty Sand
SC: Clayey Sand
ML: Silts with low plasticity
CL: Clay with low plasticity
OL: Organic Silt/Organic Clay of low plasticity
MH: Silt with high plasticity

CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
PT: Peat

FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 33
Logged by: DL & LO
Reviewed by: JK
Approved by: DD
Page: 3/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**ML -- Silt with sand,** yellow(10YR 7/6), (0,85,15), low plasticity, medium dry strength, low dilatancy, low toughness fine to medium sand, dry to slightly moist, firm.				Grout
0.5		**ML --Gravely silt with sand,** red(2.5YR 4/6), (30,20,50), low plasticity, medium dry strength, low dilatancy, low toughness fine to coarse gravel, fine to coarse sand, dry to moist, firm. *Fill materials(bricks and cobbles) observed.	SB33-0.5	0.00	Yes	Bentonite
1.0		**ML -- Silt with sand:** red (2.5YR 4/6), (10,20,70), low plasticity, medium dry strength, low dilatancy, low toughness, fine to coarse sand, dry to moist, firm.		0.00	No	
1.5		**ML -- Silt with sand: weak red**(7.5R 5/3), (10,15,75), low plasticity, low dry strength, low dilatancy, low toughness, fine to medium sand, dry to moist, firm.	SB33-1.5	0.00	Yes	
2.0				0.00	No	
2.5				0.00	No	
2.7		**CL -- Lean clay with gravel**, reddish brown (2.5YR 4/3), (20, 0, 80), low to medium plasticity, low to medium dry strength, no dilatancy, low to medium toughness, fine gravel, wet, firm.				Sand
3.0				0.00	No	
3.5				0.00	No	
3.9						
4.0						
4.5						
5.0						
6.0						
7.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	2.7 m bgl	Drill Date:	3-10 Dec 2016
End of Borehole:	6 m bgl	Static Water Level:	1.093 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube,

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
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OH: Organic Clay/Organic Silt of
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FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 34
Logged by: LO & AK
Reviewed by: JK
Approved by: DD
Page: 4/10

Depth (m)	Symbol	SUBSURFACE PROFILE	SAMPLE Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CL -- Lean clay with sand,** brown with traces of yellow, (7.5YR 4/3), (5, 15, 80), low to medium plasticity, medium dry strength, no dilatancy, low to medium toughness, traces of fine gravel, fine to medium sand, dry, firm.	SB34-0.5	0.00	Yes	Grout
0.5						
0.8						Bentonite
1.0				0.00	No	
1.5				0.60	No	
1.8		**CL -- Lean clay with sand,** brown with traces of yellow, (17.5Y/R4/3), (5, 15, 80), low to medium plasticity, medium dry strength, no dilatancy, low to medium toughness, traces of fine gravel, fine to medium sand, slightly wet, soft.	SB34-1.8	0.00	Yes	
2.0				0.05	No	
		CL -- Lean clay with sand, brown with traces of yellow, (17.5YR 4/3), (5, 15, 80), low to medium plasticity, medium dry strength, no dilatancy, low to medium toughness, traces of fine gravel, fine to medium sand, wet, soft.				
2.5				0.00	No	
3.0				0.00	No	
3.3						Sand
3.5		**CL -- Lean clay with gravel**, greenish black (GLEY 1 2.5/10Y), (20, 0, 80), medium to high plasticity, medium dry strength, no dilatancy, low toughness, fine gravel, ,moist, firm.		0.05	No	
4.0				0.00	No	
4.1		**Decomposed Wood**				
4.5				0.00	No	
4.6		**CL -- Lean Clay**, reddish brown (2.5YR 4/3), (0, 0, 100), low plasticity, medium to high dry strength, low dilatancy, low toughness, dry, hard.				
5.0				0.00	No	
5.2						
5.5				0.25	No	
6.0				0.20	No	
6.3						
7.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	2 m bgl	Drill Date:	3-9 Dec 2016
End of Borehole:	6.3 m bgl	Static Water Level:	1.602 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
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CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
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STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 35
Logged by: LO & AK
Reviewed by: JK
Approved by: DD
Page: 5/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CH -- Fat clay,** yellowish brown (10YR 5/6), (0, 0, 100), medium to high plasticity, high dry strength, no dilatancy, medium to high toughness, traces of fine gravel, dry, firm to hard.				Grout
0.5			SB35-0.5	0.00	Yes	Bentonite
0.8						
1.0				0.00	No	
1.2		**CL -- Lean clay with sand,**reddish brown (5YR 5/3), (0, 15, 75), medium plasticity, medium dry strength, no dilatancy, medium toughness, traces of fine gravel, dry, firm.				
1.5			SB35-1.5	0.00	Yes	
1.8						
2.0		**CL -- Lean clay with sand,** reddish brown, (5YR 5/3), (10, 20, 70), medium plasticity, medium dry strength, low dilatancy,medium toughness, fine to coarse gravel, wet, firm.		0.00	No	
2.5		**CL -- Lean clay with sand,** greenish black (GLEY 1 2.5/10Y), (10, 0, 90), medium to high plasticity, medium dry strength, low dilatancy, medium toughness, fine gravel, moist, firm.		0.00	No	
3.0				0.00	No	Sand
3.5				0.00	No	
4.0				0.00	No	
4.5				0.00	No	
4.6						
4.8						
5.0				0.00	No	
5.1		**OL-OH -- Organic soil with gravel,** black (5YR 2.5/1), (30, 0, 70), low plasticity, low dry strength, low dilatancy, low toughness, coarse gravel, moist, firm. *Rotten egg odour				
5.5				0.00	No	
6.0				0.25	No	
6.3						
6.5		**CL -- Lean clay,** very dark gray, (5Y 3/1), (0, 0, 100), medium plasticity, medium dry strength, low dilatancy, medium toughness, fine gravel, moist, firm.		0.20	No	
7.0		**CL -- Lean clay with sand,**olive yellow, (5Y 6/6), (0, 25, 75), medium plasticity, medium dry strength, low dilatancy, medium toughness, fine sand, moist, firm.		0.30	No	
7.5				0.0	No	
7.8						
8.0		**CL -- Lean clay,**orange, (10YR 8/8), (0, 0, 100), low plasticity, low dry strength, low dilatancy, low toughness, dry, firm.				
8.7						
9.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	1.8 m bgl	Drill Date:	3-7 Dec 2016
End of Borehole:	8.7 m bgl	Static Water Level:	0.892 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

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CL: Clay with low plasticity
OL: Organic Silt/Organic Clay of low plasticity
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CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
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FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 36
Logged by: LO & AK
Reviewed by: JK
Approved by: DD
Page: 6/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CL -- Lean clay with gravel,** reddish yellow(7.5YR 7/8), (25, 0, 75), low to medium plasticity, low dry strength, low dilatancy,low toughness, fine gravel, moist, soft.	SB36-0.3	0.00	Yes	Grout
0.3				0.00	No	
0.5						Bentonite
0.8				0.00	No	
1.0						
1.2				0.00	No	
1.5		**CL -- Lean clay with gravel,** reddish yellow(7.5YR 7/8), (25, 0, 75), low to medium plasticity, low dry strength, low dilatancy,low toughness, fine gravel, wet, firm.	SB36-1.8	0.00	Yes	
1.8				0.00	No	
2.0		**Concrete Backfill**				
2.5				0.00	No	
2.7		**CL -- Lean clay with gravel,** reddish yellow(7.5YR 7/8), (25, 0, 75), low to medium plasticity, low dry strength, low dilatancy,low toughness, fine gravel, moist, soft.		0.00	No	Sand
3.0						
3.4						
3.5		**CL -- Lean clay with gravel,** light grey(GLEY 1 7/N), (25, 0, 75), medium plasticity, medium dry strength, low dilatancy,low to medium toughness, fine gravel, moist, firm.		0.00	No	
4.0				0.05	No	
4.1		**OL-OH -- Organic soil with sand,** black, (7.5YR 2.5/1), (0, 25, 75), medium plasticity, medium dry strength, low dilatancy, medium toughness, fine grained sand, wet, soft to firm.				
4.5				0.05	No	
5.0				1.00	No	
5.5				2.00	No	
5.6		**OL-OH -- Organic soil,** brownish black(5YR 2.5/1), (0, 0, 100), medium plasticity, medium dry strength, low dilatancy, low to medium toughness, moist, firm.				
6.0				1.50	No	
6.5				0.0	No	
7.0		**CL -- Lean clay,**light grey (GLEY 1 7/N), (0, 0, 100), medium plasticity, medium dry strength, low dilatancy, medium toughness, moist, firm.				
7.5						
7.6		**CL -- Lean clay with sand,**light grey(7.5YR 7/1), (0, 25, 75), medium plasticity, low to medium dry strength, low dilatancy, medium toughness, fine grained sand, moist, firm.				
8.0						
8.5						
8.7		**CL -- Lean clay** with gravel,orange(10YR 8/8), (20, 0, 85), low to medium plasticity,medium to high dry strength, low dilatancy, medium to high toughness, fine gravel, dry, hard.				
9.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	1.5 m bgl	Drill Date:	3-12 Dec 2016
End of Borehole:	8.7 m bgl	Static Water Level:	0.889 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

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MH: Silt with high plasticity

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OH: Organic Clay/Organic Silt of
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FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 37
Logged by: DL & AK
Reviewed by: JK
Approved by: DD
Page: 7/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CL -- Lean clay with gravel,** yellow(5Y 7/6), (10, 5, 85), medium plasticity, medium strength, no dilatancy, medium toughness, medium to coarse gravel, moist, firm.	SB37-0.5	0.15	Yes	Grout
0.5						
0.7		**CL -- Lean clay,** red(2.5YR 4/8), (0, 5, 95), low to medium plasticity, medium dry strength, no dilatancy, medium toughness, fine sand, moist, firm.				Bentonite
1.0				0.00	No	
1.5				0.00	No	
1.8						
2.0		**SP -- Poorly graded sand,** grey(5YR 6/1), (0, 100, 0), fine sand, dry, loose.	SB37-2.0	0.00	Yes	
		CL -- Lean clay, red(2.5YR 4/8), (0, 5, 95), low to medium plasticity, medium dry strength, no dilatancy, medium toughness, fine sand, moist, firm.				
2.5				0.00	No	
2.7						
3.0				0.00	No	Sand
3.4						
3.5		**CL -- Gravelly lean clay,** dark grey(5YR 4/1), (40, 0, 60), low plasticity, low dry strength, low dilatancy, low toughness, medium to coarse gravel, dry, firm.		0.00	No	
3.9						
4.0		**CL -- Lean clay with gravel, light reddish brown**(5YR 6/4), (30, 10, 60), low plasticity, low dry strength, low dilatancy, medium toughness, medium to coarse gravel, moist, firm.		0.00	No	
4.5				0.00	No	
5.0				0.10	No	
5.5				0.00	No	
5.6						
6.0				0.00	No	
6.5						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	2 m bgl	Drill Date:	3-7 Dec 2016
End of Borehole:	6 m bgl	Static Water Level:	1.874 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
GM: Silty Gravel
GC: Clayey Gravel
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CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
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STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 38
Logged by: LO & AK
Reviewed by: JK
Approved by: DD
Page: 8/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**CL -- Lean clay with sand,** light brown(7.5YR 6/4), (0, 15, 85), low to medium plasticity, medium strength, no dilatancy, medium toughness, fine grained sand, dry, firm.				Grout
0.5			SB38-0.5	0.45	Yes	Bentonite
0.7						
1.0		**CL -- Lean clay with sand,** reddish brown(5YR 4/4), (0, 20, 80), low to medium plasticity, low to medium strength, no dilatancy, low to medium toughness, fine grained sand, traces of gravel, dry, firm.		0.40	No	
1.5			SB38-1.5	0.10	Yes	
1.7		**CL -- Lean clay with sand,** brown(7.5YR 5/3), (0, 15, 85), medium plasticity, medium strength, no dilatancy, medium toughness, fine grained sand, soft, firm.		0.20	No	
2.0		**CL -- Gravelly lean clay with sand,** reddish brown(5YR 4/4), (30, 0, 70), low plasticity,low to medium dry strength, low dilatancy, low toughness, fine to coarse gravel, wet, firm.		0.50	No	
2.5				0.30	No	
2.7						
3.0		**CL -- Gravelly lean clay with sand,** reddish brown(5YR 4/4), (30, 0, 70), low plasticity,low to medium dry strength, low dilatancy, low toughness, fine to coarse gravel, wet, firm.		0.45	No	Sand
3.4						
3.5				0.70	No	
3.9						
4.0				0.50	No	
4.5		**CL -- Lean clay,** dark greenish black(GLEY 1 2.5/N), (0, 0, 100), medium plasticity, low dry strength, low dilatancy, low toughness, moist, soft.		0.80	No	
5.0						
5.1		**CH -- Fat clay,** grey (5Y 5/1), (0, 0, 100), high plasticity, low dry strength, no dilatancy, low toughness,moist, soft to firm.		0.20	No	
5.5						
5.6				0.00	No	
6.0				0.00	No	
8.0						
9.0		**CH -- Fat clay with sand,** grey (5Y 5/1), (0, 15, 85), high plasticity, low dry strength, no dilatancy, low toughness,moist, soft to firm.				
10.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	1.7 m bgl	Drill Date:	3-7 Dec 2016
End of Borehole:	10 m bgl	Static Water Level:	1.672 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
GM: Silty Gravel
GC: Clayey Gravel
SW: Well-graded Sand
SP: Poorly-graded Sand

SM: Silty Sand
SC: Clayey Sand
ML: Silts with low plasticity
CL: Clay with low plasticity
OL: Organic Silt/Organic Clay of low plasticity
MH: Silt with high plasticity

CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
PT: Peat

FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

ERM (S) Pte Ltd
120 Robinson Road
#10-01
Singapore 068913
Tel. +65 6324 9636
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SOIL BORING LOG

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Soil bore No. SB 39
Logged by: DL & AK
Reviewed by: JK
Approved by: DD
Page: 9/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**Asphalt**				
0.4		**SP -- Poorly graded sand with gravel**, pale brown(2.5Y 7/3), (30, 70, 0), fine to coarse sand, fine to medium gravel, dry, medium density.				Grout
0.5		**Asphalts plus cobbles.**				
0.7		**CL -- Gravelly lean clay with sand,** reddish brown(5YR 4/4), (0, 5, 95),medium plasticity, low dry strength, no dilatancy, low toughness, fine to medium gravels, fine to coarse sand, dry, firm.	SB39-0.7	0.00	Yes	Bentonite
1.0				0.00	No	
1.5				0.00	No	
1.7						
1.8		**CL -- Gravelly lean clay with sand,** reddish brown(5YR 4/4), (0, 5, 95),medium plasticity, low dry strength, no dilatancy, low toughness, fine to medium gravels, fine to coarse sand, wet, firm.				
2.0			SB39-2.0	0.15	Yes	
2.5				0.80	No	
2.7						
3.0				1.40	No	Sand
3.2		**ML -- Silt,** light grey(5YR 7/1), (0, 0, 100), low to medium plasticity, medium to high dry strength, low dilatancy, medium toughness, dry, firm to hard.				
3.4						
3.5		**CL -- Gravelly lean clay with sand,** reddish brown(5YR 4/4), (0, 5, 95),medium plasticity, low dry strength, no dilatancy, low toughness, fine to medium gravels, fine to coarse sand, moist, firm.		0.10	No	
3.9						
4.0		**CL -- Lean clay,**greenish black(GLEY 1 2.5/10Y), (10, 0, 90), medium plasticity, medium dry strength, low dilatancy, medium toughness, fine gravel, moist, firm.		0.00	No	
4.5				0.10	No	
4.7		**OL-OH -- Organic soil,** black(5Y 2.5/1), (10, 0, 90), medium plasticity, medium dry strength, low dilatancy, medium toughness, fine gravel, moist, firm. *Rotten egg smell.				
5.0				0.45	No	
5.3						
5.5		**CL -- Lean clay,**greenish black(GLEY 1 2.5/10Y), (0, 0, 100), medium to high plasticity, medium to high dry strength, low dilatancy, medium toughness, moist, firm.		0.00	No	
5.6						
6.0		**CH -- Fat clay,**dark grey(5Y 4/1), (0, 0, 100), high plasticity, high dry strength, low dilatancy, medium toughness, moist, firm.		0.00	No	
6.5				0.00	No	
7.0						
7.5						
8.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	1.7 m bgl	Drill Date:	3-8 Dec 2016
End of Borehole:	7.5 m bgl	Static Water Level:	2.41 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

GW: Well-graded Gravel
GP: Poorly-graded Gravel
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ML: Silts with low plasticity
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OH: Organic Clay/Organic Silt of
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FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

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SOIL BORING LOG

Soil bore No. SB 40

Project No: 0311748
Project: SLA Former BP Site Assessment
Client: SLA

Logged by: DL
Reviewed by: JK
Approved by: DD
Page: 10/10

Depth (m)	Symbol	SUBSURFACE PROFILE	Sample ID	PID (ppm)	Lab Analysis	Monitoring Well Completion Details
		GROUND SURFACE				Ground
0.0		**Asphalt**				
0.4		**SP -- Poorly graded sand with gravel**, cream/pale green(2.5Y 7/3), (30, 70, 0), fine to coarse sand, fine to medium gravel, dry, medium density.				Grout
0.5		**Asphalts plus cobbles.**				
0.6						
0.7		**CL -- Gravelly lean clay with sand,** brown(7.5YR 5/3), (30, 20, 50), low plasticity, low dry strength, no dilatancy, low toughness, fine to coarse gravels, fine to coarse cobbles, fine to medium sand, wet, firm.	SB40_0.7	NA (PID faulty)	Yes	Bentonite
1.0						
1.5						
2.0			SB1_2.2 - 2.6			Sand
2.5						
3.0			SB40_0.7	NA (PID faulty)	Yes	
3.2						
3.5						
4.0						

Hole Size:	50 mm	Screen Interval:	NA	Drilled By:	Numac Drilling Services Pte Ltd
Casing Size:	50 mm	Initial Water Level:	0.6 m bgl	Drill Date:	3-8 Dec 2016
End of Borehole:	3.2 m bgl	Static Water Level:	1.755 m bgl	Drill Method:	Hand Auger, Geoprobe Push Tube, Hollow Stem Auger

BENTONITE
GROUT
ASPHALT
SCREEN
Concrete Slab
Debris

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GP: Poorly-graded Gravel
GM: Silty Gravel
GC: Clayey Gravel
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SM: Silty Sand
SC: Clayey Sand
ML: Silts with low plasticity
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MH: Silt with high plasticity

CH: Clay of high plasticity
OH: Organic Clay/Organic Silt of
PT: Peat

FIRST APPEARANCE LEVEL
STATIC GROUNDWATER LEVEL

Appendix P
Soil Laboratory Data

Delivering a better world

TEST REPORT

Our Reference No.	:	**R211852/1A**	Date Received	:	09/04/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	:	09/04/2021
			Date Reported	:	23/04/2021
Customer Ref. No.	:	-			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Mr Albert Payapaya			
Sample Description	:	6 Soil Samples			
RESULTS	:	Refer to Page 2 to Page 5			

Tan Thuan Piang
Technical Manager

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3) MLS agrees to use reasonable diligence in the performance of the service.

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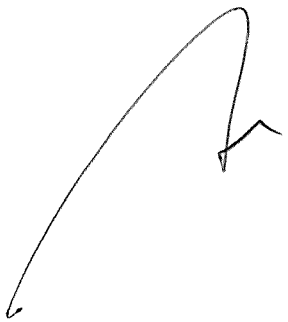
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TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH1	BC-BH1	BC-BH2	BC-BH2	BC-BH4	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.50	0.30	1.30	0.30	0.30	-	-	-	-
pH	7.6	8.4	7.9	7.7	7.1	8.3	-	-	-	-
Metals : by USEPA 3051A / APHA 3120B / USEPA 245.1										
Arsenic (As)	8.63	1.20	10.63	10.25	10.56	10.82	N.D.	-	76	0.15
Antimony (Sb)	1.78	2.86	1.44	1.30	8.27	2.40	N.D.	-	22	0.15
Barium (Ba)	140.24	14.54	32.65	34.14	18.37	24.02	N.D.	-	-	0.30
Cadmium (Cd)	0.67	0.53	0.36	0.42	0.42	0.42	N.D.	-	13	0.075
Chromium (Cr)	14.60	20.38	14.21	12.05	16.56	13.33	N.D.	-	-	0.075
Cobalt (Co)	4.42	14.27	0.95	2.51	0.88	1.05	N.D.	-	190	0.075
Copper (Cu)	159.33	39.86	23.62	40.49	12.48	9.27	N.D.	-	190	0.075
Mercury (Hg)	1.35	N.D.	0.19	0.25	0.18	0.09	N.D.	-	-	0.075
Lead (Pb)	216.89	12.11	98.61	61.65	12.52	14.53	N.D.	-	530	0.10
Molybdenum (Mo)	3.73	1.03	0.92	1.34	2.04	0.87	N.D.	-	190	0.15
Nickel (Ni)	9.72	24.47	3.92	7.76	3.81	4.17	N.D.	-	100	1.50
Zinc (Zn)	375.17	111.34	81.26	291.94	37.64	34.16	N.D.	-	720	0.75
Inorganic Compound : Cyanide (CN) by APHA 4500-CN(N) - Total Cyanide after Distillation using Micro Dist by Lachat FIA										
Cyanide (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1	20	1.0

Total Cyanide consists of Free Cyanide, Complex Cyanide and Total Thiocyanates. In this study, the Target and Intervention values of Free Cyanide, which are the most stringent Target and Intervention values of all three Cyanide species, are applied to the concentration of Total Cyanide (i.e. Free Cyanide + Complex Cyanide + Total Thiocyanates).

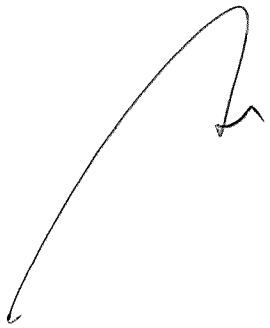
Aromatic Compounds : BTEX - Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D										
Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.1	0.1
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	110	0.1
Toluene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	32	0.1
Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.2
Styrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	86	0.1
Aromatic Compounds : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
Phenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	14	0.1
Cresols	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	13	0.2
Catechol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
Resorcinol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4
Hydrochinon	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4



MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH1	BC-BH1	BC-BH2	BC-BH2	BC-BH4	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.50	0.30	1.30	0.30	0.30	-	-	-	-
pH	7.6	8.4	7.9	7.7	7.1	8.3	-	-	-	-
Polynuclear Aromatic Hydrocarbon (PAH) : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Phenanthrene	0.6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Fluoranthene	3.0	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(a)anthracene	2.4	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Chrysene	3.0	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(a)pyrene	3.5	N.D.	0.2	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(ghi)perylene	3.0	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(k)fluoranthene	1.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Indeno(1,2,3cd)pyrene	3.0	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	-	-	0.1
PAH (total of 10)	20.0	N.D.	0.8	N.D.	N.D.	N.D.	N.D.	-	40	0.1
Chlorinated Hydrocarbons : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D										
Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.1	0.1
Dichloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	3.9	0.1
1,1-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,2-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.4	0.1
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.3	0.1
1,2-Dichloroethene (cis + trans)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1
Dichloropropanes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Trichloromethane (Chloroform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.6	0.1
1,1,1-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	10	0.1
Trichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.5	0.1
Tetrachloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.7	0.1
Tetrachloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.1
Chlorobenzenes (total of 6)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
Monochlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
Dichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	19	0.1



TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH1	BC-BH1	BC-BH2	BC-BH2	BC-BH4	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.50	0.30	1.30	0.30	0.30	-	-	-	-
pH	7.6	8.4	7.9	7.7	7.1	8.3	-	-	-	-

Chlorinated Hydrocarbons : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E

Trichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.1
Tetrachlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.2	0.2
Pentachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.7	0.1
Hexachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Chlorophenols (total of 5)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.3
Monochlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.4	0.2
Dichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.3
Trichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.1
Tetrachlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	21	0.3
Pentachlorophenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	12	0.4
Chloronaphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	23	0.2
Monochloroanilines	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	50	0.2
Polychlorobiphenyls (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1

Pesticides : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E

sum DDT/DDD/DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
DDT	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.7	0.2
DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.3	0.1
DDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	34	0.1
sum aldrin, dieldrin, endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Aldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.32	0.1
Dieldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
sum HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
a-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.1
b-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.6	0.1
g-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.2	0.1
d-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Atrazine	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.71	0.1
Carbaryl	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.45	0.4
Carbofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.017	0.4
Chlordane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Endosulfan	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor Epoxide	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1

Other Pollutants : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Cyclohexanone	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	150	0.6
Tetrahydrofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	7	0.2
Tetrahydrothiophene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.2
Tribromomethane (Bromoform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	75	0.1

MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH1	BC-BH1	BC-BH2	BC-BH2	BC-BH4	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.50	0.30	1.30	0.30	0.30	-	-	-	-
pH	7.6	8.4	7.9	7.7	7.1	8.3	-	-	-	-

Other Pollutants : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E

Phthalates (total)	N.D.	N.D.	N.D.	0.4	N.D.	N.D.	N.D.	-	-	0.2
Pyridine	2.8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.2

Other Pollutants : Total Petroleum Hydrocarbons (TPH) by US EPA Method 8015C

C6 - C9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
C10 - C14 (as C12)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	10.0
C15 - C28 (as C21)	96.5	N.D.	39.6	29.0	37.8	15.1	N.D.	-	-	10.0
C29 - C36 (as C32)	95.7	N.D.	87.5	35.0	113.5	N.D.	N.D.	-	-	10.0
C10 - C36 (Total)	192.2	N.D.	127.1	63.9	151.3	15.1	N.D.	-	5,000*	10.0

(*Dutch Standard for mineral oil)

Miscellaneous : Moisture Content and Organic Matter (LOI) by BS 1377 : Pt 2 & 3 : 1990

Moisture Content, %	27.51	13.30	18.38	19.48	33.08	16.66	-	-	-	0.01
Organic Matter (LOI), %	4.26	1.24	2.72	4.67	7.46	1.01	-	-	-	0.03

Surrogate Recovery by USEPA 8260D

1,2-Dichloroethane-d4 (%)	109	97.0	96.6	110	105	94.9	104
Toluene-d8 (%)	119	116	119	114	116	119	105
p-Bromofluorobenzene (%)	117	117	115	116	113	115	109

Surrogate Recovery by USEPA 8270E

Benzene-d5, nitro- (%)	82.7	74.2	99.7	85.5	90.6	60.5	72.3
1,1'-biphenyl,2-fluoro (%)	86.3	85.0	106	101	86.8	65.2	73.5
p-Terphenyl-d14 (%)	110	117	104	118	107	116	103
Phenol, 2-fluoro (%)	52.0	73.8	54.6	71.3	70.6	79.2	83.3
Phenol-d5 (%)	69.5	72.7	84.7	85.0	83.9	67.0	78.9
Phenol, 2,4,6-Tribromo (%)	53.4	91.1	88.8	84.0	92.3	59.9	84.2

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017).
2. LOR = Limit of Reporting. Detection Limit is based on the highest detection limit obtained from the individual compound.
3. "ND" = Not detected. The data reported is less than the LOR.
4. C10-C14, C15-C28, C29-C36 results are derived using the area under the peak against a hydrocarbon reference standard.
   For range C10-C14, C15-C28 and C29-C36, the reference standard used are C12, C21 and C32 peaks respectively.
5. The target and interventions values are derived from Soil Remediation Circular 2013

MAXXAM LABORATORY SERVICES PTE LTD

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: AECOM Singapore Pte Ltd
CONTACT (Name / Tel / email)	: Albert Payapaya / Jafon Ng
ADDRESS / COUNTRY	: 300 Beach Rd, #23-00 The Concourse, Singapore
PROJECT Code / Ref.	: 60645518
SITE	: 10 Bukit Chermin Rd, Singapore 109918
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: Albert Payapaya / Jafon Ng
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/ Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Sample Seal (Y / N) ☐ Tick if all sealed	ANALYSIS PARAMETER (Enter "x" below to indicate Request) JTC EBS Suite of Parameters (Soil)	VOCs									REMARKS / OBSERVATION / SAMPLE CONDITION
1	BC-BH1 (0.5m)	0.5	Soil	08-Apr-21	PM	1J			x										Please put samples BC-BH4
2	BC-BH1 (1.5m)	1.5	Soil	08-Apr-21	PM	1J			x										and BC-BH6 on hold.
3	BC-BH2 (0.3m)	0.3	Soil	08-Apr-21	AM	1J			x										
4	BC-BH2 (1.3m)	1.3	Soil	08-Apr-21	AM	1J			x										
5	BC-BH4 (0.3m)	0.3	Soil	09-Apr-21	AM	1J			on hold										
6	BC-BH6 (0.3m)	0.3	Soil	08-Apr-21	AM	1J			on hold										
7	Trip Blank 1	-	Water	-	-	1V				x									
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

MLS LAB USE ONLY

Job No.: R211852

PRESERVATION DONE:

☐ On Site

☐ By Lab

Cold Box temp. at receipt: _____°C (if applicable)

☐ Sampling done by MLS

RELINQUISHED BY:	DATE / TIME
Name: Jafon Ng	09/04/2021
Sign:	1400 hrs
Company: AECOM	

RECEIVED BY:	DATE / TIME
Name: TCW	9/04/2021
Sign: Tcw	1600 hrs
Company: MLS	

RELINQUISHED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

RECEIVED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

SHIPMENT BY COURIER:

Courier Co. / Carrier Name:

Consignment Note/Airway Bill:

* = For Water sample: Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

Type of Sampling Containers/Bottles: G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

$ Type of Sampling Media: ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

** Storage Condition: C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

TEST REPORT

Our Reference No.	:	**R212183**	Date Received	:	27/04/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	:	27/04/2021
			Date Reported	:	11/05/2021
Customer Ref. No.	:	-			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Mr Albert Payapaya			
Sample Description	:	6 Soil Samples			
RESULTS	:	Refer to Page 2 to Page 5			

Tan Thuan Piang
Technical Manager

Terms & Conditions:

1) This report shall not be reproduced except in full, unless approval in writing has been given by MLS.
2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

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Website: www.mls.sg

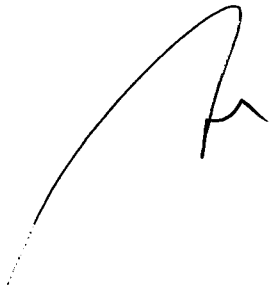
MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH3	BC-BH3	BC-BH4	BC-BH4	BC-BH6	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	3.20	0.50	1.00	0.50	1.50	-	-	-	-
pH	7.4	5.0	8.1	8.3	8.2	8.2	-	-	-	-
Metals : by USEPA 3051A / APHA 3120B / USEPA 245.1										
Arsenic (As)	1.08	0.27	6.36	7.50	14.05	2.63	N.D.	-	76	0.15
Antimony (Sb)	1.13	N.D.	N.D.	0.92	0.99	0.43	N.D.	-	22	0.15
Barium (Ba)	6.21	6.75	19.84	18.82	20.50	21.43	N.D.	-	-	0.30
Cadmium (Cd)	0.20	0.33	0.46	0.35	0.49	0.23	N.D.	-	13	0.075
Chromium (Cr)	5.73	12.17	13.11	16.52	29.27	10.75	N.D.	-	-	0.075
Cobalt (Co)	0.12	N.D.	1.50	0.88	0.75	1.31	N.D.	-	190	0.075
Copper (Cu)	2.83	1.81	14.37	16.26	14.13	15.86	N.D.	-	190	0.075
Mercury (Hg)	N.D.	N.D.	0.09	N.D.	0.11	0.14	N.D.	-	-	0.075
Lead (Pb)	11.79	20.23	16.14	18.02	13.27	29.88	N.D.	-	530	0.10
Molybdenum (Mo)	N.D.	N.D.	0.56	0.56	0.24	0.27	N.D.	-	190	0.15
Nickel (Ni)	N.D.	N.D.	3.59	3.53	2.95	3.00	N.D.	-	100	1.50
Zinc (Zn)	4.44	2.57	46.69	28.15	34.83	37.43	N.D.	-	720	0.75
Inorganic Compound : Cyanide (CN) by APHA 4500-CN(N) - Total Cyanide after Distillation using Micro Dist by Lachat FIA										
Cyanide (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1	20	1.0

Total Cyanide consists of Free Cyanide, Complex Cyanide and Total Thiocyanates. In this study, the Target and Intervention values of Free Cyanide, which are the most stringent Target and Intervention values of all three Cyanide species, are applied to the concentration of Total Cyanide (i.e. Free Cyanide + Complex Cyanide + Total Thiocyanates).

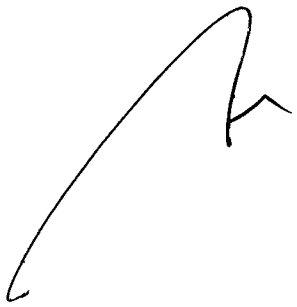
Aromatic Compounds : BTEX - Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D										
Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.1	0.1
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	110	0.1
Toluene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	32	0.1
Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.2
Styrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	86	0.1
Aromatic Compounds : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
Phenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	14	0.1
Cresols	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	13	0.2
Catechol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
Resorcinol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4
Hydrochinon	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4



MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH3	BC-BH3	BC-BH4	BC-BH4	BC-BH6	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	3.20	0.50	1.00	0.50	1.50	-	-	-	-
pH	7.4	5.0	8.1	8.3	8.2	8.2	-	-	-	-
Polynuclear Aromatic Hydrocarbon (PAH) : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Phenanthrene	0.1	0.1	0.3	N.D.	0.4	0.4	N.D.	-	-	0.1
Fluoranthene	N.D.	0.1	0.2	N.D.	0.2	0.3	N.D.	-	-	0.1
Benzo(a)anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(a)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(ghi)perylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(k)fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Indeno(1,2,3cd)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
PAH (total of 10)	0.1	0.2	0.5	N.D.	0.6	0.6	N.D.	-	40	0.1
Chlorinated Hydrocarbons : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D										
Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.1	0.1
Dichloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	3.9	0.1
1,1-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,2-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.4	0.1
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.3	0.1
1,2-Dichloroethene (cis + trans)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1
Dichloropropanes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Trichloromethane (Chloroform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.6	0.1
1,1,1-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	10	0.1
Trichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.5	0.1
Tetrachloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.7	0.1
Tetrachloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.1
Chlorobenzenes (total of 6)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
Monochlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
Dichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	19	0.1



TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH3	BC-BH3	BC-BH4	BC-BH4	BC-BH6	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	3.20	0.50	1.00	0.50	1.50	-	-	-	-
pH	7.4	5.0	8.1	8.3	8.2	8.2	-	-	-	-
Chlorinated Hydrocarbons : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
Trichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.1
Tetrachlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.2	0.2
Pentachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.7	0.1
Hexachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Chlorophenols (total of 5)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.3
Monochlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.4	0.2
Dichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.3
Trichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.1
Tetrachlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	21	0.3
Pentachlorophenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	12	0.4
Chloronaphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	23	0.2
Monochloroanilines	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	50	0.2
Polychlorobiphenyls (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1
Pesticides : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E										
sum DDT/DDD/DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
DDT	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.7	0.2
DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.3	0.1
DDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	34	0.1
sum aldrin, dieldrin, endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Aldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.32	0.1
Dieldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
sum HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
a-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.1
b-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.6	0.1
g-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.2	0.1
d-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Atrazine	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.71	0.1
Carbaryl	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.45	0.4
Carbofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.017	0.4
Chlordane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Endosulfan	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor Epoxide	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Other Pollutants : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D										
Cyclohexanone	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	150	0.6
Tetrahydrofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	7	0.2
Tetrahydrothiophene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.2
Tribromomethane (Bromoform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	75	0.1

MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH3	BC-BH3	BC-BH4	BC-BH4	BC-BH6	BC-BH6	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	3.20	0.50	1.00	0.50	1.50	-	-	-	-
pH	7.4	5.0	8.1	8.3	8.2	8.2	-	-	-	-

Other Pollutants : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E

Phthalates (total)	N.D.	N.D.	3.7	N.D.	3.7	5.9	N.D.	-	-	0.2
Pyridine	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.2

Other Pollutants : Total Petroleum Hydrocarbons (TPH) by US EPA Method 8015C

C6 - C9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
C10 - C14 (as C12)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	10.0
C15 - C28 (as C21)	N.D.	N.D.	20.1	33.5	30.5	109.3	N.D.	-	-	10.0
C29 - C36 (as C32)	N.D.	N.D.	16.8	29.1	34.0	72.9	N.D.	-	-	10.0
C10 - C36 (Total)	N.D.	N.D.	37.0	62.6	64.5	182.1	N.D.	-	5,000*	10.0

(*Dutch Standard for mineral oil)

Miscellaneous : Moisture Content and Organic Matter (LOI) by BS 1377 : Pt 2 & 3 : 1990

Moisture Content, %	19.98	32.24	17.57	22.19	23.69	17.03	-	-	-	0.01
Organic Matter (LOI), %	1.24	1.80	2.54	1.83	2.71	1.74	-	-	-	0.03

Surrogate Recovery by USEPA 8260D

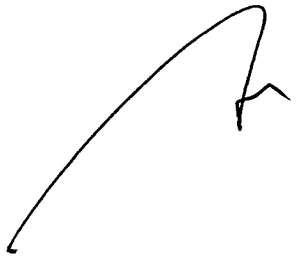
1,2-Dichloroethane-d4 (%)	97.9	104	96.6	90.8	92.6	98.8	108
Toluene-d8 (%)	98.8	97.6	109	111	114	116	96.3
p-Bromofluorobenzene (%)	110	112	119	119	120	114	101

Surrogate Recovery by USEPA 8270E

Benzene-d5, nitro- (%)	90.1	79.7	68.5	84.7	84.8	107	60.7
1,1'-biphenyl,2-fluoro (%)	87.3	82.5	67.0	84.3	79.1	106	59.7
p-Terphenyl-d14 (%)	113	124	87.7	102	91.8	123	81.5
Phenol, 2-fluoro (%)	68.5	119	80.6	86.0	54.8	104	62.8
Phenol-d5 (%)	118	89.9	101	104	113	107	52.9
Phenol, 2,4,6-Tribromo (%)	85.3	89.6	115	89.2	53.9	107	53.6

Notes:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017).
2. LOR = Limit of Reporting. Detection Limit is based on the highest detection limit obtained from the individual compound.
3. "ND" = Not detected. The data reported is less than the LOR.
4. C10-C14, C15-C28, C29-C36 results are derived using the area under the peak against a hydrocarbon reference standard.
   For range C10-C14, C15-C28 and C29-C36, the reference standard used are C12, C21 and C32 peaks respectively.
5. The target and interventions values are derived from Soil Remediation Circular 2013



MARCHWOOD LABORATORY SERVICES PTE LTD

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: AECOM Singapore Pte Ltd
CONTACT (Name / Tel / email)	: Albert Payapaya / Jafon Ng
ADDRESS / COUNTRY	: 300 Beach Rd, #23-00 The Concourse, Singapore
PROJECT Code / Ref.	: 60645518
SITE	: 10 Bukit Chermin Rd, Singapore 109918
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: Albert Payapaya / Jafon Ng
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

MLS LAB USE ONLY

Job No.: R212183

PRESERVATION DONE:

☐ On Site
☐ By Lab

Cold Box temp. at receipt: ____°C (if applicable)

☐ Sampling done by MLS

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/ Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Sample Seal (Y / N) ☐ Tick if all sealed	ANALYSIS PARAMETER (Enter "x" below to indicate Request) JTC EBS Suite of Parameters (Soil)	REMARKS / OBSERVATION / SAMPLE CONDITION
1	BC-BH3 (0.5m)	0.5	Soil	19-Apr-21	AM	1J			x	
2	BC-BH3 (3.2m)	3.2	Soil	19-Apr-21	AM	1J			x	
3	BC-BH4 (0.5m)	0.5	Soil	26-Apr-21	PM	1J			x	
4	BC-BH4 (1.0m)	1	Soil	26-Apr-21	PM	1J			x	
5	BC-BH6 (0.5m)	0.5	Soil	26-Apr-21	AM	1J			x	
6	BC-BH6 (1.5m)	1.5	Soil	26-Apr-21	AM	1J			x	
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

RELINQUISHED BY:	DATE / TIME
Name: Grujica Sarenac	27/04/2021
Sign:	1200 hrs
Company: AECOM	

RECEIVED BY:	DATE / TIME
Name: TKY	27/04/2021
Sign:	1200 hrs
Company: MLS	

RELINQUISHED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

RECEIVED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

SHIPMENT BY COURIER:

Courier Co. / Carrier Name:

Consignment Note/Airway Bill:

* = **For Water sample:** Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

\# **Type of Sampling Containers/Bottles:** G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

** **Storage Condition:** C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

$ **Type of Sampling Media:** ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

TEST REPORT

Our Reference No.	:	**R211852/2A**	Date Received	:	12/04/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	:	12/04/2021
			Date Reported	:	26/04/2021
Customer Ref. No.	:	-			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Mr Albert Payapaya			
Sample Description	:	4 Soil Samples			
RESULTS	:	Refer to Page 2 to Page 5			

Tan Thuan Piang
Technical Manager

Terms & Conditions:

1) This report shall not be reproduced except in full, unless approval in writing has been given by MLS.
2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

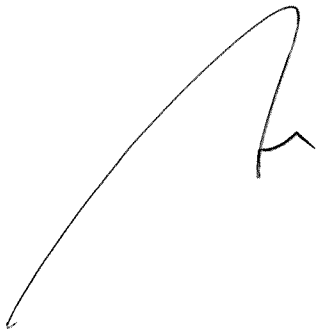
Marchwood Laboratory Services Pte Ltd: Co. Reg No. : 201422686C
Main (Office and Laboratory): 116 Tuas South Ave 2, West Point Bizhub Singapore 637163 : +65 6790 0118 : +65 6790 0091
Branch (Site and Laboratory): 216 Tuas South Ave 2, West Point Bizhub Singapore 637213 : +65 6262 3736 (Lab) : +65 6262 3726 / 3776 (Site)
Website: www.mls.sg

MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH7	BC-BH7	BC-BH5	BC-BH5	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.00	0.40	1.50	-	-	-	-
pH	8.5	5.1	7.9	5.2	-	-	-	-
Metals : by USEPA 3051A / APHA 3120B / USEPA 245.1								
Arsenic (As)	3.98	1.48	1.98	2.62	N.D.	-	76	0.15
Antimony (Sb)	1.48	1.49	0.83	0.22	N.D.	-	22	0.15
Barium (Ba)	15.65	29.33	7.59	9.20	N.D.	-	-	0.30
Cadmium (Cd)	0.52	0.36	0.22	0.23	N.D.	-	13	0.075
Chromium (Cr)	14.87	10.19	6.97	6.80	N.D.	-	-	0.075
Cobalt (Co)	0.48	3.33	0.19	0.26	N.D.	-	190	0.075
Copper (Cu)	16.14	12.60	2.40	4.11	N.D.	-	190	0.075
Mercury (Hg)	0.54	N.D.	N.D.	N.D.	N.D.	-	-	0.075
Lead (Pb)	14.23	13.36	14.42	15.55	N.D.	-	530	0.10
Molybdenum (Mo)	0.21	N.D.	N.D.	0.23	N.D.	-	190	0.15
Nickel (Ni)	3.42	10.74	N.D.	N.D.	N.D.	-	100	1.50
Zinc (Zn)	20.05	44.04	4.76	8.39	N.D.	-	720	0.75
Inorganic Compound : Cyanide (CN) by APHA 4500-CN(N) - Total Cyanide after Distillation using Micro Dist by Lachat FIA								
Cyanide (total)	N.D.	N.D.	N.D.	N.D.	N.D.	1	20	1.0
Aromatic Compounds : BTEX - Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D								
Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.1	0.1
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	-	110	0.1
Toluene	N.D.	N.D.	N.D.	N.D.	N.D.	-	32	0.1
Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.2
Styrene	N.D.	N.D.	N.D.	N.D.	N.D.	-	86	0.1
Aromatic Compounds : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E								
Phenol	N.D.	N.D.	N.D.	N.D.	N.D.	-	14	0.1
Cresols	N.D.	N.D.	N.D.	N.D.	N.D.	-	13	0.2
Catechol	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
Resorcinol	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4
Hydrochinon	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.4

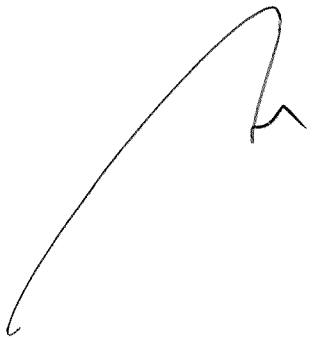
Total Cyanide consists of Free Cyanide, Complex Cyanide and Total Thiocyanates. In this study, the Target and Intervention values of Free Cyanide, which are the most stringent Target and Intervention values of all three Cyanide species, are applied to the concentration of Total Cyanide (i.e. Free Cyanide + Complex Cyanide + Total Thiocyanates).



MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH7	BC-BH7	BC-BH5	BC-BH5	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.00	0.40	1.50	-	-	-	-
pH	8.5	5.1	7.9	5.2	-	-	-	-
Polynuclear Aromatic Hydrocarbon (PAH) : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E								
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(a)anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(a)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(ghi)perylene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Benzo(k)fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Indeno(1,2,3cd)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
PAH (total of 10)	N.D.	N.D.	N.D.	N.D.	N.D.	-	40	0.1
Chlorinated Hydrocarbons : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D								
Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.1	0.1
Dichloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	3.9	0.1
1,1-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,2-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.4	0.1
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.3	0.1
1,2-Dichloroethene (cis + trans)	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1
Dichloropropanes	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Trichloromethane (Chloroform)	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.6	0.1
1,1,1-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	10	0.1
Trichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.5	0.1
Tetrachloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.7	0.1
Tetrachloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.1
Chlorobenzenes (total of 6)	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
Monochlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	-	15	0.1
Dichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	19	0.1



MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH7	BC-BH7	BC-BH5	BC-BH5	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.00	0.40	1.50	-	-	-	-
pH	8.5	5.1	7.9	5.2	-	-	-	-
Chlorinated Hydrocarbons : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E								
Trichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.1
Tetrachlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.2	0.2
Pentachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	-	6.7	0.1
Hexachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	-	2	0.1
Chlorophenols (total of 5)	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.3
Monochlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	5.4	0.2
Dichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.3
Trichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	22	0.1
Tetrachlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	21	0.3
Pentachlorophenol	N.D.	N.D.	N.D.	N.D.	N.D.	-	12	0.4
Chloronaphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	-	23	0.2
Monochloroanilines	N.D.	N.D.	N.D.	N.D.	N.D.	-	50	0.2
Polychlorobiphenyls (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	1	0.1
Pesticides : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E								
sum DDT/DDD/DDE	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
DDT	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.7	0.2
DDE	N.D.	N.D.	N.D.	N.D.	N.D.	-	2.3	0.1
DDD	N.D.	N.D.	N.D.	N.D.	N.D.	-	34	0.1
sum aldrin, dieldrin, endrin	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Aldrin	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.32	0.1
Dieldrin	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Endrin	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
sum HCH	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
a-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	-	17	0.1
b-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.6	0.1
g-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	-	1.2	0.1
d-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
Atrazine	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.71	0.1
Carbaryl	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.45	0.4
Carbofuran	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.017	0.4
Chlordane	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Endosulfan	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Heptachlor Epoxide	N.D.	N.D.	N.D.	N.D.	N.D.	-	4	0.1
Other Pollutants : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D								
Cyclohexanone	N.D.	N.D.	N.D.	N.D.	N.D.	-	150	0.6
Tetrahydrofuran	N.D.	N.D.	N.D.	N.D.	N.D.	-	7	0.2
Tetrahydrothiophene	N.D.	N.D.	N.D.	N.D.	N.D.	-	8.8	0.2
Tribromomethane (Bromoform)	N.D.	N.D.	N.D.	N.D.	N.D.	-	75	0.1



MLS

TEST RESULTS FOR SOIL (in mg/kg unless otherwise specified):

Sample Bore Hole	BC-BH7	BC-BH7	BC-BH5	BC-BH5	Method Blank	DUTCH	DUTCH	LOR
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	-	(Target)	(Intervention)	
Sample Depth m bgl	0.50	1.00	0.40	1.50	-	-	-	-
pH	8.5	5.1	7.9	5.2	-	-	-	-

Other Pollutants : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3545A / 8270E

Phthalates (total)	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.2
Pyridine	N.D.	N.D.	N.D.	N.D.	N.D.	-	11	0.2

Other Pollutants : Total Petroleum Hydrocarbons (TPH) by US EPA Method 8015C

C6 - C9	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.1
C10 - C14 (as C12)	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	10.0
C15 - C28 (as C21)	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	10.0
C29 - C36 (as C32)	12.1	N.D.	N.D.	N.D.	N.D.	-	-	10.0
C10 - C36 (Total)	12.1	N.D.	N.D.	N.D.	N.D.	-	5,000*	10.0

(*Dutch Standard for mineral oil)

Miscellaneous : Moisture Content and Organic Matter (LOI) by BS 1377 : Pt 2 & 3 : 1990

Moisture Content, %	26.07	19.81	12.98	9.53	-	-	-	0.01
Organic Matter (LOI), %	1.61	0.58	0.54	0.71	-	-	-	0.03

Surrogate Recovery by USEPA 8260D

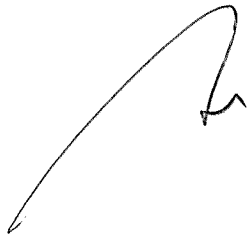
1,2-Dichloroethane-d4 (%)	97.8	102	100	99.9	104
Toluene-d8 (%)	113	109	112	113	105
p-Bromofluorobenzene (%)	120	111	116	119	109

Surrogate Recovery by USEPA 8270E

Benzene-d5, nitro- (%)	71.9	121	118	84.0	87.9
1,1'-biphenyl,2-fluoro (%)	62.7	99.0	100	73.2	72.7
p-Terphenyl-d14 (%)	89.7	125	110	105	102
Phenol, 2-fluoro (%)	27.5	77.3	7.45	74.5	83.2
Phenol-d5 (%)	50.2	54.3	33.3	70.0	77.6
Phenol, 2,4,6-Tribromo (%)	24.2	71.3	-	109	98.8

Notes:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017).
2. LOR = Limit of Reporting. Detection Limit is based on the highest detection limit obtained from the individual compound.
3. "ND" = Not detected. The data reported is less than the LOR.
4. C10-C14, C15-C28, C29-C36 results are derived using the area under the peak against a hydrocarbon reference standard.
   For range C10-C14, C15-C28 and C29-C36, the reference standard used are C12, C21 and C32 peaks respectively.
5. The target and interventions values are derived from Soil Remediation Circular 2013
6. "-" - There is no surrogate recovery for sample BC-BH5 (0.40) due to sample matrix interference.



MARCHWOOD LABORATORY SERVICES PTE LTD

MLS-QF 001 Rev (4), Mar 2017
Page ___ of ___

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: AECOM SINGAPORE PTE LTD
CONTACT (Name / Tel / email)	: ALBERT PAYAPAYA / JAFON NG
ADDRESS / COUNTRY	: 300 BEACH ROAD #23-00, THE CONCOURSE
PROJECT Code / Ref.	: 60645518
SITE	: 10 BUKIT CHERMIN RD, SG109918
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: ALBERT / JAFON
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Sample Seal (Y / N) (☐ Tick if all sealed)	ANALYSIS PARAMETER: TPH EBS SUITE OF PARA (SOIL)	ANALYSIS PARAMETER: VOCS	REMARKS / OBSERVATION / SAMPLE CONDITION
1	BC-BH7 (0.5m)	0.5	SOIL	12/04/21	AM	1J			/		
2	BC-BH7 (1.0m)	1.0	SOIL	12/04/21	AM	1J			/		
3	BC-BH 5 (0.4m)	0.4	SOIL	12/04/21	PM	1J			/		
4	BC-BH 5 (1.5m)	1.5	SOIL	12/04/21	PM	1J			/		
5	TRIP BLANK 2	-	WATER	12/04/21	-	1V				/	
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

MLS LAB USE ONLY

Job No.: R21852/2

PRESERVATION DONE:
☐ On Site
☐ By Lab

Cold Box temp. at receipt: ____ °C (if applicable)

☐ Sampling done by MLS

RELINQUISHED BY:	DATE / TIME
Name: MARK SHI	12 APR 21 / 1715 hrs
Sign:	
Company: AECOM	

RECEIVED BY:	DATE / TIME
Name: TAN	12/04/20
Sign:	1715 hrs
Company: MLS	

RELINQUISHED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

RECEIVED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

SHIPMENT BY COURIER:
Courier Co. / Carrier Name:
Consignment Note/Airway Bill:

* = For Water sample: Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

Type of Sampling Containers/Bottles: G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

** Storage Condition: C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

$ Type of Sampling Media: ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

Appendix Q
Soil Laboratory Data from Previous Study

Delivering a better world

CERTIFICATE OF ANALYSIS

Work Order	: **SG1619996**	Page	: 1 of 19
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT	Project	: 0311748
Contact	: Mr Lawrence Ow	Order number	: ----
Address	: 120 Robinson Road #10-01 Singapore 068913	Quote number	: ----
E-mail	: lawrence.ow@erm.com	Date Received	: 06-DEC-2016
Telephone	: +65 6324 9636	Date Analysed	: 06-DEC-2016
Facsimile	: +65 6226 1636	Date Issued	: 20-DEC-2016
No. of samples received	: 8	No. of samples analysed	: 8

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*
Pansy Teo	Senior Environmental Manager
Tan Teong Huat	Senior Environmental Manager

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. Results apply to the sample(s) as submitted. The laboratory declares that the test results relate only to the items tested and do not substitute any other documents. This report may not be reproduced except with prior written approval from the testing laboratory. This report may not be used for advertising purposes.

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, BS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : LOR = Limit of reporting

- **BS method is referenced to British Standard 1377: Part 3/1990**

Analytical Results

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0.5	SB31 - 1.5	SB34 - 0.5	SB35 - 0.5	SB36 - 0.3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Metals										
Arsenic	EPA3050B/EPA6010B	0.5	mg/kg	29	55	**2.8**	**1.2**	**3.5**	**1.4**	**0.8**
Barium	EPA3050B/EPA6010B	0.5	mg/kg	160	625	**54.1**	**33.9**	**25.2**	**17.5**	**24.1**
Cadmium	EPA3050B/EPA6010B	0.5	mg/kg	0.8	12	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	EPA3050B/EPA6010B	0.5	mg/kg	100	380	**15.9**	**15.4**	**12.4**	**10.9**	**16.4**
Cobalt	EPA3050B/EPA6010B	0.5	mg/kg	9	240	**4.0**	**2.9**	**3.9**	**3.9**	**1.4**
Copper	EPA3050B/EPA6010B	0.5	mg/kg	36	190	**14.2**	**15.8**	**15.0**	**14.2**	**9.5**
Mercury	EPA7471B	0.02	mg/kg	0.3	10	**0.19**	**0.03**	**0.08**	**0.05**	**0.04**
Lead	EPA3050B/EPA6010B	0.5	mg/kg	85	530	**43.2**	**29.2**	**21.5**	**12.9**	**16.8**
Molybdenum	EPA3050B/EPA6010B	0.5	mg/kg	3	200	**0.6**	**0.9**	<0.5	<0.5	<0.5
Nickel	EPA3050B/EPA6010B	0.5	mg/kg	35	210	**6.2**	**4.5**	**4.6**	**3.2**	**3.1**
Zinc	EPA3050B/EPA6010B	0.5	mg/kg	140	720	**60.8**	**32.8**	**20.0**	**15.1**	**9.8**
Antimony	EPA3050B/EPA6010B	0.5	mg/kg	3	15	**2.6**	**2.6**	**2.0**	**1.5**	**2.9**
Inorganic Compounds										
Cyanide	EPA9010/EPA 9014	0.10	mg/kg	1	20	<0.10	<0.10	<0.10	<0.10	<0.10
Aromatic Compounds										
Benzene	EPA5035/EPA8260C	0.10	mg/kg	0.01	1	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	0.03	50	<0.10	<0.10	<0.10	<0.10	<0.10
Phenol	EPA8270D	0.10	mg/kg	0.05	40	<0.10	<0.10	<0.10	<0.10	<0.10
Cresoles (Sum)	EPA8270D	0.10	mg/kg	0.05	5	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	EPA5035/EPA8260C	0.10	mg/kg	0.01	130	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	0.1	25	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	EPA5035/EPA8260C	0.10	mg/kg	0.3	100	<0.10	<0.10	<0.10	<0.10	<0.10
Catechol	EPA8270D	0.10	mg/kg	0.05	20	<0.10	<0.10	<0.10	<0.10	<0.10
Resorcinol	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Hydrochinon	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Polynuclear Aromatic Hydrocarbons - Continued										
Indeno(1.2.3.cd)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Sum of PAHs	EPA8270D	0.20	mg/kg	1	40	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorinated Hydrocarbons										
1.1-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	4	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichloroethene (sum cis & trans)	EPA5035/EPA8260C	0.20	mg/kg	0.2	1	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloropropanes (Sum)	EPA5035/EPA8260C	0.10	mg/kg	0.002	2	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.07	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	10	<0.10	<0.10	<0.10	<0.10	<0.10
Trichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	60	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	EPA5035/EPA8260C	1.00	mg/kg	0.4	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloromethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	1	<0.10	<0.10	<0.10	<0.10	<0.10
Chloroform	EPA5035/EPA8260C	0.10	mg/kg	0.02	10	<0.10	<0.10	<0.10	<0.10	<0.10
Vinyl chloride	EPA5035/EPA8260C	0.01	mg/kg	0.01	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	0.20	mg/kg	0.03	30	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA8270D	0.20	mg/kg	0.01	10	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Monochloroanilines	EPA8270D	0.20	mg/kg	0.005	50	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA8082	0.50	mg/kg	0.02	1	<0.50	<0.50	<0.50	<0.50	<0.50
Pesticides										
DDD/DDE/DDT	EPA8270D	0.50	mg/kg	0.01	4	<0.50	<0.50	<0.50	<0.50	<0.50

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	**SG1619996-002**	**SG1619996-003**	**SG1619996-004**	**SG1619996-005**
Pesticides - Continued										
Aldrin,Dieldrin,Endrin (Sum)	EPA8270D	0.50	mg/kg	0.01	4	<0.50	<0.50	<0.50	<0.50	<0.50
Aldrin	EPA8270D	0.10	mg/kg	0.00006	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin	EPA8270D	0.10	mg/kg	0.0005	----	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin	EPA8270D	0.10	mg/kg	0.00004	----	<0.10	<0.10	<0.10	<0.10	<0.10
BHC Compounds (Sum)	EPA8270D	0.50	mg/kg	0.01	2	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	EPA8270D	0.10	mg/kg	0.003	----	<0.10	<0.10	<0.10	<0.10	<0.10
beta-BHC	EPA8270D	0.10	mg/kg	0.009	----	<0.10	<0.10	<0.10	<0.10	<0.10
gamma-BHC	EPA8270D	0.10	mg/kg	0.00005	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlordane	EPA8270D	0.10	mg/kg	0.00003	4	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan	EPA8270D	0.10	mg/kg	0.00001	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor	EPA8270D	0.10	mg/kg	0.0007	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor epoxide	EPA8270D	0.10	mg/kg	0.0000002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Carbaryl	EPA8270D	0.10	mg/kg	0.00003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofuran	EPA8270D	0.01	mg/kg	0.00002	2	<0.01	<0.01	<0.01	<0.01	<0.01
Maneb	EPA8270D	0.50	mg/kg	0.002	35	<0.50	<0.50	<0.50	<0.50	<0.50
Atrazine	EPA8270D	0.10	mg/kg	0.0002	6	<0.10	<0.10	<0.10	<0.10	<0.10
Other Pollutants										
Cyclohexanone	EPA5035/EPA8260C	0.10	mg/kg	0.1	45	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalates (Sum)	EPA8270D	0.20	mg/kg	0.1	60	<0.20	<0.20	<0.20	<0.20	<0.20
Mineral oils	EPA8015B	50	mg/kg	50	5000	<50	<50	<50	<50	<50
Pyridine	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Bromoform	EPA5035/EPA8260C	0.10	mg/kg	----	75	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrofuran	EPA8270D	0.10	mg/kg	0.1	2	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrothiophene	EPA8270D	0.10	mg/kg	0.1	90	<0.10	<0.10	<0.10	<0.10	<0.10
Conventional										
Organic Matter	BS1377	0.1	% DW	----	----	**0.9**	**0.5**	**0.4**	**0.3**	**0.5**
Moisture Content (dried @ 103°C)	BS1377	0.10	%	----	----	**9.97**	**10.1**	**16.0**	**19.6**	**14.8**
Total Petroleum Hydrocarbon										
C6 - C9 Fraction	EPA5035/EPA8015B	5	mg/kg	----	----	<5	<5	<5	<5	<5
C10 - C14 Fraction	EPA8015B	5	mg/kg	----	----	<5	<5	<5	<5	<5
C15 - C28 Fraction	EPA8015B	10	mg/kg	----	----	**10**	<10	<10	**13**	<10
C29 - C36 Fraction	EPA8015B	10	mg/kg	----	----	**31**	**19**	**22**	**18**	**20**

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

				Client sample ID	Target Value	Intervention Value	SB37 - 0,5	SB38 - 0,5	SB38 - 1,5	----	----
				Sampling date/time			03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
Compound	*Method*	*LOR*	*Unit*				SG1619996-006	SG1619996-007	SG1619996-008	—	—
Metals											
Arsenic	EPA3050B/EPA6010B	0.5	mg/kg		29	55	**25,7**	**13,3**	**155**	----	----
Barium	EPA3050B/EPA6010B	0.5	mg/kg		160	625	**27,3**	**33,9**	**32,1**	----	----
Cadmium	EPA3050B/EPA6010B	0.5	mg/kg		0.8	12	<0.5	<0.5	**3.6**	----	----
Chromium	EPA3050B/EPA6010B	0.5	mg/kg		100	380	**32.2**	**24.2**	**13.1**	----	----
Cobalt	EPA3050B/EPA6010B	0.5	mg/kg		9	240	**1.4**	**1.8**	**1.6**	----	----
Copper	EPA3050B/EPA6010B	0.5	mg/kg		36	190	**12,8**	**26,2**	**176**	----	----
Mercury	EPA7471B	0.02	mg/kg		0.3	10	**0.12**	**0.12**	**0.10**	----	----
Lead	EPA3050B/EPA6010B	0.5	mg/kg		85	530	**15,2**	**19,4**	**24.0**	----	----
Molybdenum	EPA3050B/EPA6010B	0.5	mg/kg		3	200	**1,2**	**2,1**	**0,6**	----	----
Nickel	EPA3050B/EPA6010B	0.5	mg/kg		35	210	**2,7**	**4,2**	**2,9**	----	----
Zinc	EPA3050B/EPA6010B	0.5	mg/kg		140	720	**25,9**	**61,4**	**27,2**	----	----
Antimony	EPA3050B/EPA6010B	0.5	mg/kg		3	15	**3.9**	**2.5**	**4.5**	----	----
Inorganic Compounds											
Cyanide	EPA9010/EPA 9014	0.10	mg/kg		1	20	<0.10	<0.10	<0.10	----	----
Aromatic Compounds											
Benzene	EPA5035/EPA8260C	0.10	mg/kg		0.01	1	<0.10	<0.10	<0.10	----	----
Ethylbenzene	EPA5035/EPA8260C	0.10	mg/kg		0.03	50	<0.10	<0.10	<0.10	----	----
Phenol	EPA8270D	0.10	mg/kg		0.05	40	<0.10	<0.10	<0.10	----	----
Cresoles (Sum)	EPA8270D	0.10	mg/kg		0.05	5	<0.10	<0.10	<0.10	----	----
Toluene	EPA5035/EPA8260C	0.10	mg/kg		0.01	130	<0.10	<0.10	<0.10	----	----
Xylenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		0.1	25	<0.20	<0.20	<0.20	----	----
Styrene	EPA5035/EPA8260C	0.10	mg/kg		0.3	100	<0.10	<0.10	<0.10	----	----
Catechol	EPA8270D	0.10	mg/kg		0.05	20	<0.10	<0.10	<0.10	----	----
Resorcinol	EPA8270D	0.10	mg/kg		0.05	10	<0.10	<0.10	<0.10	----	----
Hydrochinon	EPA8270D	0.10	mg/kg		0.05	10	<0.10	<0.10	<0.10	----	----
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Anthracene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Phenanthrene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Fluoranthene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Benz(a)anthracene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Chrysene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Benzo(a)pyrene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Benzo(g.h.i)perylene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Benzo(k)fluoranthene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Indeno(1.2.3.cd)pyrene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	----	----
Sum of PAHs	EPA8270D	0.20	mg/kg		1	40	<0.20	<0.20	<0.20	----	----

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Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Target Value	Intervention Value	*Client sample ID* / *Sampling date/time*	SB37 - 0,5 / 03-DEC-2016 / SG1619996-006	SB38 - 0,5 / 03-DEC-2016 / SG1619996-007	SB38 - 1,5 / 03-DEC-2016 / SG1619996-008	---- / ---- / ----	---- / ---- / ----
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	15		<0.10	<0.10	<0.10	----	----
1.2-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	4		<0.10	<0.10	<0.10	----	----
1.1-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.3		<0.10	<0.10	<0.10	----	----
1.2-Dichloroethene (sum cis & trans)	EPA5035/EPA8260C	0.20	mg/kg	0.2	1		<0.20	<0.20	<0.20	----	----
Dichloropropanes (Sum)	EPA5035/EPA8260C	0.10	mg/kg	0.002	2		<0.10	<0.10	<0.10	----	----
1.1.1-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.07	15		<0.10	<0.10	<0.10	----	----
1.1.2-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	10		<0.10	<0.10	<0.10	----	----
Trichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	60		<0.10	<0.10	<0.10	----	----
Tetrachloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.002	4		<0.10	<0.10	<0.10	----	----
Methylene chloride	EPA5035/EPA8260C	1.00	mg/kg	0.4	10		<1.00	<1.00	<1.00	----	----
Tetrachloromethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	1		<0.10	<0.10	<0.10	----	----
Chloroform	EPA5035/EPA8260C	0.10	mg/kg	0.02	10		<0.10	<0.10	<0.10	----	----
Vinyl chloride	EPA5035/EPA8260C	0.01	mg/kg	0.01	0.1		<0.01	<0.01	<0.01	----	----
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	0.20	mg/kg	0.03	30		<0.20	<0.20	<0.20	----	----
Monochlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----		<0.10	<0.10	<0.10	----	----
Dichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Trichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Tetrachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Pentachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Hexachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA8270D	0.20	mg/kg	0.01	10		<0.20	<0.20	<0.20	----	----
Monochlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Dichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Trichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Tetrachlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----		<0.20	<0.20	<0.20	----	----
Pentachlorophenol	EPA8270D	0.10	mg/kg	----	----		<0.10	<0.10	<0.10	----	----
Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----		<0.10	<0.10	<0.10	----	----
Monochloroanilines	EPA8270D	0.20	mg/kg	0.005	50		<0.20	<0.20	<0.20	----	----
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA8082	0.50	mg/kg	0.02	1		<0.50	<0.50	<0.50	----	----
Pesticides											
DDD/DDE/DDT	EPA8270D	0.50	mg/kg	0.01	4		**3.58**	<0.50	**1.99**	----	----
Aldrin,Dieldrin,Endrin (Sum)	EPA8270D	0.50	mg/kg	0.01	4		<0.50	<0.50	<0.50	----	----
Aldrin	EPA8270D	0.10	mg/kg	0.00006	----		<0.10	<0.10	<0.10	----	----
Dieldrin	EPA8270D	0.10	mg/kg	0.0005	----		<0.10	<0.10	<0.10	----	----

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Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	*Client sample ID* / *Sampling date/time*	Target Value	Intervention Value	SB37 - 0,5 03-DEC-2016 SG1619996-006	SB38 - 0,5 03-DEC-2016 SG1619996-007	SB38 - 1,5 03-DEC-2016 SG1619996-008	---- ---- ----	---- ---- ----
Pesticides - Continued											
Endrin	EPA8270D	0.10	mg/kg		0.00004	----	<0.10	<0.10	<0.10	----	----
BHC Compounds (Sum)	EPA8270D	0.50	mg/kg		0.01	2	<0.50	<0.50	<0.50	----	----
alpha-BHC	EPA8270D	0.10	mg/kg		0.003	----	<0.10	<0.10	<0.10	----	----
beta-BHC	EPA8270D	0.10	mg/kg		0.009	----	<0.10	<0.10	<0.10	----	----
gamma-BHC	EPA8270D	0.10	mg/kg		0.00005	----	<0.10	<0.10	<0.10	----	----
Chlordane	EPA8270D	0.10	mg/kg		0.00003	4	<0.10	<0.10	<0.10	----	----
Endosulfan	EPA8270D	0.10	mg/kg		0.00001	4	<0.10	<0.10	<0.10	----	----
Heptachlor	EPA8270D	0.10	mg/kg		0.0007	4	<0.10	<0.10	<0.10	----	----
Heptachlor epoxide	EPA8270D	0.10	mg/kg		0.0000002	4	<0.10	<0.10	<0.10	----	----
Carbaryl	EPA8270D	0.10	mg/kg		0.00003	5	<0.10	<0.10	<0.10	----	----
Carbofuran	EPA8270D	0.01	mg/kg		0.00002	2	<0.01	<0.01	<0.01	----	----
Maneb	EPA8270D	0.50	mg/kg		0.002	35	<0.50	<0.50	<0.50	----	----
Atrazine	EPA8270D	0.10	mg/kg		0.0002	6	<0.10	<0.10	<0.10	----	----
Other Pollutants											
Cyclohexanone	EPA5035/EPA8260C	0.10	mg/kg		0.1	45	<0.10	<0.10	<0.10	----	----
Phthalates (Sum)	EPA8270D	0.20	mg/kg		0.1	60	<0.20	<0.20	<0.20	----	----
Mineral oils	EPA8015B	50	mg/kg		50	5000	**107**	**52**	**63**	----	----
Pyridine	EPA5035/EPA8260C	0.10	mg/kg		0.1	0.5	<0.10	<0.10	<0.10	----	----
Bromoform	EPA5035/EPA8260C	0.10	mg/kg		----	75	<0.10	<0.10	<0.10	----	----
Tetrahydrofuran	EPA8270D	0.10	mg/kg		0.1	2	<0.10	<0.10	<0.10	----	----
Tetrahydrothiophene	EPA8270D	0.10	mg/kg		0.1	90	<0.10	<0.10	<0.10	----	----
Conventional											
Organic Matter	BS1377	0.1	% DW		----	----	**0.5**	**1.0**	**0.4**	----	----
Moisture Content (dried @ 103°C)	BS1377	0.10	%		----	----	**15.9**	**16.8**	**11.6**	----	----
Total Petroleum Hydrocarbon											
C6 - C9 Fraction	EPA5035/EPA8015B	5	mg/kg		----	----	<5	<5	<5	----	----
C10 - C14 Fraction	EPA8015B	5	mg/kg		----	----	<5	<5	<5	----	----
C15 - C28 Fraction	EPA8015B	10	mg/kg		----	----	**69**	**19**	**29**	----	----
C29 - C36 Fraction	EPA8015B	10	mg/kg		----	----	**38**	**33**	**34**	----	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Propylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
sec-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
tert-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
p-Isopropyltoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl Acetate	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
2-Butanone (MEK)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
4-Methyl-2-pentanone (MIBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
2-Hexanone (MBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Sulfonated Compounds										
Carbon disulfide	EPA5035/EPA8260C	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Fumigants										
2.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromoethane (EDB)	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Bromomethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloroethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Trichlorofluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Iodomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Halogenated Aliphatic Compounds - Continued										
cis-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromo-3-chloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bromobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Trihalomethanes										
Bromodichloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromochloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenolic Compounds										
2-Chlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitrophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dimethylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.6-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.5-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
N-2-Fluorenyl Acetamide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b) & Benzo(k)fluoranthene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
7.12-Dimethylbenz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
3-Methylcholanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
PolyAromatic Hydrocarbons - Continued										
Dibenz(a.h)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters										
Dimethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Butyl benzyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
bis(2-ethylhexyl) phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-octylphthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrosamines										
N-Nitrosomethylethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopyrrolidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosomorpholine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodi-n-propylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopiperidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodibutylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenyl & Diphenylamine	EPA8270D	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Methapyrilene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitroaromatics and Cyclic Ketones										
2-Picoline	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acetophenone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Isophorone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1-Naphthylamine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitroquinoline-N-oxide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
5-Nitro-o-toluidine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Azobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trinitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenacetin	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Aminobiphenyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloronitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethylaminoazobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzilate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Haloethers										

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Haloethers - Continued										
Bis(2-chloroethyl) ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethoxy) methane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.4-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloroethane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloropropylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobutadiene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene (HCB)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anilines and Benzidines										
Aniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3.3`-Dichlorobenzidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorinated Biphenyls										
Aroclor 1232	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1242	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1248	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1254	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Organochlorine Pesticides										
delta-BHC	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
alpha-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDE	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
beta-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB31 - 0,5	SB31 - 1,5	SB34 - 0,5	SB35 - 0,5	SB36 - 0,3
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016	03-DEC-2016
						SG1619996-001	SG1619996-002	SG1619996-003	SG1619996-004	SG1619996-005
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDT	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin ketone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Organophosphorus Pesticides										
Malathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorvos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethoate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Diazinon	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos-methyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Ethion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fenthion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pirimphos-ethyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Prothiofos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (E)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (Z)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5035/EPA8260C	0.1	%	----	----	**90.7**	**85.0**	**107**	**98.8**	**94.0**
Toluene-D8	EPA5035/EPA8260C	0.1	%	----	----	**91.2**	**89.2**	**92.2**	**88.9**	**88.7**
4-Bromofluorobenzene	EPA5035/EPA8260C	0.1	%	----	----	**104**	**104**	**98.0**	**105**	**105**
Acid Extractable Surrogates										
2-Fluorophenol	EPA8270D	0.1	%	----	----	**52.5**	**62.6**	**66.9**	**60.3**	**64.2**
Phenol-d5	EPA8270D	0.1	%	----	----	**47.9**	**44.5**	**59.8**	**54.8**	**60.3**
2.4.6-Tribromophenol	EPA8270D	0.1	%	----	----	**52.8**	**69.6**	**72.2**	**66.2**	**73.3**
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA8270D	0.1	%	----	----	**53.0**	**57.1**	**70.7**	**72.6**	**70.0**
2-Fluorobiphenyl	EPA8270D	0.1	%	----	----	**57.9**	**62.6**	**70.1**	**64.0**	**72.3**
4-Terphenyl-d14	EPA8270D	0.1	%	----	----	**58.4**	**70.3**	**75.5**	**65.9**	**74.8**

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB37 - 0,5	SB38 - 0,5	SB38 - 1,5	----	----
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
						SG1619996-006	**SG1619996-007**	**SG1619996-008**	**—**	**—**
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
n-Propylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.3.5-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
sec-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2.4-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
tert-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
p-Isopropyltoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
n-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	----	----
Vinyl Acetate	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	----	----
2-Butanone (MEK)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	----	----
4-Methyl-2-pentanone (MIBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
2-Hexanone (MBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Sulfonated Compounds										
Carbon disulfide	EPA5035/EPA8260C	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	----	----
Fumigants										
2.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
cis-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
trans-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2-Dibromoethane (EDB)	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Chloromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Bromomethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Chloroethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Trichlorofluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	----	----
Iodomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
trans-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
cis-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.1-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Dibromomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.3-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.1.1.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
trans-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB37 - 0,5	SB38 - 0,5	SB38 - 1,5	----	----
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
						SG1619996-006	**SG1619996-007**	**SG1619996-008**	**----**	**----**
Halogenated Aliphatic Compounds - Continued										
cis-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.1.2.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2.3-Trichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Pentachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2-Dibromo-3-chloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Bromobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2.3-Trichlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Trihalomethanes										
Bromodichloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Dibromochloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Phenolic Compounds										
2-Chlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2-Nitrophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.4-Dimethylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.6-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.4-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Chloro-3-methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.4.6-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.4.5-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2-Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Acenaphthylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Acenaphthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Fluorene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
N-2-Fluorenyl Acetamide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Benzo(b) & Benzo(k)fluoranthene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
7.12-Dimethylbenz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
3-Methylcholanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB37 - 0,5	SB38 - 0,5	SB38 - 1,5	-----	-----
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
						SG1619996-006	**SG1619996-007**	**SG1619996-008**	----	----
PolyAromatic Hydrocarbons - Continued										
Dibenz(a.h)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Phthalate Esters										
Dimethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Diethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Di-n-butyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Butyl benzyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
bis(2-ethylhexyl) phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Di-n-octylphthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Nitrosamines										
N-Nitrosomethylethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosodiethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosopyrrolidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosomorpholine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosodi-n-propylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosopiperidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosodibutylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
N-Nitrosodiphenyl & Diphenylamine	EPA8270D	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	----	----
Methapyrilene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Nitroaromatics and Cyclic Ketones										
2-Picoline	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Acetophenone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Nitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Isophorone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.6-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
2.4-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1-Naphthylamine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Nitroquinoline-N-oxide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
5-Nitro-o-toluidine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Azobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.3.5-Trinitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Phenacetin	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Aminobiphenyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Pentachloronitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Dimethylaminoazobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorobenzilate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Haloethers										

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB37 - 0,5	SB38 - 0,5	SB38 - 1,5	----	----
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
						SG1619996-006	**SG1619996-007**	**SG1619996-008**	**---**	**---**
Haloethers - Continued										
Bis(2-chloroethyl) ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Bis(2-chloroethoxy) methane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Chlorophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4-Bromophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.4-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Hexachloroethane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
1.2.4-Trichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Hexachloropropylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Hexachlorobutadiene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Hexachlorocyclopentadiene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Pentachlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Hexachlorobenzene (HCB)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Anilines and Benzidines										
Aniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
4-Chloroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
2-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
3-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Dibenzofuran	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
4-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Carbazole	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
3.3`-Dichlorobenzidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Polychlorinated Biphenyls										
Aroclor 1232	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Aroclor 1242	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Aroclor 1248	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Aroclor 1254	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	----	----
Organochlorine Pesticides										
delta-BHC	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
trans-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
cis-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
alpha-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4.4`-DDE	EPA8270D	0.10	mg/kg	----	----	**0.13**	<0.10	**0.16**	----	----
beta-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB37 - 0.5	SB38 - 0.5	SB38 - 1.5	----	----
Client sample ID										
Sampling date/time						03-DEC-2016	03-DEC-2016	03-DEC-2016	----	----
						SG1619996-006	**SG1619996-007**	**SG1619996-008**	—	—
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA8270D	0.10	mg/kg	----	----	**2.80**	**0.11**	**1.13**	----	----
Endosulfan sulfate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
4.4`-DDT	EPA8270D	0.10	mg/kg	----	----	**0.65**	<0.10	**0.70**	----	----
Endrin ketone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Organophosphorus Pesticides										
Malathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Dichlorvos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Dimethoate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Diazinon	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorpyrifos-methyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Ethion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Fenthion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorpyrifos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Pirimphos-ethyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Prothiofos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Methyl Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorfenvinphos (E)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
Chlorfenvinphos (Z)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	----	----
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5035/EPA8260C	0.1	%	----	----	**104**	**105**	**113**	----	----
Toluene-D8	EPA5035/EPA8260C	0.1	%	----	----	**88.3**	**90.2**	**90.4**	----	----
4-Bromofluorobenzene	EPA5035/EPA8260C	0.1	%	----	----	**103**	**106**	**105**	----	----
Acid Extractable Surrogates										
2-Fluorophenol	EPA8270D	0.1	%	----	----	**70.0**	**70.0**	**67.4**	----	----
Phenol-d5	EPA8270D	0.1	%	----	----	**55.8**	**66.0**	**54.8**	----	----
2.4.6-Tribromophenol	EPA8270D	0.1	%	----	----	**68.5**	**68.8**	**57.8**	----	----
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA8270D	0.1	%	----	----	**75.7**	**72.8**	**65.9**	----	----
2-Fluorobiphenyl	EPA8270D	0.1	%	----	----	**75.0**	**73.3**	**71.4**	----	----
4-Terphenyl-d14	EPA8270D	0.1	%	----	----	**84.0**	**68.1**	**70.8**	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	Method	Acceptance Limits (%) Low	High
VOC Surrogates			
1,2-Dichloroethane-D4	EPA5035/EPA8260C	70	121
Toluene-D8	EPA5035/EPA8260C	84	138
4-Bromofluorobenzene	EPA5035/EPA8260C	59	113
Acid Extractable Surrogates			
2-Fluorophenol	EPA8270D	25	121
Phenol-d5	EPA8270D	24	113
2,4,6-Tribromophenol	EPA8270D	19	122
Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	EPA8270D	23	120
2-Fluorobiphenyl	EPA8270D	30	115
4-Terphenyl-d14	EPA8270D	18	137

ALS TECHNICHEM (S) PTE LTD

OUR REF NO : SG 1619996
COMPANY : Environmental Resources Management

QA/QC REPORT

Remarks : QA/QC Results

a) All analyses were analyzed within their holding times.
b) Method blanks were run in each batch of analysis to check background interference, if any.
c) Surrogate spike recoveries were performed on each sample in the VOCs and SVOCs analysis. The results were summarized as below.
d) A summarized QC report on recoveries of Lab Control Samples(LCS) and Matrix Spike (MS) is attached. Upon review of the QA/QC datas, the recoveries of the laboratory control sample, matrix spikes and surrogate spikes (vocs & svocs) were within ALS laboratory acceptance criteria.

QA/QC Results :

% Surrogate Spike Recoveries

Volatile Organics (VOCs)

Surrogare Compound	Range for all samples
Dichloroethane-d_4	85-113
Toluene-d_8	88-92
4-Bromofluorobenzene	98-106

Semi-Volatile Organics (SVOCs)

Surrogate Compound	Range for all samples
2-Fluorophenol	52-70
Phenol-d_6	44-66
Nitrobenzene-d_5	53-76
2-Fluorobiphenyl	58-75
2,4,6-Tribromophenol	53-73
p-Terphenyl-d_{14}	58-84

ALS TECHNICHEM (S) PTE LTD

OUR REF NO : SG 1619996
COMPANY : Environmental Resources Management

Test	LCS % Recovery	MS, % recovery
TPH as diesel oil	109	105
SVOCs		
Phenol	88	77
2- Chlorophenol	83	79
4-Chloro-3-methyl phenol	102	80
Pentachlorophenol	80	82
Acenaphthene	76	84
Pyrene	86	79
N-nitroso-di-n-propylamine	89	84
2,4-dinitrotolune	88	85
1,4-dichlorobenzene	86	89
1,2,4-trichlorobenzene	77	76
VOCs		
Benzene	105	92
Toluene	90	85
1,1-Dichloroethene	104	89
Trichloroethene	99	86
Chlorobenzene	105	114
Metals		
Arsenic	101	105
Barium	103	98
Cadmium	100	104
Total chromium	103	104
Cobalt	102	98
Copper	106	104
Mercury	117	98
Lead	98	88
Molybdenum	103	106
Nickel	103	100
Zinc	96	90
Antimony	101	102

CHAIN OF CUSTODY DOCUMENTATION

ATS 7789

ALS TECHNICHEM

SG1619996

CLIENT: Environmental Resource Management (S) Pte Ltd
POSTAL ADDRESS: 120 Robinson Road #20-01 (S)068913
SEND REPORT TO: Nyanne Mamonda SEND INVOICE TO: Laurence Hammond
DATA NEEDED BY: 20/12/16 REPORT NEEDED BY: 20/12/16
PROJECT ID: [illegible]
P.O. NO.:
QUOTE NO.:
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LABORATORY BATCH NO.:
SAMPLERS:
PHONE: FAX:
REPORT FORMAT: HARD ____ FAX: ____ DISK: ____ BULLETIN BOARD: ____
QC LEVEL: QCS1 ____ QCS2 ____ QCS3 ____ QCS4 ____

FOR LAB USE ONLY
COOLER SEAL
Yes ... No ...
Broken ... Intact ...
COOLER TEMP: ... deg.C

Normal TAT

ANALYSIS REQUIRED

SAMPLE DATA				*CONTAINER DATA			NOTES
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	pH	
[illegible]	[illegible]	[illegible]			1		
[illegible]	[illegible]	[illegible]			1		
[illegible]	[illegible]	[illegible]			1		
[illegible]	[illegible]	[illegible]			1		
[illegible]	[illegible]	[illegible]			1		
[illegible]	[illegible]	[illegible]			1		
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ALS Technichem (S) Pte Ltd
Work Order
SG1619996
Telephone : +65 6589 0118

emailed

Analysis

RELINQUISHED BY

NAME: [illegible] DATE: 6/12/16
OF: ERM TIME:

NAME: DATE:
OF: TIME:

RECEIVED BY

NAME: DATE:
OF: Francis TIME: 6/12/16

NAME: DATE:
OF: TIME:

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO.:
TRANSPORT CO. NAME:

*Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle. O = Other.

ALS TECHNICHEM

Rec @ 06/12 1830
Checked by:

CERTIFICATE OF ANALYSIS

Work Order	: **SG1620394**	Page	: 1 of 27
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT	Project	: 0311748
Contact	: Mr Desmond Leung	Order number	: ----
Address	: 120 Robinson Road #10-01 Singapore 068913	Quote number	: ----
E-mail	: Desmond.Leung@erm.com	Date Received	: 13-DEC-2016
Telephone	: ----	Date Analysed	: 13-DEC-2016
Facsimile	: +65 6226 1363	Date Issued	: 28-DEC-2016
No. of samples received	: 14	No. of samples analysed	: 14

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*
Pansy Teo	Senior Environmental Manager
Tan Teong Huat	Senior Environmental Manager

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. Results apply to the sample(s) as submitted. The laboratory declares that the test results relate only to the items tested and do not substitute any other documents. This report may not be reproduced except with prior written approval from the testing laboratory. This report may not be used for advertising purposes.

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, BS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : LOR = Limit of reporting

- **BS method is referenced to British Standard 1377: Part 3/1990**

Analytical Results

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Metals										
Arsenic	EPA3050B/EPA6010B	0.5	mg/kg	29	55	**4.6**	<0.5	**17.6**	<0.5	**3.1**
Barium	EPA3050B/EPA6010B	0.5	mg/kg	160	625	**17.6**	**19.9**	**38.6**	**20.6**	**41.5**
Cadmium	EPA3050B/EPA6010B	0.5	mg/kg	0.8	12	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	EPA3050B/EPA6010B	0.5	mg/kg	100	380	**10.4**	**25.3**	**29.3**	**25.1**	**19.8**
Cobalt	EPA3050B/EPA6010B	0.5	mg/kg	9	240	**1.0**	**0.8**	**2.2**	**1.0**	**1.7**
Copper	EPA3050B/EPA6010B	0.5	mg/kg	36	190	**8.2**	**3.2**	**23.4**	**3.5**	**11.2**
Mercury	EPA7471B	0.02	mg/kg	0.3	10	**0.05**	**0.04**	**0.10**	**0.06**	**0.11**
Lead	EPA3050B/EPA6010B	0.5	mg/kg	85	530	**17.5**	**28.9**	**25.7**	**30.5**	**27.2**
Molybdenum	EPA3050B/EPA6010B	0.5	mg/kg	3	200	**0.7**	<0.5	**5.1**	<0.5	**0.6**
Nickel	EPA3050B/EPA6010B	0.5	mg/kg	35	210	**1.9**	**1.0**	**16.4**	**1.1**	**2.7**
Zinc	EPA3050B/EPA6010B	0.5	mg/kg	140	720	**15.2**	**1.6**	**128**	**1.9**	**40.8**
Antimony	EPA3050B/EPA6010B	0.5	mg/kg	3	15	**1.6**	**5.4**	**3.2**	**5.4**	**3.0**
Inorganic Compounds										
Cyanide	EPA9010/EPA 9014	0.10	mg/kg	1	20	<0.10	<0.10	<0.10	<0.10	<0.10
Aromatic Compounds										
Benzene	EPA5035/EPA8260C	0.10	mg/kg	0.01	1	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	0.03	50	<0.10	<0.10	<0.10	<0.10	<0.10
Phenol	EPA8270D	0.10	mg/kg	0.05	40	<0.10	<0.10	<0.10	<0.10	<0.10
Cresoles (Sum)	EPA8270D	0.10	mg/kg	0.05	5	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	EPA5035/EPA8260C	0.10	mg/kg	0.01	130	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	0.1	25	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	EPA5035/EPA8260C	0.10	mg/kg	0.3	100	<0.10	<0.10	<0.10	<0.10	<0.10
Catechol	EPA8270D	0.10	mg/kg	0.05	20	<0.10	<0.10	<0.10	<0.10	<0.10
Resorcinol	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Hydrochinon	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	**0.33**	<0.10	**0.30**	<0.10
Fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Polynuclear Aromatic Hydrocarbons - Continued										
Indeno(1.2.3.cd)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Sum of PAHs	EPA8270D	0.20	mg/kg	1	40	<0.20	**0.33**	<0.20	**0.30**	<0.20
Chlorinated Hydrocarbons										
1.1-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.02	4	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloroethene (sum cis & trans)	EPA5035/EPA8260C	0.20	mg/kg	0.2	1	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloropropanes (Sum)	EPA5035/EPA8260C	0.10	mg/kg	0.002	2	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.07	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	10	<0.10	<0.10	<0.10	<0.10	<0.10
Trichloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.1	60	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethene	EPA5035/EPA8260C	0.10	mg/kg	0.002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	EPA5035/EPA8260C	1.00	mg/kg	0.4	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloromethane	EPA5035/EPA8260C	0.10	mg/kg	0.4	1	<0.10	<0.10	<0.10	<0.10	<0.10
Chloroform	EPA5035/EPA8260C	0.10	mg/kg	0.02	10	<0.10	<0.10	<0.10	<0.10	<0.10
Vinyl chloride	EPA5035/EPA8260C	0.01	mg/kg	0.01	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	0.20	mg/kg	0.03	30	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA8270D	0.20	mg/kg	0.01	10	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorophenols (Sum)	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Monochloroanilines	EPA8270D	0.20	mg/kg	0.005	50	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA8082	0.50	mg/kg	0.02	1	<0.50	<0.50	<0.50	<0.50	<0.50
Pesticides										
DDD/DDE/DDT	EPA8270D	0.50	mg/kg	0.01	4	**1.94**	<0.50	<0.50	<0.50	<0.50

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Pesticides - Continued										
Aldrin,Dieldrin,Endrin (Sum)	EPA8270D	0.50	mg/kg	0.01	4	<0.50	<0.50	<0.50	<0.50	<0.50
Aldrin	EPA8270D	0.10	mg/kg	0.00006	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin	EPA8270D	0.10	mg/kg	0.0005	----	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin	EPA8270D	0.10	mg/kg	0.00004	----	<0.10	<0.10	<0.10	<0.10	<0.10
BHC Compounds (Sum)	EPA8270D	0.50	mg/kg	0.01	2	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	EPA8270D	0.10	mg/kg	0.003	----	<0.10	<0.10	<0.10	<0.10	<0.10
beta-BHC	EPA8270D	0.10	mg/kg	0.009	----	<0.10	<0.10	<0.10	<0.10	<0.10
gamma-BHC	EPA8270D	0.10	mg/kg	0.00005	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlordane	EPA8270D	0.10	mg/kg	0.00003	4	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan	EPA8270D	0.10	mg/kg	0.00001	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor	EPA8270D	0.10	mg/kg	0.0007	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor epoxide	EPA8270D	0.10	mg/kg	0.0000002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Carbaryl	EPA8270D	0.10	mg/kg	0.00003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofuran	EPA8270D	0.01	mg/kg	0.00002	2	<0.01	<0.01	<0.01	<0.01	<0.01
Maneb	EPA8270D	0.50	mg/kg	0.002	35	<0.50	<0.50	<0.50	<0.50	<0.50
Atrazine	EPA8270D	0.10	mg/kg	0.0002	6	<0.10	<0.10	<0.10	<0.10	<0.10
Other Pollutants										
Cyclohexanone	EPA5035/EPA8260C	0.10	mg/kg	0.1	45	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalates (Sum)	EPA8270D	0.20	mg/kg	0.1	60	<0.20	<0.20	<0.20	<0.20	<0.20
Mineral oils	EPA8015B	50	mg/kg	50	5000	**101**	**185**	**80**	**179**	<50
Pyridine	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Bromoform	EPA5035/EPA8260C	0.10	mg/kg	----	75	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrofuran	EPA8270D	0.10	mg/kg	0.1	2	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrothiophene	EPA8270D	0.10	mg/kg	0.1	90	<0.10	<0.10	<0.10	<0.10	<0.10
Conventional										
Organic Matter	BS1377	0.1	% DW	----	----	**0.2**	**0.2**	**2.5**	**0.2**	**0.6**
Moisture Content (dried @ 103°C)	BS1377	0.10	%	----	----	**15.7**	**21.8**	**16.5**	**23.2**	**17.3**
Total Petroleum Hydrocarbon										
C6 - C9 Fraction	EPA5035/EPA8015B	5	mg/kg	----	----	<5	<5	<5	<5	<5
C10 - C14 Fraction	EPA8015B	5	mg/kg	----	----	<5	**40**	<5	**39**	<5
C15 - C28 Fraction	EPA8015B	10	mg/kg	----	----	**67**	**145**	**32**	**139**	<10
C29 - C36 Fraction	EPA8015B	10	mg/kg	----	----	**34**	<10	**47**	<10	**28**

Dutch Standards 2000: Dutch Soil Standards

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Metals										
Arsenic	EPA3050B/EPA6010B	0.5	mg/kg	29	55	<0.5	**6.3**	<0.5	**2.5**	**4.8**
Barium	EPA3050B/EPA6010B	0.5	mg/kg	160	625	**23.2**	**15.5**	**17.4**	**25.0**	**16.6**
Cadmium	EPA3050B/EPA6010B	0.5	mg/kg	0.8	12	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	EPA3050B/EPA6010B	0.5	mg/kg	100	380	**14.0**	**12.0**	**11.8**	**8.3**	**9.8**
Cobalt	EPA3050B/EPA6010B	0.5	mg/kg	9	240	**1.4**	**1.9**	**1.6**	**7.8**	**0.9**
Copper	EPA3050B/EPA6010B	0.5	mg/kg	36	190	**9.2**	**14.8**	**13.6**	**20.2**	**7.6**
Mercury	EPA7471B	0.02	mg/kg	0.3	10	**0.06**	**0.04**	**0.03**	**0.03**	**0.06**
Lead	EPA3050B/EPA6010B	0.5	mg/kg	85	530	**12.5**	**15.6**	**9.9**	**13.4**	**16.6**
Molybdenum	EPA3050B/EPA6010B	0.5	mg/kg	3	200	<0.5	**1.4**	<0.5	<0.5	**0.7**
Nickel	EPA3050B/EPA6010B	0.5	mg/kg	35	210	**2.4**	**2.7**	**2.4**	**8.5**	**1.8**
Zinc	EPA3050B/EPA6010B	0.5	mg/kg	140	720	**4.2**	**9.0**	**8.5**	**22.8**	**12.6**
Antimony	EPA3050B/EPA6010B	0.5	mg/kg	3	15	**2.1**	**1.5**	**1.6**	**1.0**	**1.4**
Inorganic Compounds										
Cyanide	EPA9010/EPA 9014	0.10	mg/kg	1	20	<0.10	<0.10	<0.10	<0.10	<0.10
Aromatic Compounds										
Benzene	EPA5035/EPA8260C	0.10	mg/kg	0.01	1	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	0.03	50	<0.10	<0.10	<0.10	<0.10	<0.10
Phenol	EPA8270D	0.10	mg/kg	0.05	40	<0.10	<0.10	<0.10	<0.10	<0.10
Cresoles (Sum)	EPA8270D	0.10	mg/kg	0.05	5	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	EPA5035/EPA8260C	0.10	mg/kg	0.01	130	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg	0.1	25	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	EPA5035/EPA8260C	0.10	mg/kg	0.3	100	<0.10	<0.10	<0.10	<0.10	<0.10
Catechol	EPA8270D	0.10	mg/kg	0.05	20	<0.10	<0.10	<0.10	<0.10	<0.10
Resorcinol	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Hydrochinon	EPA8270D	0.10	mg/kg	0.05	10	<0.10	<0.10	<0.10	<0.10	<0.10
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1.2.3.cd)pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Sum of PAHs	EPA8270D	0.20	mg/kg	1	40	<0.20	<0.20	<0.20	<0.20	<0.20

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Sub-Matrix: **SOIL**

				Client sample ID	Target	Intervention	SB33 - 1.5m	SB34 - 1.8m	SB35 - 1.5m	SB36 - 1.8m	SB37 - 2.0m
				Sampling date/time	Value	Value	08-DEC-2016	09-DEC-2016	07-DEC-2016	09-DEC-2016	07-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620394-009**	**SG1620394-011**	**SG1620394-005**	**SG1620394-012**	**SG1620394-001**
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.02	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.02	4	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.1	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloroethene (sum cis & trans)	EPA5035/EPA8260C	0.20	mg/kg		0.2	1	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloropropanes (Sum)	EPA5035/EPA8260C	0.10	mg/kg		0.002	2	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.07	15	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.4	10	<0.10	<0.10	<0.10	<0.10	<0.10
Trichloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.1	60	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	EPA5035/EPA8260C	1.00	mg/kg		0.4	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloromethane	EPA5035/EPA8260C	0.10	mg/kg		0.4	1	<0.10	<0.10	<0.10	<0.10	<0.10
Chloroform	EPA5035/EPA8260C	0.10	mg/kg		0.02	10	<0.10	<0.10	<0.10	<0.10	<0.10
Vinyl chloride	EPA5035/EPA8260C	0.01	mg/kg		0.01	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	0.20	mg/kg		0.03	30	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorobenzene	EPA5035/EPA8260C	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA8270D	0.20	mg/kg		0.01	10	<0.20	<0.20	<0.20	<0.20	<0.20
Monochlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chloronaphthalene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Monochloroanilines	EPA8270D	0.20	mg/kg		0.005	50	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA8082	0.50	mg/kg		0.02	1	<0.50	<0.50	<0.50	<0.50	<0.50
Pesticides											
DDD/DDE/DDT	EPA8270D	0.50	mg/kg		0.01	4	<0.50	<0.50	<0.50	<0.50	**1.86**
Aldrin,Dieldrin,Endrin (Sum)	EPA8270D	0.50	mg/kg		0.01	4	<0.50	<0.50	<0.50	<0.50	<0.50
Aldrin	EPA8270D	0.10	mg/kg		0.00006	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin	EPA8270D	0.10	mg/kg		0.0005	----	<0.10	<0.10	<0.10	<0.10	<0.10

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Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Pesticides - Continued										
Endrin	EPA8270D	0.10	mg/kg	0.00004	----	<0.10	<0.10	<0.10	<0.10	<0.10
BHC Compounds (Sum)	EPA8270D	0.50	mg/kg	0.01	2	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	EPA8270D	0.10	mg/kg	0.003	----	<0.10	<0.10	<0.10	<0.10	<0.10
beta-BHC	EPA8270D	0.10	mg/kg	0.009	----	<0.10	<0.10	<0.10	<0.10	<0.10
gamma-BHC	EPA8270D	0.10	mg/kg	0.00005	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlordane	EPA8270D	0.10	mg/kg	0.00003	4	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan	EPA8270D	0.10	mg/kg	0.00001	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor	EPA8270D	0.10	mg/kg	0.0007	4	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor epoxide	EPA8270D	0.10	mg/kg	0.0000002	4	<0.10	<0.10	<0.10	<0.10	<0.10
Carbaryl	EPA8270D	0.10	mg/kg	0.00003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofuran	EPA8270D	0.01	mg/kg	0.00002	2	<0.01	<0.01	<0.01	<0.01	<0.01
Maneb	EPA8270D	0.50	mg/kg	0.002	35	<0.50	<0.50	<0.50	<0.50	<0.50
Atrazine	EPA8270D	0.10	mg/kg	0.0002	6	<0.10	<0.10	<0.10	<0.10	<0.10
Other Pollutants										
Cyclohexanone	EPA5035/EPA8260C	0.10	mg/kg	0.1	45	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalates (Sum)	EPA8270D	0.20	mg/kg	0.1	60	<0.20	<0.20	<0.20	<0.20	<0.20
Mineral oils	EPA8015B	50	mg/kg	50	5000	<50	**59**	<50	**56**	**100**
Pyridine	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Bromoform	EPA5035/EPA8260C	0.10	mg/kg	----	75	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrofuran	EPA8270D	0.10	mg/kg	0.1	2	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrahydrothiophene	EPA8270D	0.10	mg/kg	0.1	90	<0.10	<0.10	<0.10	<0.10	<0.10
Conventional										
Organic Matter	BS1377	0.1	% DW	----	----	**0.2**	**0.6**	**0.2**	**0.4**	**0.2**
Moisture Content (dried @ 103°C)	BS1377	0.10	%	----	----	**15.0**	**22.2**	**20.4**	**20.2**	**14.6**
Total Petroleum Hydrocarbon										
C6 - C9 Fraction	EPA5035/EPA8015B	5	mg/kg	----	----	<5	<5	<5	<5	<5
C10 - C14 Fraction	EPA8015B	5	mg/kg	----	----	<5	<5	<5	<5	<5
C15 - C28 Fraction	EPA8015B	10	mg/kg	----	----	<10	**33**	**22**	**32**	**66**
C29 - C36 Fraction	EPA8015B	10	mg/kg	----	----	<10	**26**	**24**	**23**	**34**

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Sub-Matrix: **SOIL**

				Client sample ID	Target Value	Intervention Value	SB39 - 0.7m	SB39 - 2.0m	SB40 - 0.7m	SB40 - 3.0m	----
				Sampling date/time			07-DEC-2016	07-DEC-2016	07-DEC-2016	08-DEC-2016	----
Compound	*Method*	*LOR*	*Unit*				SG1620394-002	SG1620394-003	SG1620394-004	SG1620394-010	---
Metals											
Arsenic	EPA3050B/EPA6010B	0.5	mg/kg		29	55	**8.2**	**2.7**	**9.8**	**1.0**	----
Barium	EPA3050B/EPA6010B	0.5	mg/kg		160	625	**34.7**	**26.2**	**36.2**	**15.3**	----
Cadmium	EPA3050B/EPA6010B	0.5	mg/kg		0.8	12	<0.5	<0.5	<0.5	<0.5	----
Chromium	EPA3050B/EPA6010B	0.5	mg/kg		100	380	**19.5**	**18.2**	**15.2**	**17.0**	----
Cobalt	EPA3050B/EPA6010B	0.5	mg/kg		9	240	**2.0**	**1.5**	**2.0**	**0.9**	----
Copper	EPA3050B/EPA6010B	0.5	mg/kg		36	190	**21.4**	**14.0**	**16.9**	**9.6**	----
Mercury	EPA7471B	0.02	mg/kg		0.3	10	**0.11**	**0.21**	**0.12**	**0.12**	----
Lead	EPA3050B/EPA6010B	0.5	mg/kg		85	530	**31.8**	**23.1**	**23.9**	**21.5**	----
Molybdenum	EPA3050B/EPA6010B	0.5	mg/kg		3	200	**2.7**	**0.7**	**12.7**	**1.1**	----
Nickel	EPA3050B/EPA6010B	0.5	mg/kg		35	210	**3.6**	**3.4**	**3.9**	**2.4**	----
Zinc	EPA3050B/EPA6010B	0.5	mg/kg		140	720	**33.9**	**19.8**	**41.6**	**12.5**	----
Antimony	EPA3050B/EPA6010B	0.5	mg/kg		3	15	**2.1**	**2.2**	**1.9**	**1.8**	----
Inorganic Compounds											
Cyanide	EPA9010/EPA 9014	0.10	mg/kg		1	20	<0.10	<0.10	<0.10	<0.10	----
Aromatic Compounds											
Benzene	EPA5035/EPA8260C	0.10	mg/kg		0.01	1	<0.10	<0.10	<0.10	<0.10	----
Ethylbenzene	EPA5035/EPA8260C	0.10	mg/kg		0.03	50	<0.10	<0.10	<0.10	<0.10	----
Phenol	EPA8270D	0.10	mg/kg		0.05	40	<0.10	<0.10	<0.10	<0.10	----
Cresoles (Sum)	EPA8270D	0.10	mg/kg		0.05	5	<0.10	<0.10	<0.10	<0.10	----
Toluene	EPA5035/EPA8260C	0.10	mg/kg		0.01	130	<0.10	<0.10	<0.10	<0.10	----
Xylenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		0.1	25	<0.20	<0.20	<0.20	<0.20	----
Styrene	EPA5035/EPA8260C	0.10	mg/kg		0.3	100	<0.10	<0.10	<0.10	<0.10	----
Catechol	EPA8270D	0.10	mg/kg		0.05	20	<0.10	<0.10	<0.10	<0.10	----
Resorcinol	EPA8270D	0.10	mg/kg		0.05	10	<0.10	<0.10	<0.10	<0.10	----
Hydrochinon	EPA8270D	0.10	mg/kg		0.05	10	<0.10	<0.10	<0.10	<0.10	----
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
Anthracene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
Phenanthrene	EPA8270D	0.10	mg/kg		----	----	<0.10	**0.26**	<0.10	<0.10	----
Fluoranthene	EPA8270D	0.10	mg/kg		----	----	**0.14**	**0.58**	<0.10	**0.12**	----
Benz(a)anthracene	EPA8270D	0.10	mg/kg		----	----	<0.10	**0.25**	<0.10	<0.10	----
Chrysene	EPA8270D	0.10	mg/kg		----	----	<0.10	**0.19**	<0.10	<0.10	----
Benzo(a)pyrene	EPA8270D	0.10	mg/kg		----	----	**0.12**	**0.14**	<0.10	<0.10	----
Benzo(g.h.i)perylene	EPA8270D	0.10	mg/kg		----	----	**0.15**	**0.14**	<0.10	<0.10	----
Benzo(k)fluoranthene	EPA8270D	0.10	mg/kg		----	----	**0.21**	**0.36**	<0.10	<0.10	----
Indeno(1.2.3.cd)pyrene	EPA8270D	0.10	mg/kg		----	----	**0.10**	**0.13**	<0.10	<0.10	----
Sum of PAHs	EPA8270D	0.20	mg/kg		1	40	**0.73**	**2.05**	<0.20	<0.20	----

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Sub-Matrix: **SOIL**

				Client sample ID	Target Value	Intervention Value	SB39 - 0.7m	SB39 - 2.0m	SB40 - 0.7m	SB40 - 3.0m	----
				Sampling date/time			07-DEC-2016	07-DEC-2016	07-DEC-2016	08-DEC-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1620394-002**	**SG1620394-003**	**SG1620394-004**	**SG1620394-010**	**---**
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.02	15	<0.10	<0.10	<0.10	<0.10	----
1.2-Dichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.02	4	<0.10	<0.10	<0.10	<0.10	----
1.1-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.1	0.3	<0.10	<0.10	<0.10	<0.10	----
1.2-Dichloroethene (sum cis & trans)	EPA5035/EPA8260C	0.20	mg/kg		0.2	1	<0.20	<0.20	<0.20	<0.20	----
Dichloropropanes (Sum)	EPA5035/EPA8260C	0.10	mg/kg		0.002	2	<0.10	<0.10	<0.10	<0.10	----
1.1.1-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.07	15	<0.10	<0.10	<0.10	<0.10	----
1.1.2-Trichloroethane	EPA5035/EPA8260C	0.10	mg/kg		0.4	10	<0.10	<0.10	<0.10	<0.10	----
Trichloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.1	60	<0.10	<0.10	<0.10	<0.10	----
Tetrachloroethene	EPA5035/EPA8260C	0.10	mg/kg		0.002	4	<0.10	<0.10	<0.10	<0.10	----
Methylene chloride	EPA5035/EPA8260C	1.00	mg/kg		0.4	10	<1.00	<1.00	<1.00	<1.00	----
Tetrachloromethane	EPA5035/EPA8260C	0.10	mg/kg		0.4	1	<0.10	<0.10	<0.10	<0.10	----
Chloroform	EPA5035/EPA8260C	0.10	mg/kg		0.02	10	<0.10	<0.10	<0.10	<0.10	----
Vinyl chloride	EPA5035/EPA8260C	0.01	mg/kg		0.01	0.1	<0.01	<0.01	<0.01	<0.01	----
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	0.20	mg/kg		0.03	30	<0.20	<0.20	<0.20	<0.20	----
Monochlorobenzene	EPA5035/EPA8260C	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
Dichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Trichlorobenzenes (Sum)	EPA5035/EPA8260C	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Tetrachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Pentachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Hexachlorobenzenes (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA8270D	0.20	mg/kg		0.01	10	<0.20	<0.20	<0.20	<0.20	----
Monochlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Dichlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Trichlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Tetrachlorophenols (Sum)	EPA8270D	0.20	mg/kg		----	----	<0.20	<0.20	<0.20	<0.20	----
Pentachlorophenol	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
Chloronaphthalene	EPA8270D	0.10	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
Monochloroanilines	EPA8270D	0.20	mg/kg		0.005	50	<0.20	<0.20	<0.20	<0.20	----
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA8082	0.50	mg/kg		0.02	1	<0.50	<0.50	<0.50	<0.50	----
Pesticides											
DDD/DDE/DDT	EPA8270D	0.50	mg/kg		0.01	4	**7.74**	**1.83**	**9.35**	**24.2**	----
Aldrin,Dieldrin,Endrin (Sum)	EPA8270D	0.50	mg/kg		0.01	4	<0.50	<0.50	<0.50	<0.50	----
Aldrin	EPA8270D	0.10	mg/kg		0.00006	----	<0.10	<0.10	<0.10	<0.10	----
Dieldrin	EPA8270D	0.10	mg/kg		0.0005	----	<0.10	<0.10	<0.10	<0.10	----

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Sub-Matrix: **SOIL**

				Client sample ID	Target Value	Intervention Value	SB39 - 0.7m	SB39 - 2.0m	SB40 - 0.7m	SB40 - 3.0m	----
				Sampling date/time			07-DEC-2016	07-DEC-2016	07-DEC-2016	08-DEC-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1620394-002**	**SG1620394-003**	**SG1620394-004**	**SG1620394-010**	**---**
Pesticides - Continued											
Endrin	EPA8270D	0.10	mg/kg	0.00004	----	<0.10	<0.10	<0.10	<0.10	----
BHC Compounds (Sum)	EPA8270D	0.50	mg/kg	0.01	2	<0.50	<0.50	<0.50	<0.50	----
alpha-BHC	EPA8270D	0.10	mg/kg	0.003	----	<0.10	<0.10	<0.10	<0.10	----
beta-BHC	EPA8270D	0.10	mg/kg	0.009	----	<0.10	<0.10	<0.10	<0.10	----
gamma-BHC	EPA8270D	0.10	mg/kg	0.00005	----	<0.10	<0.10	<0.10	<0.10	----
Chlordane	EPA8270D	0.10	mg/kg	0.00003	4	<0.10	<0.10	<0.10	<0.10	----
Endosulfan	EPA8270D	0.10	mg/kg	0.00001	4	<0.10	<0.10	<0.10	<0.10	----
Heptachlor	EPA8270D	0.10	mg/kg	0.0007	4	<0.10	<0.10	<0.10	<0.10	----
Heptachlor epoxide	EPA8270D	0.10	mg/kg	0.0000002	4	<0.10	<0.10	<0.10	<0.10	----
Carbaryl	EPA8270D	0.10	mg/kg	0.00003	5	<0.10	<0.10	<0.10	<0.10	----
Carbofuran	EPA8270D	0.01	mg/kg	0.00002	2	<0.01	<0.01	<0.01	<0.01	----
Maneb	EPA8270D	0.50	mg/kg	0.002	35	<0.50	<0.50	<0.50	<0.50	----
Atrazine	EPA8270D	0.10	mg/kg	0.0002	6	<0.10	<0.10	<0.10	<0.10	----
Other Pollutants											
Cyclohexanone	EPA5035/EPA8260C	0.10	mg/kg	0.1	45	<0.10	<0.10	<0.10	<0.10	----
Phthalates (Sum)	EPA8270D	0.20	mg/kg	0.1	60	<0.20	<0.20	<0.20	<0.20	----
Mineral oils	EPA8015B	50	mg/kg	50	5000	<50	**140**	**106**	**126**	----
Pyridine	EPA5035/EPA8260C	0.10	mg/kg	0.1	0.5	<0.10	<0.10	<0.10	<0.10	----
Bromoform	EPA5035/EPA8260C	0.10	mg/kg	----	75	<0.10	<0.10	<0.10	<0.10	----
Tetrahydrofuran	EPA8270D	0.10	mg/kg	0.1	2	<0.10	<0.10	<0.10	<0.10	----
Tetrahydrothiophene	EPA8270D	0.10	mg/kg	0.1	90	<0.10	<0.10	<0.10	<0.10	----
Conventional											
Organic Matter	BS1377	0.1	% DW	----	----	**1.7**	**0.8**	**2.4**	**0.9**	----
Moisture Content (dried @ 103°C)	BS1377	0.10	%	----	----	**15.8**	**17.4**	**19.1**	**21.5**	----
Total Petroleum Hydrocarbon											
C6 - C9 Fraction	EPA5035/EPA8015B	5	mg/kg	----	----	<5	<5	<5	**9**	----
C10 - C14 Fraction	EPA8015B	5	mg/kg	----	----	<5	**51**	**5**	**51**	----
C15 - C28 Fraction	EPA8015B	10	mg/kg	----	----	**15**	**88**	**63**	**66**	----
C29 - C36 Fraction	EPA8015B	10	mg/kg	----	----	**24**	<10	**38**	<10	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Propylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
sec-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
tert-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
p-Isopropyltoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl Acetate	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
2-Butanone (MEK)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
4-Methyl-2-pentanone (MIBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
2-Hexanone (MBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Sulfonated Compounds										
Carbon disulfide	EPA5035/EPA8260C	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Fumigants										
2.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromoethane (EDB)	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Bromomethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloroethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Trichlorofluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Iodomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Halogenated Aliphatic Compounds - Continued										
cis-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromo-3-chloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bromobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Trihalomethanes										
Bromodichloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromochloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenolic Compounds										
2-Chlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitrophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dimethylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.6-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.5-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
N-2-Fluorenyl Acetamide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b) & Benzo(k)fluoranthene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
7.12-Dimethylbenz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
3-Methylcholanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
PolyAromatic Hydrocarbons - Continued										
Dibenz(a.h)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters										
Dimethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Butyl benzyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
bis(2-ethylhexyl) phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-octylphthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrosamines										
N-Nitrosomethylethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopyrrolidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosomorpholine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodi-n-propylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopiperidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodibutylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenyl & Diphenylamine	EPA8270D	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Methapyrilene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitroaromatics and Cyclic Ketones										
2-Picoline	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acetophenone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Isophorone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1-Naphthylamine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitroquinoline-N-oxide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
5-Nitro-o-toluidine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Azobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trinitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenacetin	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Aminobiphenyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloronitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethylaminoazobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzilate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Haloethers										

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Haloethers - Continued										
Bis(2-chloroethyl) ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethoxy) methane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.4-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloroethane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloropropylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobutadiene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene (HCB)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anilines and Benzidines										
Aniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3.3`-Dichlorobenzidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorinated Biphenyls										
Aroclor 1232	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1242	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1248	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1254	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Organochlorine Pesticides										
delta-BHC	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
alpha-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDE	EPA8270D	0.10	mg/kg	----	----	**0.14**	<0.10	<0.10	<0.10	<0.10
beta-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP01 07-DEC-2016 SG1620394-006	DUP02 10-DEC-2016 SG1620394-014	SB32 - 0.5m 08-DEC-2016 SG1620394-007	SB32 - 1.5m 10-DEC-2016 SG1620394-013	SB33 - 0.5m 08-DEC-2016 SG1620394-008
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA8270D	0.10	mg/kg	----	----	**1.13**	<0.10	<0.10	<0.10	**0.28**
Endosulfan sulfate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDT	EPA8270D	0.10	mg/kg	----	----	**0.67**	<0.10	<0.10	<0.10	<0.10
Endrin ketone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Organophosphorus Pesticides										
Malathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorvos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethoate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Diazinon	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos-methyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Ethion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fenthion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pirimphos-ethyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Prothiofos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (E)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (Z)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5035/EPA8260C	0.1	%	----	----	**96.0**	**92.3**	**90.3**	**90.4**	**89.2**
Toluene-D8	EPA5035/EPA8260C	0.1	%	----	----	**88.6**	**91.8**	**88.4**	**92.0**	**95.0**
4-Bromofluorobenzene	EPA5035/EPA8260C	0.1	%	----	----	**92.7**	**100**	**91.2**	**101**	**101**
Acid Extractable Surrogates										
2-Fluorophenol	EPA8270D	0.1	%	----	----	**73.8**	**53.5**	**79.4**	**45.1**	**64.6**
Phenol-d5	EPA8270D	0.1	%	----	----	**60.2**	**66.2**	**68.8**	**40.3**	**58.7**
2.4.6-Tribromophenol	EPA8270D	0.1	%	----	----	**73.0**	**65.5**	**83.1**	**79.6**	**69.9**
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA8270D	0.1	%	----	----	**89.9**	**63.2**	**94.0**	**65.7**	**71.3**
2-Fluorobiphenyl	EPA8270D	0.1	%	----	----	**77.2**	**64.2**	**81.1**	**58.9**	**68.8**
4-Terphenyl-d14	EPA8270D	0.1	%	----	----	**102**	**52.2**	**72.3**	**64.7**	**62.8**

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Propylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
sec-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
tert-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
p-Isopropyltoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
n-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl Acetate	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
2-Butanone (MEK)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
4-Methyl-2-pentanone (MIBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
2-Hexanone (MBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Sulfonated Compounds										
Carbon disulfide	EPA5035/EPA8260C	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Fumigants										
2.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromoethane (EDB)	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Bromomethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Chloroethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Trichlorofluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Iodomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.1.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Halogenated Aliphatic Compounds - Continued										
cis-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.1.2.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dibromo-3-chloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bromobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.3-Trichlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Trihalomethanes										
Bromodichloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromochloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenolic Compounds										
2-Chlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitrophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dimethylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.6-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4.5-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
N-2-Fluorenyl Acetamide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b) & Benzo(k)fluoranthene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
7.12-Dimethylbenz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
3-Methylcholanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
PolyAromatic Hydrocarbons - Continued										
Dibenz(a.h)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters										
Dimethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Butyl benzyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
bis(2-ethylhexyl) phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-octylphthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrosamines										
N-Nitrosomethylethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopyrrolidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosomorpholine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodi-n-propylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosopiperidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodibutylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenyl & Diphenylamine	EPA8270D	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Methapyrilene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Nitroaromatics and Cyclic Ketones										
2-Picoline	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Acetophenone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Isophorone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.6-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
2.4-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1-Naphthylamine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitroquinoline-N-oxide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
5-Nitro-o-toluidine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Azobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.3.5-Trinitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phenacetin	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Aminobiphenyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachloronitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethylaminoazobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzilate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Haloethers										

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Haloethers - Continued										
Bis(2-chloroethyl) ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethoxy) methane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.4-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloroethane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
1.2.4-Trichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachloropropylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobutadiene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene (HCB)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Anilines and Benzidines										
Aniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3.3`-Dichlorobenzidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Polychlorinated Biphenyls										
Aroclor 1232	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1242	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1248	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor 1254	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
Organochlorine Pesticides										
delta-BHC	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
trans-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
cis-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
alpha-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDE	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	**0.14**
beta-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB33 - 1.5m 08-DEC-2016 SG1620394-009	SB34 - 1.8m 09-DEC-2016 SG1620394-011	SB35 - 1.5m 07-DEC-2016 SG1620394-005	SB36 - 1.8m 09-DEC-2016 SG1620394-012	SB37 - 2.0m 07-DEC-2016 SG1620394-001
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	**0.94**
Endosulfan sulfate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
4.4`-DDT	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	**0.78**
Endrin ketone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Organophosphorus Pesticides										
Malathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorvos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethoate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Diazinon	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos-methyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Ethion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Fenthion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Pirimphos-ethyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Prothiofos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (E)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (Z)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5035/EPA8260C	0.1	%	----	----	**89.7**	**91.7**	**90.7**	**89.0**	**92.8**
Toluene-D8	EPA5035/EPA8260C	0.1	%	----	----	**88.5**	**90.5**	**88.8**	**89.6**	**93.8**
4-Bromofluorobenzene	EPA5035/EPA8260C	0.1	%	----	----	**98.9**	**99.7**	**98.3**	**94.0**	**101**
Acid Extractable Surrogates										
2-Fluorophenol	EPA8270D	0.1	%	----	----	**72.0**	**47.1**	**60.3**	**84.0**	**64.6**
Phenol-d5	EPA8270D	0.1	%	----	----	**62.0**	**64.0**	**55.0**	**63.4**	**54.6**
2.4.6-Tribromophenol	EPA8270D	0.1	%	----	----	**79.0**	**84.1**	**55.6**	**81.8**	**69.0**
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA8270D	0.1	%	----	----	**73.0**	**101**	**62.2**	**101**	**76.8**
2-Fluorobiphenyl	EPA8270D	0.1	%	----	----	**70.8**	**71.3**	**58.1**	**64.2**	**64.7**
4-Terphenyl-d14	EPA8270D	0.1	%	----	----	**60.1**	**68.8**	**71.0**	**63.9**	**87.9**

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

			Client sample ID	Target Value	Intervention Value	SB39 - 0.7m	SB39 - 2.0m	SB40 - 0.7m	SB40 - 3.0m	----
			Sampling date/time			07-DEC-2016	07-DEC-2016	07-DEC-2016	08-DEC-2016	----
Compound	*Method*	*LOR*	*Unit*			**SG1620394-002**	**SG1620394-003**	**SG1620394-004**	**SG1620394-010**	**---**
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
n-Propylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.3.5-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
sec-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2.4-Trimethylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
tert-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
p-Isopropyltoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
n-Butylbenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	----
Vinyl Acetate	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	----
2-Butanone (MEK)	EPA5035/EPA8260C	5.00	mg/kg	----	----	<5.00	<5.00	<5.00	<5.00	----
4-Methyl-2-pentanone (MIBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
2-Hexanone (MBK)	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Sulfonated Compounds										
Carbon disulfide	EPA5035/EPA8260C	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	----
Fumigants										
2.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
cis-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
trans-1.3-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2-Dibromoethane (EDB)	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Chloromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Bromomethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Chloroethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Trichlorofluoromethane	EPA5035/EPA8260C	2.00	mg/kg	----	----	<2.00	<2.00	<2.00	<2.00	----
Iodomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
trans-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
cis-1.2-Dichloroethene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.1-Dichloropropylene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Dibromomethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.3-Dichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.1.1.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
trans-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB39 - 0.7m 07-DEC-2016 SG1620394-002	SB39 - 2.0m 07-DEC-2016 SG1620394-003	SB40 - 0.7m 07-DEC-2016 SG1620394-004	SB40 - 3.0m 08-DEC-2016 SG1620394-010	---- ---- ----
Halogenated Aliphatic Compounds - Continued										
cis-1.4-Dichloro-2-butene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.1.2.2-Tetrachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2.3-Trichloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Pentachloroethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2-Dibromo-3-chloropropane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Bromobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Chlorotoluene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2.3-Trichlorobenzene	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Trihalomethanes										
Bromodichloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Dibromochloromethane	EPA5035/EPA8260C	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Phenolic Compounds										
2-Chlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2-Nitrophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.4-Dimethylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.6-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.4-Dichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Chloro-3-methylphenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.4.6-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.4.5-Trichlorophenol	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2-Chloronaphthalene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Acenaphthylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Acenaphthene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Fluorene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Pyrene	EPA8270D	0.10	mg/kg	----	----	**0.16**	**0.56**	<0.10	**0.16**	----
N-2-Fluorenyl Acetamide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Benzo(b) & Benzo(k)fluoranthene	EPA8270D	0.20	mg/kg	----	----	**0.21**	**0.36**	<0.20	<0.20	----
7.12-Dimethylbenz(a)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
3-Methylcholanthrene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB39 - 0.7m 07-DEC-2016 SG1620394-002	SB39 - 2.0m 07-DEC-2016 SG1620394-003	SB40 - 0.7m 07-DEC-2016 SG1620394-004	SB40 - 3.0m 08-DEC-2016 SG1620394-010	---- ---- ----
PolyAromatic Hydrocarbons - Continued										
Dibenz(a.h)anthracene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Phthalate Esters										
Dimethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Diethyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Di-n-butyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Butyl benzyl phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
bis(2-ethylhexyl) phthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Di-n-octylphthalate	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Nitrosamines										
N-Nitrosomethylethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosodiethylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosopyrrolidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosomorpholine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosodi-n-propylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosopiperidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosodibutylamine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
N-Nitrosodiphenyl & Diphenylamine	EPA8270D	0.50	mg/kg	----	----	<0.50	<0.50	<0.50	<0.50	----
Methapyrilene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Nitroaromatics and Cyclic Ketones										
2-Picoline	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Acetophenone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Nitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Isophorone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.6-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
2.4-Dinitrotoluene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1-Naphthylamine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Nitroquinoline-N-oxide	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
5-Nitro-o-toluidine	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Azobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.3.5-Trinitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Phenacetin	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Aminobiphenyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Pentachloronitrobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Dimethylaminoazobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorobenzilate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Haloethers										

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB39 - 0.7m 07-DEC-2016 SG1620394-002	SB39 - 2.0m 07-DEC-2016 SG1620394-003	SB40 - 0.7m 07-DEC-2016 SG1620394-004	SB40 - 3.0m 08-DEC-2016 SG1620394-010	---- ---- ----
Haloethers - Continued										
Bis(2-chloroethyl) ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Bis(2-chloroethoxy) methane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Chlorophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4-Bromophenyl phenyl ether	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.4-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2-Dichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Hexachloroethane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
1.2.4-Trichlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Hexachloropropylene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Hexachlorobutadiene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Hexachlorocyclopentadiene	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Pentachlorobenzene	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Hexachlorobenzene (HCB)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Anilines and Benzidines										
Aniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
4-Chloroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
2-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
3-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Dibenzofuran	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
4-Nitroaniline	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Carbazole	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
3.3`-Dichlorobenzidine	EPA8270D	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Polychlorinated Biphenyls										
Aroclor 1232	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Aroclor 1242	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Aroclor 1248	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Aroclor 1254	EPA8082	0.20	mg/kg	----	----	<0.20	<0.20	<0.20	<0.20	----
Organochlorine Pesticides										
delta-BHC	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
trans-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
cis-Chlordane	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
alpha-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4.4`-DDE	EPA8270D	0.10	mg/kg	----	----	**0.36**	**0.11**	**0.33**	**0.49**	----
beta-Endosulfan	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----

No Guideline Evaluation Required

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Target Value	Intervention Value	SB39 - 0.7m 07-DEC-2016 SG1620394-002	SB39 - 2.0m 07-DEC-2016 SG1620394-003	SB40 - 0.7m 07-DEC-2016 SG1620394-004	SB40 - 3.0m 08-DEC-2016 SG1620394-010	---- ---- ----
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA8270D	0.10	mg/kg	----	----	**4.28**	**1.48**	**4.64**	**22.5**	----
Endosulfan sulfate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
4.4`-DDT	EPA8270D	0.10	mg/kg	----	----	**3.11**	**0.25**	**4.38**	**1.14**	----
Endrin ketone	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Organophosphorus Pesticides										
Malathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Dichlorvos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Dimethoate	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Diazinon	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorpyrifos-methyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Ethion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Fenthion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorpyrifos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Pirimphos-ethyl	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Prothiofos	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Methyl Parathion	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorfenvinphos (E)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
Chlorfenvinphos (Z)	EPA8270D	0.10	mg/kg	----	----	<0.10	<0.10	<0.10	<0.10	----
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5035/EPA8260C	0.1	%	----	----	**94.9**	**89.6**	**89.2**	**98.3**	----
Toluene-D8	EPA5035/EPA8260C	0.1	%	----	----	**88.4**	**96.4**	**89.0**	**88.5**	----
4-Bromofluorobenzene	EPA5035/EPA8260C	0.1	%	----	----	**100**	**100**	**96.3**	**101**	----
Acid Extractable Surrogates										
2-Fluorophenol	EPA8270D	0.1	%	----	----	**62.0**	**72.2**	**66.6**	**66.2**	----
Phenol-d5	EPA8270D	0.1	%	----	----	**58.8**	**47.8**	**46.9**	**77.1**	----
2.4.6-Tribromophenol	EPA8270D	0.1	%	----	----	**44.2**	**55.8**	**91.4**	**93.6**	----
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA8270D	0.1	%	----	----	**74.8**	**89.9**	**88.2**	**67.9**	----
2-Fluorobiphenyl	EPA8270D	0.1	%	----	----	**52.5**	**77.6**	**62.5**	**60.9**	----
4-Terphenyl-d14	EPA8270D	0.1	%	----	----	**45.1**	**74.4**	**55.7**	**59.2**	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	Method	Acceptance Limits (%) Low	High
VOC Surrogates			
1,2-Dichloroethane-D4	EPA5035/EPA8260C	70	121
Toluene-D8	EPA5035/EPA8260C	84	138
4-Bromofluorobenzene	EPA5035/EPA8260C	59	113
Acid Extractable Surrogates			
2-Fluorophenol	EPA8270D	25	121
Phenol-d5	EPA8270D	24	113
2,4,6-Tribromophenol	EPA8270D	19	122
Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	EPA8270D	23	120
2-Fluorobiphenyl	EPA8270D	30	115
4-Terphenyl-d14	EPA8270D	18	137

CHAIN OF CUSTODY DOCUMENTATION

ATS 7791

ALS TECHNICHEM

SG1620394

CLIENT: Environmental Resource Management (S) Pte Ltd	LABORATORY BATCH NO.:
POSTAL ADDRESS: 140 Robinson Road #10-01 (S) 068913	SAMPLERS:
SEND REPORT TO: Lawrence / Desmond SEND INVOICE TO: Lawrence / Desmond	PHONE: FAX:
DATA NEEDED BY: 22/12/16 REPORT NEEDED BY: 22/12/16	REPORT FORMAT: HARD _____ FAX: _____ DISK: _____ BULLETIN BOARD _____
PROJECT ID: 0317648 QUOTE NO.:	QC LEVEL: QCS1 _____ QCS2 _____ QCS3 _____ QCS4 _____
P.O. NO.: COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	ANALYSIS REQUIRED
FOR LAB USE ONLY	
COOLER SEAL Yes ..... No ..... Broken ..... Intact	PRAMPAD ATT.
COOLER TEMP: deg.C	

SAMPLE DATA				*CONTAINER DATA			NOTES
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	pH	
SB37 - 2.0	Soil	8/12/16	-		1		
SB39 - 0.7	"	"	-		1		
SB39 - 2.0	"	"	-		1		
SB40 - 0.7	"	"	-		1		
SB35 - 1.5	"	"	-		1		
Dup#1	"	"	-		1		
SB32 - 0.5	"	8/12/16	-		1		
SB33 - 0.5	"	8/12/16	-		1		
SB33 - 1.5	"	8/12/16	-		1		
SB40 - 3.0	Soil	8/12/16	-		1		
TP4 - 1.8	Soil	9/12/16	-		1		
SB36 - 1.8	"	"	-		1		
SB32 - 1.5	"	10/12/16	-		1		
Dup#2	"	"	-		1		

ALS Technichem (S) Pte Ltd
Work Order
SG1620394
Telephone : + 65 6569 0116

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
NAME: Lawrence Ou OF: SERM	DATE: 9/12/16 TIME:	NAME: OF:	DATE: 13/12 TIME:	CONSIGNMENT NOTE NO.
NAME: OF:	DATE: TIME:	NAME: OF:	DATE: TIME:	TRANSPORT CO. NAME:

*Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle. O = Other.

Appendix R Groundwater and Surface Water (for Major Ions) Laboratory Results

Delivering a better world

TEST REPORT

Our Reference No.	:	**R212477/1A**	Date Received	:	11/05/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	:	11/05/2021
			Date Reported	:	28/05/2021
Customer Ref. No.	:	-			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Mr Albert Payapaya			
Sample Description	:	6 Water Samples			
RESULTS	:	Refer to Page 2 to Page 5			

Tan Thuan Piang
Technical Manager

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1) This report shall not be reproduced except in full, unless approval in writing has been given by MLS.
2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

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Website: www.mls.sg

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW1	BC-MW3	BC-MW4	BC-MW5	BC-MW6	BC-MW7	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)		
pH value	7.4	6.3	5.9	6.9	7.4	7.4	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	21.9	21.9	22.0	21.8	21.6	-	-	-	-	

Metals by APHA 3125B / USEPA 245.1

Arsenic (As)	1.1	N.D.	N.D.	N.D.	5.4	N.D.	N.D.	10	60	1.0
Antimony (Sb)	N.D.	N.D.	N.D.	N.D.	1.2	N.D.	N.D.	-	20	1.0
Barium (Ba)	50.8	8.4	233.9	438.7	65.7	55.8	N.D.	50	625	1.0
Cadmium (Cd)	0.3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.4	6	0.25
Chromium (Cr)	1.9	N.D.	0.2	0.1	N.D.	N.D.	N.D.	1	30	0.1
Cobalt (Co)	N.D.	N.D.	1.3	N.D.	N.D.	3.8	N.D.	20	100	1.0
Copper (Cu)	2.3	N.D.	N.D.	N.D.	N.D.	1.7	N.D.	15	75	1.5
Mercury (Hg)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.05	0.3	0.02
Lead (Pb)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	15	75	1.5
Molybdenum (Mo)	20.2	N.D.	N.D.	0.9	19.6	0.8	N.D.	5	300	0.5
Nickel (Ni)	N.D.	N.D.	N.D.	N.D.	N.D.	6.4	N.D.	15	75	1.5
Zinc (Zn)	5.7	15.0	3.8	6.5	5.1	12.8	N.D.	65	800	1.0

Miscellaneous Analyses by APHA 23rd Edition 2017

BOD (mg/L)	N.D.	N.D.	4.9	N.D.	N.D.	N.D.	N.D.	-	-	2.0	APHA 5210B
COD (mg/L)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	50	HACH 8000
TOC (mg/L)	1.8	3.9	9.4	10.4	9.6	3.1	N.D.	-	-	1.0	APHA 5310B
Fluoride (mg/L)	0.6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	0.5	APHA 4500-F (C)
Chloride (mg/L)	9,579.6	40.3	2,236.5	928.1	62.0	11.9	N.D.	100	-	1.0	APHA 4110B
Bromide (mg/L)	27.6	N.D.	7.5	3.7	N.D.	N.D.	N.D.	-	-	1.0	APHA 4110B
Phosphate (mg/L)	0.21	0.09	0.14	0.18	0.23	0.10	N.D.	-	-	0.08	APHA 4500-P
Sulphate (mg/L)	1,824.2	15.3	15.8	2.6	16.8	15.8	N.D.	-	-	1.0	APHA 4110B
Total Ammonical Nitrogen (mg/L)	N.D.	0.03	7.54	5.59	0.61	0.16	N.D.	-	-	0.01	APHA 4500-NH_3

Inorganic Compound : Cyanide (CN) by APHA 4500-CN(N) - Total Cyanide after Distillation using Micro Dist by Lachat FIA

Cyanide (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5	1,500	20

Total Cyanide consists of Free Cyanide, Complex Cyanide and Total Thiocyanates. In this study, the Target and Intervention values of Free Cyanide, which are the most stringent Target and Intervention values of all three Cyanide species, are applied to the concentration of Total Cyanide (i.e. Free Cyanide + Complex Cyanide + Total Thiocyanates).

Aromatic Compounds : BTEX - Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	30	1.0
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	4	150	1.0
Toluene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7	1,000	1.0
Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	70	2.0
Styrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	6	300	2.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW1	BC-MW3	BC-MW4	BC-MW5	BC-MW6	BC-MW7	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)		
pH value	7.4	6.3	5.9	6.9	7.4	7.4	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	21.9	21.9	22.0	21.8	21.6	-	-	-	-	

Aromatic Compounds : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Phenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	2,000	1.0
Cresols	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	200	2.0
Catechol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	10
Resorcinol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	4.0
Hydrochinon	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	4.0

Polynuclear Aromatic Hydrocarbon (PAH) : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	70	1.0
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0007	5	1.0
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.003	5	1.0
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.003	1	1.0
Benzo(a)anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0001	0.5	1.0
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.003	0.2	1.0
Benzo(a)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0005	0.05	1.0
Benzo(ghi)perylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0003	0.05	1.0
Benzo(k)fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0004	0.05	1.0
Indeno(1,2,3cd)pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0004	0.05	1.0
PAH (total of 10)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0

Chlorinated Hydrocarbons : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	5	2.0
Dichloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	1,000	5.0
1,1-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7	900	1.0
1,2-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7	400	1.0
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	10	1.0
1,2-Dichloroethene (cis + trans)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	20	1.0
Dichloropropanes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.8	80	1.0
Trichloromethane (Chloroform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	6	400	1.0
1,1,1-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	300	1.0
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	130	1.0
Trichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	24	500	1.0
Tetrachloromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	10	1.0
Tetrachloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	40	1.0
Chlorobenzenes (total of 6)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	3.0
Monochlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7	180	1.0
Dichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	3	50	3.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW1	BC-MW3	BC-MW4	BC-MW5	BC-MW6	BC-MW7	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)		
pH value	7.4	6.3	5.9	6.9	7.4	7.4	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	21.9	21.9	22.0	21.8	21.6	-	-	-	-	

Chlorinated Hydrocarbons : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Trichlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	10	1.0
Tetrachlorobenzenes (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	2.5	2.0
Pentachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.003	1	1.0
Hexachlorobenzenes	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.00009	0.5	1.0
Chlorophenols (total of 5)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	3.0
Monochlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.30	100	2.0
Dichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.20	30	3.0
Trichlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.03	10	1.0
Tetrachlorophenols (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01	10	3.0
Pentachlorophenol	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.04	3	4.0
Chloronaphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	6	2.0
Monochloroanilines	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	30	2.0
Polychlorobiphenyls (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.01 (d)	0.01	1.0

Pesticides : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

sum DDT/DDD/DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.000004	0.01	2.0
DDT	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	2.0
DDE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
DDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
sum aldrin, dieldrin, endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	0.1	1.0
Aldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.000009	-	1.0
Dieldrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0001	-	1.0
Endrin	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.00004	-	1.0
sum HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.05	1	1.0
a-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.033	-	1.0
b-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.008	-	1.0
g-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.009	-	1.0
d-HCH	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	1.0
Atrazine	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.029	150	1.0
Carbaryl	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.002	50	4.0
Carbofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.009	100	4.0
Chlordane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.00002	0.2	1.0
Endosulfan	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.0002	5	1.0
Heptachlor	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.000005	0.3	1.0
Heptachlor Epoxide	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.000005	3	1.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW1	BC-MW3	BC-MW4	BC-MW5	BC-MW6	BC-MW7	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	-	(Target)	(Intervention)		
pH value	7.4	6.3	5.9	6.9	7.4	7.4	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	21.9	21.9	22.0	21.8	21.6	-	-	-	-	

Other Pollutants : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Cyclohexanone	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.5	15,000	10
Tetrahydrofuran	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.5	300	2.0
Tetrahydrothiophene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.5	5,000	2.0
Tribromomethane (Bromoform)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	630	1.0

Other Pollutants : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Phthalates (total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.5	5	2.0
Pyridine	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.5	30	2.0

Other Pollutants : Total Petroleum Hydrocarbons (TPH) by USEPA 8015C

C6 - C9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	20
C10 - C14 (as C12)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	100
C15 - C28 (as C21)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	100
C29 - C36 (as C32)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	-	-	100
C6 - C36 (Total)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	50*	600*	100

(*Dutch Standard for mineral oil)

Surrogate Recovery by USEPA 8260D

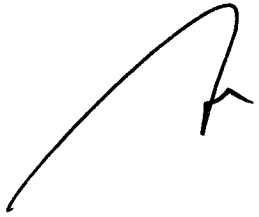
1,2-Dichloroethane-d4 (%)	98.8	114	116	114	116	116	90.7
Toluene-d8 (%)	102	91.7	96.2	97.7	100	95.5	105
p-Bromofluorobenzene (%)	114	117	119	113	119	115	117

Surrogate Recovery by USEPA 8270E

Benzene-d5, nitro- (%)	101	120	103	114	103	107	123
1,1'-biphenyl,2-fluoro (%)	82.3	105	85.4	98.6	81.1	101	103
p-Terphenyl-d14 (%)	124	121	123	120	122	119	116
Phenol, 2-fluoro (%)	98.5	124	112	115	116	119	119
Phenol-d5 (%)	82.5	87.5	80.6	82.5	80.5	82.7	78.0
Phenol, 2,4,6-Tribromo (%)	87.2	112	119	115	113	109	104

Notes:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017).
2. LOR = Limit of Reporting. Detection Limit is based on the highest detection limit obtained from the individual compound.
3. "ND" = Not detected. The data reported is less than the LOR.
4. C10-C14, C15-C28, C29-C36 results are derived using the area under the peak against a hydrocarbon reference standard.
   For range C10-C14, C15-C28 and C29-C36, the reference standard used are C12, C21 and C32 peaks respectively.
5. The target and interventions values are derived from Soil Remediation Circular 2013



TEST REPORT

Our Reference No.	: **R212477/1B**		Date Received	: 11/05/2021
Project Code / Ref.	: 10 Bukit Chermin Road Singapore 109918		Date Commenced	: 11/05/2021
			Date Reported	: 28/05/2021
Customer Ref. No.	: -			
Customer Name	: AECOM Singapore Pte Ltd			
Customer Address	: 300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	: Mr Albert Payapaya			
Sample Description	: 6 Water Samples			
RESULTS	: Refer to Page 2			

Tan Thuan Piang
Technical Manager

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2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

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Branch (Site and Laboratory): 216 Tuas South Ave 2, West Point Bizhub Singapore 637213 : +65 6262 3736 (Lab) : +65 6262 3726 / 3776 (Site)
Website: www.mls.sg

R212477/1A

TEST RESULTS FOR WATER:

SN	Test Parameter	Unit	Test Method	BC-MW1	BC-MW3	BC-MW4	BC-MW5	BC-MW6	BC-MW7
				Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
1	Calcium as Ca	mg/L	APHA 3120B	253	32.3	98.7	121	143	101
2	Potassium as K	mg/L	APHA 3120B	199	0.27	36.2	22.6	3.59	6.37
3	Magnesium as Mg	mg/L	APHA 3120B	508	1.82	52.0	41.7	9.42	12.5
4	Sodium as Na	mg/L	APHA 3120B	4,259	17.2	984	453	45.2	15.7
5	Bicarbonate as HCO^3	mg/L	APHA 4500-CO_2 (D)	234	90.3	39.0	216	364	257
6	Carbonate as CO_3	mg/L	APHA 4500-CO_2 (D)	<2	<2	<2	<2	<2	<2
7	Nitrate-Nitrogen as NO_3-N	mg/L	APHA 4500-NO_3 (I)	1.02	0.019	<0.015	0.018	<0.015	0.56
8	Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.086	0.056	0.062	0.081	0.16	0.064

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

MARCHWOOD LABORATORY SERVICES PTE LTD

MLS-QF 001 Rev (4), Mar 2017

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

11 MAY 2021

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: AECOM Singapore Pte Ltd
CONTACT (Name / Tel / email)	: Albert Payapaya / Jafon Ng
ADDRESS / COUNTRY	: 300 Beach Rd, #23-00 The Concourse, Singapore
PROJECT Code / Ref.	: 60645518
SITE	: 10 Bukit Chermin Rd, Singapore 109918
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: Albert Payapaya / Jafon Ng
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/ Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Sample Seal (Y / N) ☐ Tick if all sealed	ANALYSIS PARAMETER (Enter "x" below to indicate Request)										REMARKS / OBSERVATION / SAMPLE CONDITION
									JTC EBS Suite of Parameters (Groundwater	Nitrates and phosphorus	Major anions and cations								
1	BC-MW1	-	Groundwater	10-May-11	PM	2V, 2P, 2G			x	x	x								Major ions including calcium,
2	BC-MW3	-	Groundwater	10-May-11	PM	2V, 2P, 2G			x	x	x								magnesium, sodium, potassium,
3	BC-MW4	-	Groundwater	10-May-11	AM	2V, 2P, 2G			x	x	x								bicarbonate, carbonate, chloride,
4	BC-MW5	-	Groundwater	10-May-11	PM	2V, 2P, 2G			x	x	x								sulphate and fluoride
5	BC-MW6	-	Groundwater	10-May-11	AM	2V, 2P, 2G			x	x	x								
6	BC-MW7	-	Groundwater	10-May-11	PM	2V, 2P, 2G			x	x	x								
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

MLS LAB USE ONLY

Job No.: Q212477

PRESERVATION DONE:

☐ On Site

☐ By Lab

Cold Box temp. at receipt: _____°C (if applicable)

☐ Sampling done by MLS

RELINQUISHED BY:	DATE / TIME
Name: Mark Shi	11/05/2021
Sign:	
Company: AECOM	1600 hrs

RECEIVED BY:	DATE / TIME
Name: [illegible]	11/5/21
Sign:	
Company: MLS	1600 hrs

RELINQUISHED BY:	DATE / TIME
Name:	
Sign:	
Company:	hrs

RECEIVED BY:	DATE / TIME
Name:	
Sign:	
Company:	hrs

SHIPMENT BY COURIER:

Courier Co. / Carrier Name:

Consignment Note/Airway Bill:

* = **For Water sample:** Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

\# **Type of Sampling Containers/Bottles:** G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

** **Storage Condition:** C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

$ **Type of Sampling Media:** ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

TEST REPORT

Our Reference No.	:	**R212477/2A**	Date Received	:	11/05/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	:	11/05/2021
			Date Reported	:	28/05/2021
Customer Ref. No.	:	-			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Mr Albert Payapaya			
Sample Description	:	1 Water Sample			
RESULTS	:	Refer to Page 2 to Page 5			

Tan Thuan Piang
Technical Manager

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Branch (Site and Laboratory): 216 Tuas South Ave 2, West Point Bizhub Singapore 637213 : +65 6262 3736 (Lab) : +65 6262 3726 / 3776 (Site)
Website: www.mls.sg

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW2	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	-	(Target)	(Intervention)		
pH value	6.5	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	-	-	-	-	

Metals by APHA 3125B / USEPA 245.1

Arsenic (As)	1.2	N.D.	10	60	1.0
Antimony (Sb)	N.D.	N.D.	-	20	1.0
Barium (Ba)	14.7	N.D.	50	625	1.0
Cadmium (Cd)	N.D.	N.D.	0.4	6	0.25
Chromium (Cr)	0.3	N.D.	1	30	0.1
Cobalt (Co)	N.D.	N.D.	20	100	1.0
Copper (Cu)	N.D.	N.D.	15	75	1.5
Mercury (Hg)	N.D.	N.D.	0.05	0.3	0.02
Lead (Pb)	N.D.	N.D.	15	75	1.5
Molybdenum (Mo)	N.D.	N.D.	5	300	0.5
Nickel (Ni)	N.D.	N.D.	15	75	1.5
Zinc (Zn)	16.9	N.D.	65	800	1.0

Miscellaneous Analyses by APHA 23rd Edition 2017

BOD (mg/L)	3.6	N.D.	-	-	2.0	APHA 5210B
COD (mg/L)	N.D.	N.D.	-	-	50	HACH 8000
TOC (mg/L)	11.4	N.D.	-	-	1.0	APHA 5310B
Fluoride (mg/L)	N.D.	N.D.	-	-	0.5	APHA 4500-F (C)
Chloride (mg/L)	7.6	N.D.	100	-	1.0	APHA 4110B
Bromide (mg/L)	N.D.	N.D.	-	-	1.0	APHA 4110B
Phosphate (mg/L)	N.D.	N.D.	-	-	0.08	APHA 4500-P
Sulphate (mg/L)	35.4	N.D.	-	-	1.0	APHA 4110B
Total Ammonical Nitrogen (mg/L)	0.23	N.D.	-	-	0.01	APHA 4500-NH_3

Inorganic Compound : Cyanide (CN) by APHA 4500-CN(N) - Total Cyanide after Distillation using Micro Dist by Lachat FIA

Cyanide (total)	N.D.	N.D.	5	1,500	20

Total Cyanide consists of Free Cyanide, Complex Cyanide and Total Thiocyanates. In this study, the Target and Intervention values of Free Cyanide, which are the most stringent Target and Intervention values of all three Cyanide species, are applied to the concentration of Total Cyanide (i.e. Free Cyanide + Complex Cyanide + Total Thiocyanates).

Aromatic Compounds : BTEX - Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Benzene	N.D.	N.D.	0.2	30	1.0
Ethylbenzene	N.D.	N.D.	4	150	1.0
Toluene	N.D.	N.D.	7	1,000	1.0
Xylene	N.D.	N.D.	0.2	70	2.0
Styrene	N.D.	N.D.	6	300	2.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW2	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	-	(Target)	(Intervention)		
pH value	6.5	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	-	-	-	-	

Aromatic Compounds : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Phenol	N.D.	N.D.	0.2	2,000	1.0
Cresols	N.D.	N.D.	0.2	200	2.0
Catechol	N.D.	N.D.	-	-	10
Resorcinol	N.D.	N.D.	-	-	4.0
Hydrochinon	N.D.	N.D.	-	-	4.0

Polynuclear Aromatic Hydrocarbon (PAH) : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Naphthalene	N.D.	N.D.	0.01	70	1.0
Anthracene	N.D.	N.D.	0.0007	5	1.0
Phenanthrene	N.D.	N.D.	0.003	5	1.0
Fluoranthene	N.D.	N.D.	0.003	1	1.0
Benzo(a)anthracene	N.D.	N.D.	0.0001	0.5	1.0
Chrysene	N.D.	N.D.	0.003	0.2	1.0
Benzo(a)pyrene	N.D.	N.D.	0.0005	0.05	1.0
Benzo(ghi)perylene	N.D.	N.D.	0.0003	0.05	1.0
Benzo(k)fluoranthene	N.D.	N.D.	0.0004	0.05	1.0
Indeno(1,2,3cd)pyrene	N.D.	N.D.	0.0004	0.05	1.0
PAH (total of 10)	N.D.	N.D.	-	-	1.0

Chlorinated Hydrocarbons : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Vinyl Chloride	N.D.	N.D.	0.01	5	2.0
Dichloromethane	N.D.	N.D.	0.01	1,000	5.0
1,1-Dichloroethane	N.D.	N.D.	7	900	1.0
1,2-Dichloroethane	N.D.	N.D.	7	400	1.0
1,1-Dichloroethene	N.D.	N.D.	0.01	10	1.0
1,2-Dichloroethene (cis + trans)	N.D.	N.D.	0.01	20	1.0
Dichloropropanes	N.D.	N.D.	0.8	80	1.0
Trichloromethane (Chloroform)	N.D.	N.D.	6	400	1.0
1,1,1-Trichloroethane	N.D.	N.D.	0.01	300	1.0
1,1,2-Trichloroethane	N.D.	N.D.	0.01	130	1.0
Trichloroethene	N.D.	N.D.	24	500	1.0
Tetrachloromethane	N.D.	N.D.	0.01	10	1.0
Tetrachloroethene	N.D.	N.D.	0.01	40	1.0
Chlorobenzenes (total of 6)	N.D.	N.D.	-	-	3.0
Monochlorobenzene	N.D.	N.D.	7	180	1.0
Dichlorobenzenes (total)	N.D.	N.D.	3	50	3.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW2	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	-	(Target)	(Intervention)		
pH value	6.5	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	-	-	-	-	

Chlorinated Hydrocarbons : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Trichlorobenzenes (total)	N.D.	N.D.	0.01	10	1.0
Tetrachlorobenzenes (total)	N.D.	N.D.	0.01	2.5	2.0
Pentachlorobenzenes	N.D.	N.D.	0.003	1	1.0
Hexachlorobenzenes	N.D.	N.D.	0.00009	0.5	1.0
Chlorophenols (total of 5)	N.D.	N.D.	-	-	3.0
Monochlorophenols (total)	N.D.	N.D.	0.30	100	2.0
Dichlorophenols (total)	N.D.	N.D.	0.20	30	3.0
Trichlorophenols (total)	N.D.	N.D.	0.03	10	1.0
Tetrachlorophenols (total)	N.D.	N.D.	0.01	10	3.0
Pentachlorophenol	N.D.	N.D.	0.04	3	4.0
Chloronaphthalene	N.D.	N.D.	-	6	2.0
Monochloroanilines	N.D.	N.D.	-	30	2.0
Polychlorobiphenyls (total)	N.D.	N.D.	0.01 (d)	0.01	1.0

Pesticides : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

sum DDT/DDD/DDE	N.D.	N.D.	0.000004	0.01	2.0
DDT	N.D.	N.D.	-	-	2.0
DDE	N.D.	N.D.	-	-	1.0
DDD	N.D.	N.D.	-	-	1.0
sum aldrin, dieldrin, endrin	N.D.	N.D.	-	0.1	1.0
Aldrin	N.D.	N.D.	0.000009	-	1.0
Dieldrin	N.D.	N.D.	0.0001	-	1.0
Endrin	N.D.	N.D.	0.00004	-	1.0
sum HCH	N.D.	N.D.	0.05	1	1.0
a-HCH	N.D.	N.D.	0.033	-	1.0
b-HCH	N.D.	N.D.	0.008	-	1.0
g-HCH	N.D.	N.D.	0.009	-	1.0
d-HCH	N.D.	N.D.	-	-	1.0
Atrazine	N.D.	N.D.	0.029	150	1.0
Carbaryl	N.D.	N.D.	0.002	50	4.0
Carbofuran	N.D.	N.D.	0.009	100	4.0
Chlordane	N.D.	N.D.	0.00002	0.2	1.0
Endosulfan	N.D.	N.D.	0.0002	5	1.0
Heptachlor	N.D.	N.D.	0.000005	0.3	1.0
Heptachlor Epoxide	N.D.	N.D.	0.000005	3	1.0

MLS

TEST RESULTS FOR WATER (in ug/L unless otherwise specified):

Sample ID / Monitoring Well	BC-MW2	Method Blank	DUTCH	DUTCH	LOR	
Sample No.	Sample 1	-	(Target)	(Intervention)		
pH value	6.5	-	-	-	-	APHA 4500-H^+
@ Temperature (deg. C)	22.0	-	-	-	-	

Other Pollutants : Volatile Organic Compounds (VOC's) by USEPA 5021A / 8260D

Cyclohexanone	N.D.	N.D.	0.5	15,000	10
Tetrahydrofuran	N.D.	N.D.	0.5	300	2.0
Tetrahydrothiophene	N.D.	N.D.	0.5	5,000	2.0
Tribromomethane (Bromoform)	N.D.	N.D.	-	630	1.0

Other Pollutants : Semi-Volatile Organic Compounds (SVOC's) by USEPA 3510C / 8270E

Phthalates (total)	N.D.	N.D.	0.5	5	2.0
Pyridine	N.D.	N.D.	0.5	30	2.0

Other Pollutants : Total Petroleum Hydrocarbons (TPH) by USEPA 8015C

C6 - C9	N.D.	N.D.	-	-	20
C10 - C14 (as C12)	N.D.	N.D.	-	-	100
C15 - C28 (as C21)	N.D.	N.D.	-	-	100
C29 - C36 (as C32)	N.D.	N.D.	-	-	100
C6 - C36 (Total)	N.D.	N.D.	50*	600*	100

(*Dutch Standard for mineral oil)

Surrogate Recovery by USEPA 8260D

1,2-Dichloroethane-d4 (%)	113	96.3
Toluene-d8 (%)	90.7	101
p-Bromofluorobenzene (%)	118	119

Surrogate Recovery by USEPA 8270E

Benzene-d5, nitro- (%)	121	123
1,1'-biphenyl,2-fluoro (%)	92.1	103
p-Terphenyl-d14 (%)	115	116
Phenol, 2-fluoro (%)	117	119
Phenol-d5 (%)	81.3	78.0
Phenol, 2,4,6-Tribromo (%)	117	104

Notes:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017).
2. LOR = Limit of Reporting. Detection Limit is based on the highest detection limit obtained from the individual compound.
3. "ND" = Not detected. The data reported is less than the LOR.
4. C10-C14, C15-C28, C29-C36 results are derived using the area under the peak against a hydrocarbon reference standard. For range C10-C14, C15-C28 and C29-C36, the reference standard used are C12, C21 and C32 peaks respectively.
5. The target and interventions values are derived from Soil Remediation Circular 2013



TEST REPORT

Our Reference No.	:	**R212477/2B**	Date Received	: 11/05/2021
Project Code / Ref.	:	10 Bukit Chermin Road Singapore 109918	Date Commenced	: 11/05/2021
			Date Reported	: 28/05/2021
Customer Ref. No.	:	-		
Customer Name	:	AECOM Singapore Pte Ltd		
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555		
Attention To	:	Mr Albert Payapaya		
Sample Description	:	1 Water Sample		
RESULTS	:	Refer to Page 2		

Tan Thuan Piang
Technical Manager

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2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

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Website: www.mls.sg

MLS

TEST RESULTS FOR WATER:

SN	Test Parameter	Unit	Test Method	BC-MW2
				Sample 1
1	Calcium as Ca	mg/L	APHA 3120B	24.7
2	Potassium as K	mg/L	APHA 3120B	4.10
3	Magnesium as Mg	mg/L	APHA 3120B	2.68
4	Sodium as Na	mg/L	APHA 3120B	10.1
5	Bicarbonate as HCO^3	mg/L	APHA 4500-CO_2 (D)	63.4
6	Carbonate as CO_3	mg/L	APHA 4500-CO_2 (D)	<2
7	Nitrate-Nitrogen as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.14
8	Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.027

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.



MARCHWOOD LABORATORY SERVICES PTE LTD

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

12 MAY 2021

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: AECOM Singapore Pte Ltd
CONTACT (Name / Tel / email)	: Albert Payapaya / Jafon Ng
ADDRESS / COUNTRY	: 300 Beach Rd, #23-00 The Concourse, Singapore
PROJECT Code / Ref.	: 60645518
SITE	: 10 Bukit Chermin Rd, Singapore 109918
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: Albert Payapaya / Jafon Ng
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/ Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Sample Seal (Y / N) ☐ Tick if all sealed	ANALYSIS PARAMETER (Enter "x" below to indicate Request) JTC EBS Suite of Parameters (Groundwater	Nitrates and phosphorus	Major anions and cations								REMARKS / OBSERVATION / SAMPLE CONDITION
1	BC-MW2	-	Groundwater	12-May-21	AM	2V, 2P, 2G			x	x	x								Major ions including calcium,
																			magnesium, sodium, potassium,
																			bicarbonate, carbonate, chloride,
																			sulphate and fluoride
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

MLS LAB USE ONLY

Job No.: P2212477/2.

PRESERVATION DONE:

☐ On Site

☐ By Lab

Cold Box temp. at receipt: ____°C (if applicable)

☐ Sampling done by MLS

RELINQUISHED BY:	DATE / TIME
Name: Mark Shi	12/05/2021
Sign:	1100 hrs
Company: AECOM	

RECEIVED BY:	DATE / TIME
Name: WM	12/5/21
Sign:	1600 hrs
Company: MCJ.	

RELINQUISHED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

RECEIVED BY:	DATE / TIME
Name:	
Sign:	hrs
Company:	

SHIPMENT BY COURIER:

Courier Co. / Carrier Name:

Consignment Note/Airway Bill:

* = **For Water sample:** Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

Type of Sampling Containers/Bottles: G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

** **Storage Condition:** C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

$ **Type of Sampling Media:** ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

TEST REPORT

Our Reference No.	:	**R214056**	Date Received	:	02/08/2021
Project Code / Ref.	:	Berlayer	Date Commenced	:	02/08/2021
			Date Reported	:	10/08/2021
Customer Ref. No.	:	60645518			
Customer Name	:	AECOM Singapore Pte Ltd			
Customer Address	:	300 Beach Road #03-00 The Concourse Singapore 199555			
Attention To	:	Ms Liang Liang			
Sample Description	:	4 Water Samples were received			
RESULTS:		Refer to Page 2			

Tan Thuan Piang
Technical Manager

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Website: www.mls.sg

R214056

RESULTS

Test Parameter	Unit	Test Method	Sampling Date: 02/08/2021				LOR
			Sample 1	Sample 2	Sample 3	Sample 4	
			WQ1	WQ3	WQ4	WQ6	
Total Nitrogen as TN	mg/L	APHA 4500-P (J)	1.07	0.55	0.41	1.22	0.01
Total Phosphorus as TP	mg/L	APHA 4500-P (J)	0.051	0.027	0.021	0.089	0.01
Ammonia as NH_4-N	mg/L	APHA 4500-NH_3 (H)	0.29	0.060	0.018	0.44	0.01
Nitrate as NO_3-N	mg/L	APHA 4500-NO_3 (I)	0.46	0.21	0.099	0.56	0.005
Orthophosphates as PO_4-P	mg/L	APHA 4500-P (G)	0.038	0.018	0.014	0.056	0.005
Total Suspended Solids as TSS	mg/L	APHA 2540D	65.0	7.40	6.90	7.80	1
Total Dissolved Solids as TDS	mg/L	APHA 2540C	11,401	23,634	29,562	3,171	10
Salinity	ppt	APHA 2520B	10.2	22.6	28.9	2.70	0.2
Conductivity	µS/cm	APHA 2510B	17,545	36,365	45,475	5,114	-
Total Organic Carbon,TOC	mg/L	APHA 5310B	2.71	2.57	2.31	2.46	1
Enterococcus	cfu/100mL	APHA 9230C	1,500	600	24	500	1
Lead as Pb	µg/L	APHA 3125B	<0.5	<0.5	<0.5	0.62	0.5
Sulphate as SO_4	mg/L	APHA 4110B	643	1,462	2,063	203	5
Fluoride as F	mg/L	APHA 4500-F (C)	0.51	0.67	0.74	0.32	-
Chloride as Cl	mg/L	APHA 4110B	5,294	11,842	15,405	1,469	10
Calcium as Ca	mg/L	APHA 3120B	169	300	356	63.5	1 µg/L
Magnesium as Mg	mg/L	APHA 3120B	352	832	1,074	94.1	1 µg/L
Bicarbonate as $CaCO_3$	mg/L	APHA 4500-CO_2 (D)	94.1	93.2	93.8	81.1	-
Sodium as Na	mg/L	APHA 3120B	2,886	6,221	8,080	770	1 µg/L
Potassium as K	mg/L	APHA 3120B	143	335	419	36.1	1 µg/L
Iron as Fe	µg/L	APHA 3125B	312	107	69.4	310	0.5
Carbonate as CO_3	mg/L	APHA 2320B	0.51	0.46	0.70	0.48	-

Note:

1. APHA is a standard method for Determination of Water and Waste Water (APHA 23rd Edition, 2017)
2. "<" = Less than. The data reported is less than Detection Limit of the test.

Appendix S
Groundwater Laboratory Results from Previous Study

Delivering a better world

CERTIFICATE OF ANALYSIS

Work Order	: **SG1616288**	Page	: 1 of 32
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT	Project	: 0311748
Contact	: Mr Lawrence Ow	Order number	: ----
Address	: 120 Robinson Road #10-01 Singapore 068913	Quote number	: ----
E-mail	: lawrence.ow@erm.com	Date Received	: 07-OCT-2016
Telephone	: +65 6324 9636	Date Analysed	: 07-OCT-2016
Facsimile	: +65 6226 1636	Date Issued	: 25-OCT-2016
No. of samples received	: 14	No. of samples analysed	: 14

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*
Pansy Teo	Senior Environmental Manager
Tan Kah Guan	Environmental Supervisor
Yao Kaiwen	Technical Manager

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. Results apply to the sample(s) as submitted. The laboratory declares that the test results relate only to the items tested and do not substitute any other documents. This report may not be reproduced except with prior written approval from the testing laboratory. This report may not be used for advertising purposes.

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, BS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : LOR = Limit of reporting

- **APHA method is referenced to American Public Health Association Standard Method, 22nd Ed, 2012**

Analytical Results

Dutch Standards 2000: Dutch Groundwater Standards

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
Client sample ID										
Sampling date/time						07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-013	SG1616288-001	SG1616288-002	SG1616288-003	SG1616288-004
Metals										
Arsenic	EPA3005/EPA6010B	10.0	µg/L	10	60	<10.0	<10.0	<10.0	<10.0	<10.0
Barium	EPA3005/EPA6010B	20.0	µg/L	50	625	**690**	**621**	**428**	**33.3**	**387**
Cadmium	EPA3005/EPA6010B	5.0	µg/L	0.4	6	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	EPA3005/EPA6010B	10.0	µg/L	1	30	<10.0	<10.0	<10.0	<10.0	<10.0
Cobalt	EPA3005/EPA6010B	10.0	µg/L	20	100	<10.0	<10.0	<10.0	<10.0	<10.0
Copper	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Mercury	EPA7470	0.10	µg/L	0.05	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
Lead	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Molybdenum	EPA3005/EPA6010B	10.0	µg/L	5	300	<10.0	<10.0	<10.0	**13.0**	<10.0
Nickel	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Zinc	EPA3005/EPA6010B	10.0	µg/L	65	800	<10.0	**12.7**	<10.0	**11.0**	**15.3**
Antimony	EPA3005/EPA6010B	10.0	µg/L	----	20	<10.0	<10.0	<10.0	<10.0	<10.0
Inorganic Compounds										
Cyanide	EPA9010/EPA9014	10	µg/L	5	1500	<10	<10	<10	<10	<10
Aromatic Compounds										
Benzene	EPA5030B/EPA8260C	1.00	µg/L	0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Ethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	4	150	<1.00	<1.00	<1.00	<1.00	<1.00
Phenol	EPA3510C/EPA8270D	1.00	µg/L	0.2	2000	<1.00	<1.00	<1.00	<1.00	<1.00
Cresoles (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	200	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	EPA5030B/EPA8260C	1.00	µg/L	7	1000	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes (Sum)	EPA5030B/EPA8260C	2.00	µg/L	0.2	70	<2.00	<2.00	<2.00	<2.00	<2.00
Styrene	EPA5030B/EPA8260C	1.00	µg/L	0.6	300	<1.00	<1.00	<1.00	<1.00	<1.00
Catechol	EPA3510C/EPA8270D	1.00	µg/L	0.2	1250	<1.00	<1.00	<1.00	<1.00	<1.00
Resorcinol	EPA3510C/EPA8270D	1.00	µg/L	0.2	600	<1.00	<1.00	<1.00	<1.00	<1.00
Hydrochinon	EPA3510C/EPA8270D	1.00	µg/L	0.2	800	<1.00	<1.00	<1.00	<1.00	<1.00
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA3510C/EPA8270D	0.10	µg/L	0.01	70	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0007	5	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA3510C/EPA8270D	0.10	µg/L	0.003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.003	1	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0001	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA3510C/EPA8270D	0.10	µg/L	0.003	0.2	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.001	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA3510C/EPA8270D	0.10	µg/L	0.0003	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10

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Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Client sample ID / Sampling date/time	Target Value	Intervention Value	DUP 01 07-OCT-2016 15:00 SG1616288-013	MW 1 06-OCT-2016 15:00 SG1616288-001	MW 3 06-OCT-2016 15:00 SG1616288-002	MW 4 06-OCT-2016 15:00 SG1616288-003	MW 6 06-OCT-2016 15:00 SG1616288-004
Polynuclear Aromatic Hydrocarbons - Continued											
Indeno(1.2.3.cd)pyrene	EPA3510C/EPA8270D	0.10	µg/L		0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	900	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	400	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethene (sum cis & trans)	EPA5030B/EPA8260C	1.00	µg/L		0.01	20	<1.00	<1.00	<1.00	<1.00	<1.00
Dichloropropanes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.8	80	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	300	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.2-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	130	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	EPA5030B/EPA8260C	1.00	µg/L		24	500	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	40	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene chloride	EPA5030B/EPA8260C	10.0	µg/L		0.01	1000	<10.0	<10.0	<10.0	<10.0	<10.0
Tetrachloromethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroform	EPA5030B/EPA8260C	1.00	µg/L		6	400	<1.00	<1.00	<1.00	<1.00	<1.00
Vinyl chloride	EPA5030B/EPA8260C	2.00	µg/L		0.01	5	<2.00	<2.00	<2.00	<2.00	<2.00
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	5.00	µg/L		----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Monochlorobenzene	EPA5030B/EPA8260C	1.00	µg/L		7	180	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		3	50	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	2.5	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.003	1	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzenes (Sum)	EPA3510C/EPA8270D	0.50	µg/L		0.00009	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA3510C/EPA8270D	10.0	µg/L		----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Monochlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.3	100	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.03	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorophenol	EPA3510C/EPA8270D	1.00	µg/L		0.04	3	<1.00	<1.00	<1.00	**1.60**	<1.00
Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L		----	6	<1.00	<1.00	<1.00	<1.00	<1.00
Monochloroanilines	EPA3510C/EPA8270D	2.00	µg/L		----	30	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA3510C/EPA8082	1.00	µg/L		0.01	0.01	<1.00	<1.00	<1.00	<1.00	<1.00
Pesticides											
DDD/DDE/DDT	EPA3510C/EPA8270D	1.00	µg/L		0.004 ng/L	1000 ng/L	<1.00	**1.52**	<1.00	<1.00	<1.00
Aldrin,Dieldrin,Endrin (Sum)	EPA3510C/EPA8270D	1.00	µg/L		----	0.1	<1.00	<1.00	<1.00	<1.00	<1.00

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
				Sampling date/time			07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-013**	**SG1616288-001**	**SG1616288-002**	**SG1616288-003**	**SG1616288-004**
Pesticides - Continued											
Aldrin	EPA3510C/EPA8270D	1.00	µg/L	0.009 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dieldrin	EPA3510C/EPA8270D	1.00	µg/L	0.1 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endrin	EPA3510C/EPA8270D	1.00	µg/L	0.04 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
BHC Compounds (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.05	1	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-BHC	EPA3510C/EPA8270D	1.00	µg/L	33 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-BHC	EPA3510C/EPA8270D	1.00	µg/L	8 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
gamma-BHC	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Atrazine	EPA3510C/EPA8270D	1.00	µg/L	29 ng/L	150000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbaryl	EPA3510C/EPA8270D	1.00	µg/L	2 ng/L	50000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbofuran	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	100000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Chlordane	EPA3510C/EPA8270D	1.00	µg/L	0.02 ng/L	200 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	0.2 ng/L	0.005 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	300 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor epoxide	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	3000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Maneb	EPA3510C/EPA8270D	1.00	µg/L	0.05 ng/L	0.0001 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Other Pollutants											
Cyclohexanone	EPA5030B/EPA8260C	1.00	µg/L	0.5	15000	<1.00	<1.00	<1.00	<1.00	<1.00
Phthalates (Sum)	EPA3510C/EPA8270D	2.00	µg/L	0.5	5	<2.00	<2.00	**36.4**	<2.00	<2.00
Mineral oils	EPA8015B	115	µg/L	50	600	**376**	**730**	**1230**	**170**	**720**
Pyridine	EPA5030B/EPA8260C	1.00	µg/L	0.5	30	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	EPA5030B/EPA8260C	1.00	µg/L	----	630	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrofuran	EPA3510C/EPA8270D	1.00	µg/L	0.5	300	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrothiophene	EPA3510C/EPA8270D	1.00	µg/L	0.5	5000	<1.00	<1.00	<1.00	<1.00	<1.00
Conventional											
pH @ 25 deg C	APHA4500 H+B	0.1	pH Unit	----	----	**7.1**	**6.0**	**6.4**	**6.2**	**5.9**
Biochemical Oxygen Demand (5 days @ 20 deg C)	APHA5210B	2	mg/L	----	----	**5**	**27**	**12**	**8**	**16**
Chemical Oxygen Demand	APHA5220C	1	mg/L	----	----	**112**	**75**	**59**	**105**	**56**
Total Organic Carbon	APHA5310B	0.10	mg/L	----	----	**22.3**	**7.11**	**7.42**	**6.68**	**4.89**
Fluoride as F	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	<0.50	**0.67**	<0.50
Chloride as Cl	APHA4110B	0.10	mg/L	----	----	**2840**	**4280**	**2330**	**4950**	**2690**
Bromide as Br	APHA4110B	0.10	mg/L	----	----	**12.4**	**16.0**	**3.24**	**21.7**	**3.51**
Sulphate as SO4	APHA4110B	0.10	mg/L	----	----	----	**161**	**1.18**	----	----
Sulphate as SO4	APHA4110B	0.50	mg/L	----	----	<0.50	----	----	**1.05**	**0.53**
Ammonia as N	APHA4500B/APHA4500H	0.01	mg/L	----	----	**16.6**	**4.00**	**11.1**	**30.8**	**10.6**
Conductivity	APHA2510B	1.0	µS/cm	----	----	**8870**	**1190**	**4170**	**1390**	**7630**
Total Petroleum Hydrocarbon											

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Compound	*Method*	*LOR*	*Unit*	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
Client sample ID										
Sampling date/time						07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-013	**SG1616288-001**	**SG1616288-002**	**SG1616288-003**	**SG1616288-004**
Total Petroleum Hydrocarbon - Continued										
C6 - C9 Fraction	EPA5030B/EPA8015B	5	µg/L	----	----	<5	<5	<5	<5	<5
C10 - C14 Fraction	EPA3510C/EPA8015B	10	µg/L	----	----	**156**	<10	**360**	<10	**100**
C15 - C28 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----	**220**	**660**	**800**	**170**	**620**
C29 - C36 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----	<50	**70**	**70**	<50	<50

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Sub-Matrix: **GROUNDWATER**

			Client sample ID	Target	Intervention	MW 8	MW10	MW11	MW16	MW19
			Sampling date/time	Value	Value	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*			**SG1616288-005**	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
Metals										
Arsenic	EPA3005/EPA6010B	10.0	µg/L	10	60	<10.0	<10.0	<10.0	<10.0	<10.0
Barium	EPA3005/EPA6010B	20.0	µg/L	50	625	**120**	**494**	**98.9**	**466**	**156**
Cadmium	EPA3005/EPA6010B	5.0	µg/L	0.4	6	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	EPA3005/EPA6010B	10.0	µg/L	1	30	<10.0	<10.0	<10.0	<10.0	<10.0
Cobalt	EPA3005/EPA6010B	10.0	µg/L	20	100	<10.0	<10.0	<10.0	<10.0	<10.0
Copper	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Mercury	EPA7470	0.10	µg/L	0.05	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
Lead	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Molybdenum	EPA3005/EPA6010B	10.0	µg/L	5	300	<10.0	<10.0	**21.6**	<10.0	<10.0
Nickel	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	**10.4**	<10.0	<10.0	<10.0
Zinc	EPA3005/EPA6010B	10.0	µg/L	65	800	**14.2**	**14.4**	<10.0	<10.0	**10.5**
Antimony	EPA3005/EPA6010B	10.0	µg/L	----	20	<10.0	**13.6**	<10.0	<10.0	<10.0
Inorganic Compounds										
Cyanide	EPA9010/EPA9014	10	µg/L	5	1500	<10	<10	<10	<10	<10
Aromatic Compounds										
Benzene	EPA5030B/EPA8260C	1.00	µg/L	0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Ethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	4	150	<1.00	<1.00	<1.00	<1.00	<1.00
Phenol	EPA3510C/EPA8270D	1.00	µg/L	0.2	2000	<1.00	**1.20**	<1.00	**1.12**	<1.00
Cresoles (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	200	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	EPA5030B/EPA8260C	1.00	µg/L	7	1000	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes (Sum)	EPA5030B/EPA8260C	2.00	µg/L	0.2	70	<2.00	<2.00	<2.00	<2.00	<2.00
Styrene	EPA5030B/EPA8260C	1.00	µg/L	0.6	300	<1.00	<1.00	<1.00	<1.00	<1.00
Catechol	EPA3510C/EPA8270D	1.00	µg/L	0.2	1250	<1.00	<1.00	<1.00	<1.00	<1.00
Resorcinol	EPA3510C/EPA8270D	1.00	µg/L	0.2	600	<1.00	<1.00	<1.00	<1.00	<1.00
Hydrochinon	EPA3510C/EPA8270D	1.00	µg/L	0.2	800	<1.00	<1.00	<1.00	<1.00	<1.00
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA3510C/EPA8270D	0.10	µg/L	0.01	70	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0007	5	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA3510C/EPA8270D	0.10	µg/L	0.003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.003	1	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0001	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA3510C/EPA8270D	0.10	µg/L	0.003	0.2	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.001	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA3510C/EPA8270D	0.10	µg/L	0.0003	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1.2.3.cd)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
				Sampling date/time			06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-005**	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	900	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	400	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethene (sum cis & trans)	EPA5030B/EPA8260C	1.00	µg/L		0.01	20	<1.00	<1.00	<1.00	<1.00	<1.00
Dichloropropanes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.8	80	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	300	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.2-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	130	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	EPA5030B/EPA8260C	1.00	µg/L		24	500	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	40	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene chloride	EPA5030B/EPA8260C	10.0	µg/L		0.01	1000	<10.0	<10.0	<10.0	<10.0	<10.0
Tetrachloromethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroform	EPA5030B/EPA8260C	1.00	µg/L		6	400	<1.00	<1.00	<1.00	<1.00	<1.00
Vinyl chloride	EPA5030B/EPA8260C	2.00	µg/L		0.01	5	<2.00	<2.00	<2.00	<2.00	<2.00
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	5.00	µg/L		----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Monochlorobenzene	EPA5030B/EPA8260C	1.00	µg/L		7	180	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		3	50	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	2.5	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.003	1	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzenes (Sum)	EPA3510C/EPA8270D	0.50	µg/L		0.00009	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA3510C/EPA8270D	10.0	µg/L		----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Monochlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.3	100	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.03	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorophenol	EPA3510C/EPA8270D	1.00	µg/L		0.04	3	<1.00	<1.00	<1.00	<1.00	<1.00
Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L		----	6	<1.00	<1.00	<1.00	<1.00	<1.00
Monochloroanilines	EPA3510C/EPA8270D	2.00	µg/L		----	30	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA3510C/EPA8082	1.00	µg/L		0.01	0.01	<1.00	<1.00	<1.00	<1.00	<1.00
Pesticides											
DDD/DDE/DDT	EPA3510C/EPA8270D	1.00	µg/L		0.004 ng/L	1000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Aldrin,Dieldrin,Endrin (Sum)	EPA3510C/EPA8270D	1.00	µg/L		----	0.1	<1.00	<1.00	<1.00	<1.00	<1.00
Aldrin	EPA3510C/EPA8270D	1.00	µg/L		0.009 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dieldrin	EPA3510C/EPA8270D	1.00	µg/L		0.1 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target	Intervention	MW 8	MW10	MW11	MW16	MW19
				Sampling date/time	Value	Value	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-005**	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
Pesticides - Continued											
Endrin	EPA3510C/EPA8270D	1.00	µg/L	0.04 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
BHC Compounds (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.05	1	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-BHC	EPA3510C/EPA8270D	1.00	µg/L	33 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-BHC	EPA3510C/EPA8270D	1.00	µg/L	8 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
gamma-BHC	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Atrazine	EPA3510C/EPA8270D	1.00	µg/L	29 ng/L	150000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbaryl	EPA3510C/EPA8270D	1.00	µg/L	2 ng/L	50000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbofuran	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	100000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Chlordane	EPA3510C/EPA8270D	1.00	µg/L	0.02 ng/L	200 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	0.2 ng/L	0.005 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	300 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor epoxide	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	3000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Maneb	EPA3510C/EPA8270D	1.00	µg/L	0.05 ng/L	0.0001 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Other Pollutants											
Cyclohexanone	EPA5030B/EPA8260C	1.00	µg/L	0.5	15000	<1.00	<1.00	<1.00	<1.00	<1.00
Phthalates (Sum)	EPA3510C/EPA8270D	2.00	µg/L	0.5	5	<2.00	<2.00	<2.00	<2.00	<2.00
Mineral oils	EPA8015B	115	µg/L	50	600	<115	**670**	<115	**550**	<115
Pyridine	EPA5030B/EPA8260C	1.00	µg/L	0.5	30	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	EPA5030B/EPA8260C	1.00	µg/L	----	630	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrofuran	EPA3510C/EPA8270D	1.00	µg/L	0.5	300	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrothiophene	EPA3510C/EPA8270D	1.00	µg/L	0.5	5000	<1.00	<1.00	<1.00	<1.00	<1.00
Conventional											
pH @ 25 deg C	APHA4500 H+B	0.1	pH Unit	----	----	**6.5**	**6.1**	**7.1**	**6.0**	**6.3**
Biochemical Oxygen Demand (5 days @ 20 deg C)	APHA5210B	2	mg/L	----	----	<2	**28**	**3**	**14**	**17**
Chemical Oxygen Demand	APHA5220C	1	mg/L	----	----	**30**	**100**	**87**	**62**	**101**
Total Organic Carbon	APHA5310B	0.10	mg/L	----	----	<0.10	**3.44**	**23.4**	**2.70**	**4.49**
Fluoride as F	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	**0.60**	<0.50	<0.50
Chloride as Cl	APHA4110B	0.10	mg/L	----	----	**10200**	**5090**	**1780**	**3230**	**5960**
Bromide as Br	APHA4110B	0.10	mg/L	----	----	**40.5**	**21.5**	**2.26**	**14.6**	**26.1**
Sulphate as SO4	APHA4110B	0.50	mg/L	----	----	**483**	**3.09**	**56.2**	**0.55**	**0.83**
Ammonia as N	APHA4500B/APHA4500H	0.01	mg/L	----	----	**3.82**	**18.7**	**2.86**	**12.9**	**34.6**
Conductivity	APHA2510B	1.0	µS/cm	----	----	**2580**	**1310**	**6310**	**9830**	**1750**
Total Petroleum Hydrocarbon											
C6 - C9 Fraction	EPA5030B/EPA8015B	5	µg/L	----	----	<5	<5	<5	<5	<5
C10 - C14 Fraction	EPA3510C/EPA8015B	10	µg/L	----	----	<10	**320**	<10	**200**	<10
C15 - C28 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----	<50	**350**	<50	**350**	<50

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
				Sampling date/time			06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-005**	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
Total Petroleum Hydrocarbon - Continued											
C29 - C36 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----		<50	<50	<50	<50	<50

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Metals											
Arsenic	EPA3005/EPA6010B	10.0	µg/L	10	60	<10.0	<10.0	<10.0	----	----	
Barium	EPA3005/EPA6010B	20.0	µg/L	50	625	**137**	**700**	**63.6**	----	----	
Cadmium	EPA3005/EPA6010B	5.0	µg/L	0.4	6	<5.0	<5.0	<5.0	----	----	
Chromium	EPA3005/EPA6010B	10.0	µg/L	1	30	<10.0	<10.0	<10.0	----	----	
Cobalt	EPA3005/EPA6010B	10.0	µg/L	20	100	<10.0	<10.0	<10.0	----	----	
Copper	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	----	----	
Mercury	EPA7470	0.10	µg/L	0.05	0.3	<0.10	<0.10	<0.10	----	----	
Lead	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	----	----	
Molybdenum	EPA3005/EPA6010B	10.0	µg/L	5	300	<10.0	<10.0	<10.0	----	----	
Nickel	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	----	----	
Zinc	EPA3005/EPA6010B	10.0	µg/L	65	800	<10.0	<10.0	<10.0	----	----	
Antimony	EPA3005/EPA6010B	10.0	µg/L	----	20	<10.0	<10.0	<10.0	----	----	
Inorganic Compounds											
Cyanide	EPA9010/EPA9014	10	µg/L	5	1500	<10	<10	<10	----	----	
Aromatic Compounds											
Benzene	EPA5030B/EPA8260C	1.00	µg/L	0.2	30	<1.00	<1.00	<1.00	<1.00	----	
Ethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	4	150	<1.00	<1.00	<1.00	<1.00	----	
Phenol	EPA3510C/EPA8270D	1.00	µg/L	0.2	2000	**1.16**	<1.00	<1.00	----	----	
Cresoles (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	200	<1.00	<1.00	<1.00	----	----	
Toluene	EPA5030B/EPA8260C	1.00	µg/L	7	1000	<1.00	<1.00	<1.00	<1.00	----	
Xylenes (Sum)	EPA5030B/EPA8260C	2.00	µg/L	0.2	70	<2.00	<2.00	<2.00	<2.00	----	
Styrene	EPA5030B/EPA8260C	1.00	µg/L	0.6	300	<1.00	<1.00	<1.00	<1.00	----	
Catechol	EPA3510C/EPA8270D	1.00	µg/L	0.2	1250	<1.00	<1.00	<1.00	----	----	
Resorcinol	EPA3510C/EPA8270D	1.00	µg/L	0.2	600	<1.00	<1.00	<1.00	----	----	
Hydrochinon	EPA3510C/EPA8270D	1.00	µg/L	0.2	800	<1.00	<1.00	<1.00	----	----	
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA3510C/EPA8270D	0.10	µg/L	0.01	70	<0.10	<0.10	<0.10	----	----	
Anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0007	5	<0.10	<0.10	<0.10	----	----	
Phenanthrene	EPA3510C/EPA8270D	0.10	µg/L	0.003	5	<0.10	<0.10	<0.10	----	----	
Fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.003	1	<0.10	<0.10	<0.10	----	----	
Benz(a)anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0001	0.5	<0.10	<0.10	<0.10	----	----	
Chrysene	EPA3510C/EPA8270D	0.10	µg/L	0.003	0.2	<0.10	<0.10	<0.10	----	----	
Benzo(a)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.001	0.05	<0.10	<0.10	<0.10	----	----	
Benzo(g.h.i)perylene	EPA3510C/EPA8270D	0.10	µg/L	0.0003	0.05	<0.10	<0.10	<0.10	----	----	
Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	----	----	
Indeno(1.2.3.cd)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	----	----	

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	900	<1.00	<1.00	<1.00	<1.00	----
1.2-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L		7	400	<1.00	<1.00	<1.00	<1.00	----
1.1-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	----
1.2-Dichloroethene (sum cis & trans)	EPA5030B/EPA8260C	1.00	µg/L		0.01	20	<1.00	<1.00	<1.00	<1.00	----
Dichloropropanes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.8	80	<1.00	<1.00	<1.00	<1.00	----
1.1.1-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	300	<1.00	<1.00	<1.00	<1.00	----
1.1.2-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	130	<1.00	<1.00	<1.00	<1.00	----
Trichloroethene	EPA5030B/EPA8260C	1.00	µg/L		24	500	<1.00	<1.00	<1.00	<1.00	----
Tetrachloroethene	EPA5030B/EPA8260C	1.00	µg/L		0.01	40	<1.00	<1.00	<1.00	<1.00	----
Methylene chloride	EPA5030B/EPA8260C	10.0	µg/L		0.01	1000	<10.0	<10.0	<10.0	<10.0	----
Tetrachloromethane	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	----
Chloroform	EPA5030B/EPA8260C	1.00	µg/L		6	400	<1.00	<1.00	<1.00	<1.00	----
Vinyl chloride	EPA5030B/EPA8260C	2.00	µg/L		0.01	5	<2.00	<2.00	<2.00	<2.00	----
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	5.00	µg/L		----	----	<5.00	<5.00	<5.00	----	----
Monochlorobenzene	EPA5030B/EPA8260C	1.00	µg/L		7	180	<1.00	<1.00	<1.00	<1.00	----
Dichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		3	50	<1.00	<1.00	<1.00	<1.00	----
Trichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	<1.00	----
Tetrachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	2.5	<1.00	<1.00	<1.00	----	----
Pentachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.003	1	<1.00	<1.00	<1.00	----	----
Hexachlorobenzenes (Sum)	EPA3510C/EPA8270D	0.50	µg/L		0.00009	0.5	<0.50	<0.50	<0.50	----	----
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA3510C/EPA8270D	10.0	µg/L		----	----	<10.0	<10.0	<10.0	----	----
Monochlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.3	100	<1.00	<1.00	<1.00	----	----
Dichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.2	30	<1.00	<1.00	<1.00	----	----
Trichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.03	10	<1.00	<1.00	<1.00	----	----
Tetrachlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L		0.01	10	<1.00	<1.00	<1.00	----	----
Pentachlorophenol	EPA3510C/EPA8270D	1.00	µg/L		0.04	3	<1.00	<1.00	<1.00	----	----
Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L		----	6	<1.00	<1.00	<1.00	----	----
Monochloroanilines	EPA3510C/EPA8270D	2.00	µg/L		----	30	<2.00	<2.00	<2.00	----	----
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA3510C/EPA8082	1.00	µg/L		0.01	0.01	<1.00	<1.00	<1.00	----	----
Pesticides											
DDD/DDE/DDT	EPA3510C/EPA8270D	1.00	µg/L		0.004 ng/L	1000 ng/L	<1.00	<1.00	<1.00	----	----
Aldrin,Dieldrin,Endrin (Sum)	EPA3510C/EPA8270D	1.00	µg/L		----	0.1	<1.00	<1.00	<1.00	----	----
Aldrin	EPA3510C/EPA8270D	1.00	µg/L		0.009 ng/L	----	<1.00	<1.00	<1.00	----	----
Dieldrin	EPA3510C/EPA8270D	1.00	µg/L		0.1 ng/L	----	<1.00	<1.00	<1.00	----	----

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Pesticides - Continued											
Endrin	EPA3510C/EPA8270D	1.00	µg/L	0.04 ng/L	----	<1.00	<1.00	<1.00	----	----	
BHC Compounds (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.05	1	<1.00	<1.00	<1.00	----	----	
alpha-BHC	EPA3510C/EPA8270D	1.00	µg/L	33 ng/L	----	<1.00	<1.00	<1.00	----	----	
beta-BHC	EPA3510C/EPA8270D	1.00	µg/L	8 ng/L	----	<1.00	<1.00	<1.00	----	----	
gamma-BHC	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	----	<1.00	<1.00	<1.00	----	----	
Atrazine	EPA3510C/EPA8270D	1.00	µg/L	29 ng/L	150000 ng/L	<1.00	<1.00	<1.00	----	----	
Carbaryl	EPA3510C/EPA8270D	1.00	µg/L	2 ng/L	50000 ng/L	<1.00	<1.00	<1.00	----	----	
Carbofuran	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	100000 ng/L	<1.00	<1.00	<1.00	----	----	
Chlordane	EPA3510C/EPA8270D	1.00	µg/L	0.02 ng/L	200 ng/L	<1.00	<1.00	<1.00	----	----	
Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	0.2 ng/L	0.005 ng/L	<1.00	<1.00	<1.00	----	----	
Heptachlor	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	300 ng/L	<1.00	<1.00	<1.00	----	----	
Heptachlor epoxide	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	3000 ng/L	<1.00	<1.00	<1.00	----	----	
Maneb	EPA3510C/EPA8270D	1.00	µg/L	0.05 ng/L	0.0001 ng/L	<1.00	<1.00	<1.00	----	----	
Other Pollutants											
Cyclohexanone	EPA5030B/EPA8260C	1.00	µg/L	0.5	15000	<1.00	<1.00	<1.00	<1.00	----	
Phthalates (Sum)	EPA3510C/EPA8270D	2.00	µg/L	0.5	5	<2.00	<2.00	<2.00	----	----	
Mineral oils	EPA8015B	115	µg/L	50	600	**170**	**370**	<115	----	----	
Pyridine	EPA5030B/EPA8260C	1.00	µg/L	0.5	30	<1.00	<1.00	<1.00	<1.00	----	
Bromoform	EPA5030B/EPA8260C	1.00	µg/L	----	630	<1.00	<1.00	<1.00	<1.00	----	
Tetrahydrofuran	EPA3510C/EPA8270D	1.00	µg/L	0.5	300	<1.00	<1.00	<1.00	----	----	
Tetrahydrothiophene	EPA3510C/EPA8270D	1.00	µg/L	0.5	5000	<1.00	<1.00	<1.00	----	----	
Conventional											
pH @ 25 deg C	APHA4500 H+B	0.1	pH Unit	----	----	**6.4**	**6.6**	**6.6**	----	----	
Biochemical Oxygen Demand (5 days @ 20 deg C)	APHA5210B	2	mg/L	----	----	**8**	**4**	**8**	----	----	
Chemical Oxygen Demand	APHA5220C	1	mg/L	----	----	**48**	**114**	**81**	----	----	
Total Organic Carbon	APHA5310B	0.10	mg/L	----	----	**2.27**	**23.0**	**14.6**	----	----	
Fluoride as F	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	<0.50	----	----	
Chloride as Cl	APHA4110B	0.10	mg/L	----	----	**1720**	**2880**	**686**	----	----	
Bromide as Br	APHA4110B	0.10	mg/L	----	----	**8.17**	**12.3**	**2.66**	----	----	
Sulphate as SO4	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	**28.1**	----	----	
Ammonia as N	APHA4500B/APHA4500H	0.01	mg/L	----	----	**8.80**	**16.5**	**5.05**	----	----	
Conductivity	APHA2510B	1.0	µS/cm	----	----	**6140**	**9200**	**2450**	----	----	
Total Petroleum Hydrocarbon											
C6 - C9 Fraction	EPA5030B/EPA8015B	5	µg/L	----	----	<5	<5	<5	----	----	
C10 - C14 Fraction	EPA3510C/EPA8015B	10	µg/L	----	----	<10	**160**	<10	----	----	
C15 - C28 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----	**170**	**210**	<50	----	----	

Dutch Standards 2000: Dutch Groundwater Standards

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Total Petroleum Hydrocarbon - Continued											
C29 - C36 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----		<50	<50	**70**	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
Client sample ID										
Sampling date/time						07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-013	SG1616288-001	SG1616288-002	SG1616288-003	SG1616288-004
INORGANIC- Physical Properties										
Total Dissolved Solids	APHA2540C	5	mg/L	----	----	----	**8160**	----	----	----
Total Hardness as CaCO3	APHA2340B	0.10	mg/L	----	----	----	**1320**	----	----	----
Total Suspended Solids	APHA2540D	5	mg/L	----	----	----	**15600**	----	----	----
Calcium Hardness	APHA2340B	0.10	mg/L	----	----	----	**483**	----	----	----
Magnesium Hardness	APHA2340B	0.10	mg/L	----	----	----	**842**	----	----	----
Conventional										
Phosphate as PO4	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Propylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3.5-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl Acetate	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone (MEK)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
4-Methyl-2-pentanone (MIBK)	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone (MBK)	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Sulfonated Compounds										
Carbon disulfide	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Fumigants										
2.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromoethane (EDB)	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Bromomethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
				Sampling date/time			07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-013**	**SG1616288-001**	**SG1616288-002**	**SG1616288-003**	**SG1616288-004**
Halogenated Aliphatic Compounds - Continued											
Iodomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Carbon Tetrachloride	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
cis-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
1.1.2.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromo-3-chloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aromatic Compounds											
Chlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Trihalomethanes											
Bromodichloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromochloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Phenolic Compounds											
2-Chlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitrophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dimethylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.6-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloro-3-methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.6-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.5-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
PolyAromatic Hydrocarbons											
2-Methylnaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
				Sampling date/time			07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-013**	**SG1616288-001**	**SG1616288-002**	**SG1616288-003**	**SG1616288-004**
PolyAromatic Hydrocarbons - Continued											
2-Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Fluorene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pyrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-2-Fluorenyl Acetamide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(b) & Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.20	µg/L	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Methylcholanthrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibenz(a,h)anthracene	EPA3510C/EPA8270D	0.10	µg/L	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters											
Dimethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Di-n-butyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Butyl benzyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
bis(2-ethylhexyl) phthalate	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	**36.4**	<2.00	<2.00
Di-n-octylphthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrosamines											
N-Nitrosomethylethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopyrrolidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosomorpholine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodi-n-propylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopiperidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodibutylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiphenyl & Diphenylamine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Nitroaromatics and Cyclic Ketones											
2-Picoline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acetophenone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Isophorone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2,6-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2,4-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1-Naphthylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Nitroquinoline-N-oxide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
5-Nitro-o-toluidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Azobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1,3,5-Trinitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
Client sample ID										
Sampling date/time						07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-013	SG1616288-001	SG1616288-002	SG1616288-003	SG1616288-004
Nitroaromatics and Cyclic Ketones - Continued										
Phenacetin	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Aminobiphenyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloronitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethylaminoazobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzilate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Haloethers										
Bis(2-chloroethyl) ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bis(2-chloroethoxy) methane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Bromophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.4-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloroethane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloropropylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobutadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorocyclopentadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzene (HCB)	EPA3510C/EPA8270D	0.50	µg/L	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Anilines and Benzidines										
Aniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloroaniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Dibenzofuran	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
4-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Carbazole	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3.3`-Dichlorobenzidine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorinated Biphenyls										
Aroclor 1232	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1242	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1248	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1254	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organochlorine Pesticides										

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
Client sample ID										
Sampling date/time						07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-013	SG1616288-001	SG1616288-002	SG1616288-003	SG1616288-004
Organochlorine Pesticides - Continued										
delta-BHC	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDE	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDD	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	**1.52**	<1.00	<1.00	<1.00
Endosulfan sulfate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDT	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endrin ketone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organophosphorus Pesticides										
Malathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorvos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethoate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diazinon	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos-methyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Ethion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Fenthion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pirimphos-ethyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Prothiofos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (E)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (Z)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5030B/EPA8260C	0.1	%	----	----	**97.3**	**101**	**100**	**96.0**	**95.5**
Toluene-D8	EPA5030B/EPA8260C	0.1	%	----	----	**94.9**	**99.7**	**97.6**	**97.8**	**101**
4-Bromofluorobenzene	EPA5030B/EPA8260C	0.1	%	----	----	**94.7**	**94.3**	**93.3**	**93.0**	**93.4**
Acid Extractable Surrogates										
2-Fluorophenol	EPA3510C/EPA8270D	0.1	%	----	----	**41.2**	**36.1**	**77.4**	**43.0**	**66.3**
Phenol-d5	EPA3510C/EPA8270D	0.1	%	----	----	**37.2**	**49.8**	**41.4**	**43.6**	**54.7**
2.4.6-Tribromophenol	EPA3510C/EPA8270D	0.1	%	----	----	**57.0**	**65.0**	**74.8**	**67.0**	**59.4**
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA3510C/EPA8270D	0.1	%	----	----	**58.0**	**46.5**	**50.4**	**56.3**	**70.0**
2-Fluorobiphenyl	EPA3510C/EPA8270D	0.1	%	----	----	**65.9**	**51.8**	**59.4**	**59.1**	**48.6**

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	DUP 01	MW 1	MW 3	MW 4	MW 6
				Sampling date/time			07-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-013**	**SG1616288-001**	**SG1616288-002**	**SG1616288-003**	**SG1616288-004**
Base/Neutral Extractable Surrogates - Continued											
4-Terphenyl-d14	EPA3510C/EPA8270D	0.1	%	----	----		**59.7**	**64.7**	**77.9**	**73.2**	**61.6**

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
Client sample ID										
Sampling date/time						06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-005	SG1616288-006	SG1616288-007	SG1616288-008	SG1616288-009
Conventional										
Phosphate as PO4	APHA4110B	0.50	mg/L	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Propylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3.5-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl Acetate	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone (MEK)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
4-Methyl-2-pentanone (MIBK)	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone (MBK)	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Sulfonated Compounds										
Carbon disulfide	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Fumigants										
2.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromoethane (EDB)	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Bromomethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Iodomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Carbon Tetrachloride	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
Client sample ID										
Sampling date/time						06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-005	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
Halogenated Aliphatic Compounds - Continued										
1.3-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
cis-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
1.1.2.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromo-3-chloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aromatic Compounds										
Chlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Trihalomethanes										
Bromodichloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromochloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Phenolic Compounds										
2-Chlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitrophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dimethylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.6-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloro-3-methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.6-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.5-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
PolyAromatic Hydrocarbons										
2-Methylnaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Fluorene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pyrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-2-Fluorenyl Acetamide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
				Sampling date/time			06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
Compound	*Method*	*LOR*	*Unit*				**SG1616288-005**	**SG1616288-006**	**SG1616288-007**	**SG1616288-008**	**SG1616288-009**
PolyAromatic Hydrocarbons - Continued											
Benzo(b) & Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.20	µg/L		----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Methylcholanthrene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibenz(a.h)anthracene	EPA3510C/EPA8270D	0.10	µg/L		----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters											
Dimethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Di-n-butyl phthalate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Butyl benzyl phthalate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
bis(2-ethylhexyl) phthalate	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Di-n-octylphthalate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrosamines											
N-Nitrosomethylethylamine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiethylamine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopyrrolidine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosomorpholine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodi-n-propylamine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopiperidine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodibutylamine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiphenyl & Diphenylamine	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Nitroaromatics and Cyclic Ketones											
2-Picoline	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acetophenone	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Isophorone	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.6-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1-Naphthylamine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Nitroquinoline-N-oxide	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
5-Nitro-o-toluidine	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Azobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3.5-Trinitrobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Phenacetin	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Aminobiphenyl	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloronitrobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethylaminoazobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzilate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	Client sample ID: MW 8	MW10	MW11	MW16	MW19
						Sampling date/time: 06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-005	SG1616288-006	SG1616288-007	SG1616288-008	SG1616288-009
Haloethers										
Bis(2-chloroethyl) ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bis(2-chloroethoxy) methane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Bromophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorinated Hydrocarbon										
1.3-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.4-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloroethane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloropropylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobutadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorocyclopentadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzene (HCB)	EPA3510C/EPA8270D	0.50	µg/L	----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Anilines and Benzidines										
Aniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloroaniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Dibenzofuran	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
4-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Carbazole	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3.3`-Dichlorobenzidine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorinated Biphenyls										
Aroclor 1232	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1242	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1248	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1254	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organochlorine Pesticides										
delta-BHC	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDE	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	MW 8	MW10	MW11	MW16	MW19
Client sample ID										
Sampling date/time						06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00	06-OCT-2016 15:00
						SG1616288-005	SG1616288-006	SG1616288-007	SG1616288-008	SG1616288-009
Organochlorine Pesticides - Continued										
4.4`-DDD	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endosulfan sulfate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDT	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endrin ketone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organophosphorus Pesticides										
Malathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorvos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethoate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diazinon	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos-methyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Ethion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Fenthion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pirimphos-ethyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Prothiofos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (E)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (Z)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
VOC Surrogates										
1.2-Dichloroethane-D4	EPA5030B/EPA8260C	0.1	%	----	----	**97.6**	**98.7**	**91.4**	**90.3**	**101**
Toluene-D8	EPA5030B/EPA8260C	0.1	%	----	----	**98.2**	**100**	**100**	**97.1**	**101**
4-Bromofluorobenzene	EPA5030B/EPA8260C	0.1	%	----	----	**91.5**	**95.3**	**94.1**	**93.3**	**96.8**
Acid Extractable Surrogates										
2-Fluorophenol	EPA3510C/EPA8270D	0.1	%	----	----	**40.5**	**40.2**	**45.2**	**63.6**	**36.1**
Phenol-d5	EPA3510C/EPA8270D	0.1	%	----	----	**60.1**	**56.1**	**55.3**	**31.4**	**44.8**
2.4.6-Tribromophenol	EPA3510C/EPA8270D	0.1	%	----	----	**57.3**	**55.8**	**62.2**	**64.3**	**61.4**
Base/Neutral Extractable Surrogates										
Nitrobenzene-D5	EPA3510C/EPA8270D	0.1	%	----	----	**46.3**	**53.1**	**52.2**	**63.0**	**59.2**
2-Fluorobiphenyl	EPA3510C/EPA8270D	0.1	%	----	----	**52.8**	**49.2**	**57.3**	**52.7**	**49.5**
4-Terphenyl-d14	EPA3510C/EPA8270D	0.1	%	----	----	**70.5**	**60.0**	**73.4**	**69.4**	**68.1**

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
INORGANIC- Physical Properties											
Total Dissolved Solids	APHA2540C	5	mg/L	----	----		**7230**	**5820**	----	----	----
Total Hardness as CaCO3	APHA2340B	0.10	mg/L	----	----		**358**	**940**	----	----	----
Total Suspended Solids	APHA2540D	5	mg/L	----	----		**8300**	**2210**	----	----	----
Calcium Hardness	APHA2340B	0.10	mg/L	----	----		**79.8**	**357**	----	----	----
Magnesium Hardness	APHA2340B	0.10	mg/L	----	----		**278**	**583**	----	----	----
Conventional											
Phosphate as PO4	APHA4110B	0.50	mg/L	----	----		<0.50	<0.50	<0.50	----	----
Monocyclic Aromatic Hydrocarbons											
Isopropylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
n-Propylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
1.3.5-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
sec-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
1.2.4-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
tert-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
p-Isopropyltoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
n-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
Oxygenated Compounds											
2-Propanone (Acetone)	EPA5030B/EPA8260C	50.0	µg/L	----	----		<50.0	<50.0	<50.0	<50.0	----
Vinyl Acetate	EPA5030B/EPA8260C	50.0	µg/L	----	----		<50.0	<50.0	<50.0	<50.0	----
2-Butanone (MEK)	EPA5030B/EPA8260C	50.0	µg/L	----	----		<50.0	<50.0	<50.0	<50.0	----
4-Methyl-2-pentanone (MIBK)	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----
2-Hexanone (MBK)	EPA5030B/EPA8260C	5.00	µg/L	----	----		<5.00	<5.00	<5.00	<5.00	----
Sulfonated Compounds											
Carbon disulfide	EPA5030B/EPA8260C	5.00	µg/L	----	----		<5.00	<5.00	<5.00	<5.00	----
Fumigants											
2.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
1.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
cis-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
trans-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
1.2-Dibromoethane (EDB)	EPA5030B/EPA8260C	1.00	µg/L	----	----		<1.00	<1.00	<1.00	<1.00	----
Halogenated Aliphatic Compounds											
Dichlorodifluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----
Chloromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----
Bromomethane	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----
Chloroethane	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----
Trichlorofluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----		<10.0	<10.0	<10.0	<10.0	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Halogenated Aliphatic Compounds - Continued											
Iodomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
trans-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
cis-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.1-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Carbon Tetrachloride	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Dibromomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.3-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.1.1.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
trans-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	----
cis-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	----
1.1.2.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.2.3-Trichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Pentachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.2-Dibromo-3-chloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Halogenated Aromatic Compounds											
Chlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Bromobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
2-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
4-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
1.2.3-Trichlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Trihalomethanes											
Bromodichloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Dibromochloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	----
Phenolic Compounds											
2-Chlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2-Nitrophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2.4-Dimethylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2.6-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2.4-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Chloro-3-methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2.4.6-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2.4.5-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
PolyAromatic Hydrocarbons											
2-Methylnaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
PolyAromatic Hydrocarbons - Continued											
2-Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Acenaphthylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Acenaphthene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Fluorene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Pyrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-2-Fluorenyl Acetamide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Benzo(b) & Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.20	µg/L	----	----	<0.20	<0.20	<0.20	----	----
3-Methylcholanthrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Dibenz(a,h)anthracene	EPA3510C/EPA8270D	0.10	µg/L	----	----	<0.10	<0.10	<0.10	----	----
Phthalate Esters											
Dimethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Diethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Di-n-butyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Butyl benzyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
bis(2-ethylhexyl) phthalate	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Di-n-octylphthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Nitrosamines											
N-Nitrosomethylethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosodiethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosopyrrolidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosomorpholine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosodi-n-propylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosopiperidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosodibutylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
N-Nitrosodiphenyl & Diphenylamine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Nitroaromatics and Cyclic Ketones											
2-Picoline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Acetophenone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Nitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Isophorone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2,6-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2,4-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
1-Naphthylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Nitroquinoline-N-oxide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
5-Nitro-o-toluidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Azobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
1,3,5-Trinitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Nitroaromatics and Cyclic Ketones - Continued											
Phenacetin	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Aminobiphenyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Pentachloronitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Dimethylaminoazobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorobenzilate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Haloethers											
Bis(2-chloroethyl) ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Bis(2-chloroethoxy) methane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Chlorophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Bromophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorinated Hydrocarbon											
1.3-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
1.4-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
1.2-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Hexachloroethane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
1.2.4-Trichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Hexachloropropylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Hexachlorobutadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Hexachlorocyclopentadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Pentachlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Hexachlorobenzene (HCB)	EPA3510C/EPA8270D	0.50	µg/L	----	----	<0.50	<0.50	<0.50	----	----
Anilines and Benzidines											
Aniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4-Chloroaniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
2-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
3-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Dibenzofuran	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
4-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Carbazole	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
3.3`-Dichlorobenzidine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Polychlorinated Biphenyls											
Aroclor 1232	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Aroclor 1242	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Aroclor 1248	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Aroclor 1254	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Organochlorine Pesticides											

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Organochlorine Pesticides - Continued											
delta-BHC	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
trans-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
cis-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
alpha-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4.4`-DDE	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
beta-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4.4`-DDD	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Endosulfan sulfate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
4.4`-DDT	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Endrin ketone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Organophosphorus Pesticides											
Malathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Dichlorvos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Dimethoate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Diazinon	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorpyrifos-methyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Ethion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Fenthion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorpyrifos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Pirimphos-ethyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Prothiofos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<2.00	<2.00	<2.00	----	----
Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Methyl Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorfenvinphos (E)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
Chlorfenvinphos (Z)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	----	----
VOC Surrogates											
1.2-Dichloroethane-D4	EPA5030B/EPA8260C	0.1	%	----	----	**98.3**	**101**	**96.8**	**97.6**	----
Toluene-D8	EPA5030B/EPA8260C	0.1	%	----	----	**99.0**	**102**	**99.0**	**100**	----
4-Bromofluorobenzene	EPA5030B/EPA8260C	0.1	%	----	----	**94.1**	**94.5**	**94.1**	**94.0**	----
Acid Extractable Surrogates											
2-Fluorophenol	EPA3510C/EPA8270D	0.1	%	----	----	**44.9**	**34.9**	**39.7**	----	----
Phenol-d5	EPA3510C/EPA8270D	0.1	%	----	----	**43.8**	**36.9**	**31.8**	----	----
2.4.6-Tribromophenol	EPA3510C/EPA8270D	0.1	%	----	----	**64.6**	**67.2**	**56.4**	----	----
Base/Neutral Extractable Surrogates											
Nitrobenzene-D5	EPA3510C/EPA8270D	0.1	%	----	----	**60.0**	**61.9**	**42.5**	----	----
2-Fluorobiphenyl	EPA3510C/EPA8270D	0.1	%	----	----	**52.4**	**57.4**	**45.4**	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW20	MW29	MW30	Trip Blank	----
				Sampling date/time			06-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016 15:00	07-OCT-2016	----
Compound	*Method*	*LOR*	*Unit*				**SG1616288-010**	**SG1616288-011**	**SG1616288-012**	**SG1616288-014**	**---**
Base/Neutral Extractable Surrogates - Continued											
4-Terphenyl-d14	EPA3510C/EPA8270D	0.1	%	----	----		**71.4**	**67.3**	**54.2**	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Acceptance Limits (%)	
Compound	*Method*	*Low*	*High*
VOC Surrogates			
1,2-Dichloroethane-D4	EPA5030B/EPA8260C	76	114
Toluene-D8	EPA5030B/EPA8260C	88	110
4-Bromofluorobenzene	EPA5030B/EPA8260C	86	115
Acid Extractable Surrogates			
2-Fluorophenol	EPA3510C/EPA8270D	21	110
Phenol-d5	EPA3510C/EPA8270D	10	110
2,4,6-Tribromophenol	EPA3510C/EPA8270D	10	123
Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	EPA3510C/EPA8270D	35	114
2-Fluorobiphenyl	EPA3510C/EPA8270D	43	116
4-Terphenyl-d14	EPA3510C/EPA8270D	33	141

ALS TECHNICHEM (S) PTE LTD

OUR REF NO : SG 1616288
COMPANY : Environmental Resources Management

QA/QC REPORT

Remarks : QA/QC Results

a) All analyses were analyzed within their holding times.
b) Method blanks were run in each batch of analysis to check background interference, if any.
c) Surrogate spike recoveries were performed on each sample in the VOCs and SVOCs analysis. The results were summarized as below.
d) A summarized QC report on recoveries of Lab Control Samples(LCS) and Matrix Spike (MS) is attached. Upon review of the QA/QC datas, the recoveries of the laboratory control sample, matrix spikes and surrogate spikes (vocs & svocs) were within ALS laboratory acceptance criteria.

QA/QC Results :

% Surrogate Spike Recoveries

Volatile Organics (VOCs)

Surrogare Compound	Range for all samples
Dichloroethane-d_4	90-101
Toluene-d_8	95-103
4-Bromofluorobenzene	91-100

Semi-Volatile Organics (SVOCs)

Surrogate Compound	Range for all samples
2-Fluorophenol	35-77
Phenol-d_6	24-60
Nitrobenzene-d_5	42-70
2-Fluorobiphenyl	45-66
2,4,6-Tribromophenol	56-75
p-Terphenyl-d_{14}	54-102

ALS TECHNICHEM (S) PTE LTD

OUR REF NO : SG 1616288
COMPANY : Environmental Resources Management

Test	LCS % Recovery	MS, % recovery
TPH as diesel oil	93	91
SVOCs		
Phenol	85	104
2- Chlorophenol	80	101
4-Chloro-3-methyl phenol	79	87
Pentachlorophenol	92	85
Acenaphthene	76	84
Pyrene	76	92
N-nitroso-di-n-propylamine	85	79
2,4-dinitrotolune	102	81
1,4-dichlorobenzene	77	76
1,2,4-trichlorobenzene	76	83
VOCs		
Benzene	92	97
Toluene	94	97
1,1-Dichloroethene	93	99
Trichloroethene	96	89
Chlorobenzene	100	99
Metals		
Arsenic	96	124
Barium	94	93
Cadmium	97	107
Total chromium	92	98
Cobalt	95	102
Copper	94	103
Mercury	99	83
Lead	93	96
Molybdenum	94	108
Nickel	94	100
Zinc	96	107
Antimony	98	114

CHAIN OF CUSTODY DOCUMENTATION

ATS 7971

ALS TECHNICHEM

SG1616288

CLIENT: Environmental Business Management (S) Pte Ltd
POSTAL ADDRESS: 120 Robinson Road #10-01 (S) 068913
SEND REPORT TO: Lawrence Ow
SEND INVOICE TO: Lawrence Ow
DATA NEEDED BY: 31/10/16
REPORT NEEDED BY: 31/10/16
PROJECT ID: 0311764
QUOTE NO.:
P.O. NO.:
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:
FOR LAB USE ONLY
COOLER SEAL: Yes ..... No .....
Broken ..... Intact .....
COOLER TEMP: ..... deg.C

LABORATORY BATCH NO.:
SAMPLERS:
PHONE: FAX:
REPORT FORMAT: HARD _____ FAX: _____ DISK: _____ BULLETIN BOARD _____
QC LEVEL: QCS1 _____ QCS2 _____ QCS3 _____ QCS4 _____

Standard TAT -

ANALYSIS REQUIRED

SAMPLE DATA				*CONTAINER DATA			TPH (C6-C44) with BTEX	Hardness	TDS	TSS	NOTES
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	pH					
MW1	Water	6/10/16	-		1		✓	✓	✓	✓	
~~MW2~~ MW3	"	"	-		2		✓				
~~MW3~~ MW4	"	"	-		3		✓				
~~MW4~~ ~~MW5~~ MW5	"	"	-		4		✓				
~~MW5~~ MW8	"	"	-		5		✓				
~~MW6~~ MW10	"	"	-		6		✓				
~~MW7~~ MW11	"	"	-		7		✓				
~~MW8~~ MW16	"	"	-		8		✓				
~~MW9~~ MW19	"	"	-		9		✓				
MW10 MW20	"	"	-		10		✓	✓	✓	✓	
~~MW11~~ MW23	"	7/10/16	-		11		✓				
~~MW12~~ MW24	"	"	-		12		✓				
~~MW13~~ MW26	"	"	-		13		✓				
~~MW~~ MW29	"	7/10/16	-		14		✓	✓	✓	✓	
MW30	"	"	-		15		✓				

ALS Technichem (S) Pte Ltd
Work Order
SG1616288
Telephone : +65 6589 0118

RELINQUISHED BY		RECEIVED BY		
NAME: Lawrence Ow	DATE: 7/10/16	NAME:	DATE: 7/10	METHOD OF SHIPMENT
OF: EBM	TIME:	OF:	TIME:	CONSIGNMENT NOTE NO.
NAME:	DATE:	NAME:	DATE:	TRANSPORT CO. NAME.
OF:	TIME:	OF:	TIME:	

*Container Type and Preservative Codes: P = Natural Plastic, N = Nitric Acid Preserved, C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial, VS = Sulphuric Acid Preserved Vial, BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle. O = Other.

CHAIN OF CUSTODY DOCUMENTATION

ATS 7973

ALS TECHNICHEM

8G1616288

CLIENT: Environmental Resources Management (S) Pte Ltd		LABORATORY BATCH NO.:	
POSTAL ADDRESS: 120 Robinson Road #17-01 S(068913		SAMPLERS:	
SEND REPORT TO: Lawrence Ou	SEND INVOICE TO: Lawrence Ou	PHONE:	FAX:
DATA NEEDED BY: 21/10/16	REPORT NEEDED BY: 21/10/16	REPORT FORMAT: HARD ____ FAX: ____ DISK: ____ BULLETIN BOARD: ____	
PROJECT ID: 0161748	QUOTE NO.:	QC LEVEL: QCS1 ____ QCS2 ____ QCS3 ____ QCS4 ____	
P.O. NO.:	COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	ANALYSIS REQUIRED	
FOR LAB USE ONLY			
COOLER SEAL: Yes ____ No ____	Standard TAT.		
Broken ____ Intact ____			
COOLER TEMP: ____ deg.C			

SAMPLE DATA				*CONTAINER DATA			NOTES
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	pH	
~~Hgc Ex~~							
DUP 01	Water	7/10/16	-		1		
Trip blank	"	"	-		1		

RELINQUISHED BY	RECEIVED BY	
NAME: Lawrence Ou	DATE: 7/10/16	NAME:	DATE:	METHOD OF SHIPMENT
OF: ERM	TIME:	OF:	TIME:	
NAME:	DATE:	NAME:	DATE:	CONSIGNMENT NOTE NO.
OF:	TIME:	OF:	TIME:	
				TRANSPORT CO. NAME.

*Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle. O = Other.

CERTIFICATE OF ANALYSIS

Work Order	: **SG1620769**	Page	: 1 of 21
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT	Project	: 0311748
Contact	: Mr Desmond Leung	Order number	: ----
Address	: 120 Robinson Road #10-01 Singapore 068913	Quote number	: ----
E-mail	: Desmond.Leung@erm.com	Date Received	: 19-DEC-2016
Telephone	: ----	Date Analysed	: 19-DEC-2016
Facsimile	: +65 6226 1363	Date Issued	: 13-JAN-2017
No. of samples received	: 7	No. of samples analysed	: 7

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*
Pansy Teo	Senior Environmental Manager
Tan Kah Guan	Environmental Supervisor
Tan Teong Huat	Senior Environmental Manager

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. Results apply to the sample(s) as submitted. The laboratory declares that the test results relate only to the items tested and do not substitute any other documents. This report may not be reproduced except with prior written approval from the testing laboratory. This report may not be used for advertising purposes.

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, BS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : LOR = Limit of reporting

- **APHA method is referenced to American Public Health Association Standard Method, 22nd Ed, 2012**
- **The conductivity test result is referenced at 25 deg C**

Analytical Results

Dutch Standards 2000: Dutch Groundwater Standards

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
Client sample ID										
Sampling date/time						19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
						SG1620769-001	SG1620769-002	SG1620769-003	SG1620769-004	SG1620769-005
Metals										
Arsenic	EPA3005/EPA6010B	10.0	µg/L	10	60	<10.0	<10.0	<10.0	<10.0	<10.0
Barium	EPA3005/EPA6010B	20.0	µg/L	50	625	**136**	**521**	**746**	**209**	**58.0**
Cadmium	EPA3005/EPA6010B	5.0	µg/L	0.4	6	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	EPA3005/EPA6010B	10.0	µg/L	1	30	<10.0	<10.0	<10.0	<10.0	<10.0
Cobalt	EPA3005/EPA6010B	10.0	µg/L	20	100	<10.0	<10.0	<10.0	**27.0**	<10.0
Copper	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Mercury	EPA7470	0.10	µg/L	0.05	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
Lead	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	<10.0	<10.0
Molybdenum	EPA3005/EPA6010B	10.0	µg/L	5	300	**35.4**	<10.0	**11.2**	<10.0	<10.0
Nickel	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	<10.0	<10.0	**28.0**	<10.0
Zinc	EPA3005/EPA6010B	10.0	µg/L	65	800	<10.0	<10.0	<10.0	**100**	<10.0
Antimony	EPA3005/EPA6010B	10.0	µg/L	----	20	<10.0	<10.0	<10.0	<10.0	**14.4**
Inorganic Compounds										
Cyanide	EPA9010/EPA9014	10	µg/L	5	1500	<10	<10	<10	<10	<10
Aromatic Compounds										
Benzene	EPA5030B/EPA8260C	1.00	µg/L	0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Ethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	4	150	<1.00	<1.00	<1.00	<1.00	<1.00
Phenol	EPA3510C/EPA8270D	1.00	µg/L	0.2	2000	<1.00	<1.00	<1.00	<1.00	<1.00
Cresoles (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	200	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	EPA5030B/EPA8260C	1.00	µg/L	7	1000	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes (Sum)	EPA5030B/EPA8260C	2.00	µg/L	0.2	70	<2.00	<2.00	<2.00	<2.00	<2.00
Styrene	EPA5030B/EPA8260C	1.00	µg/L	0.6	300	<1.00	<1.00	<1.00	<1.00	<1.00
Catechol	EPA3510C/EPA8270D	1.00	µg/L	0.2	1250	<1.00	<1.00	<1.00	<1.00	<1.00
Resorcinol	EPA3510C/EPA8270D	1.00	µg/L	0.2	600	<1.00	<1.00	<1.00	<1.00	<1.00
Hydrochinon	EPA3510C/EPA8270D	1.00	µg/L	0.2	800	<1.00	<1.00	<1.00	<1.00	<1.00
Polynuclear Aromatic Hydrocarbons										
Naphthalene	EPA3510C/EPA8270D	0.10	µg/L	0.01	70	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0007	5	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	EPA3510C/EPA8270D	0.10	µg/L	0.003	5	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.003	1	<0.10	<0.10	<0.10	<0.10	<0.10
Benz(a)anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0001	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	EPA3510C/EPA8270D	0.10	µg/L	0.003	0.2	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.001	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g.h.i)perylene	EPA3510C/EPA8270D	0.10	µg/L	0.0003	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10

Dutch Standards 2000: Dutch Groundwater Standards

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
Client sample ID										
Sampling date/time						19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
						SG1620769-001	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Polynuclear Aromatic Hydrocarbons - Continued										
Indeno(1.2.3.cd)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorinated Hydrocarbons										
1.1-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L	7	900	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L	7	400	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloroethene (sum cis & trans)	EPA5030B/EPA8260C	1.00	µg/L	0.01	20	<1.00	<1.00	<1.00	<1.00	<1.00
Dichloropropanes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	0.8	80	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	300	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.2-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	130	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	EPA5030B/EPA8260C	1.00	µg/L	24	500	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	EPA5030B/EPA8260C	1.00	µg/L	0.01	40	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene chloride	EPA5030B/EPA8260C	10.0	µg/L	0.01	1000	<10.0	<10.0	<10.0	<10.0	<10.0
Tetrachloromethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroform	EPA5030B/EPA8260C	1.00	µg/L	6	400	<1.00	<1.00	<1.00	<1.00	<1.00
Vinyl chloride	EPA5030B/EPA8260C	2.00	µg/L	0.01	5	<2.00	<2.00	<2.00	<2.00	<2.00
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Monochlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	7	180	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	3	50	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.01	2.5	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.003	1	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzenes (Sum)	EPA3510C/EPA8270D	0.50	µg/L	0.00009	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA3510C/EPA8270D	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Monochlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.3	100	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	30	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.03	10	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.01	10	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorophenol	EPA3510C/EPA8270D	1.00	µg/L	0.04	3	<1.00	<1.00	<1.00	<1.00	<1.00
Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	6	<1.00	<1.00	<1.00	<1.00	<1.00
Monochloroanilines	EPA3510C/EPA8270D	2.00	µg/L	----	30	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA3510C/EPA8082	1.00	µg/L	0.01	0.01	<1.00	<1.00	<1.00	<1.00	<1.00
Pesticides										
DDD/DDE/DDT	EPA3510C/EPA8270D	1.00	µg/L	0.004 ng/L	1000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Aldrin,Dieldrin,Endrin (Sum)	EPA3510C/EPA8270D	1.00	µg/L	----	0.1	<1.00	<1.00	<1.00	<1.00	<1.00

Dutch Standards 2000: Dutch Groundwater Standards

Sub-Matrix: **GROUNDWATER**

			Client sample ID	Target	Intervention	MW 23	MW 25	MW 26	MW 37	MW 38
			Sampling date/time	Value	Value	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*			**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Pesticides - Continued										
Aldrin	EPA3510C/EPA8270D	1.00	µg/L	0.009 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dieldrin	EPA3510C/EPA8270D	1.00	µg/L	0.1 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endrin	EPA3510C/EPA8270D	1.00	µg/L	0.04 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
BHC Compounds (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.05	1	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-BHC	EPA3510C/EPA8270D	1.00	µg/L	33 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-BHC	EPA3510C/EPA8270D	1.00	µg/L	8 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
gamma-BHC	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	----	<1.00	<1.00	<1.00	<1.00	<1.00
Atrazine	EPA3510C/EPA8270D	1.00	µg/L	29 ng/L	150000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbaryl	EPA3510C/EPA8270D	1.00	µg/L	2 ng/L	50000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Carbofuran	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	100000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Chlordane	EPA3510C/EPA8270D	1.00	µg/L	0.02 ng/L	200 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	0.2 ng/L	0.005 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	300 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Heptachlor epoxide	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	3000 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Maneb	EPA3510C/EPA8270D	1.00	µg/L	0.05 ng/L	0.0001 ng/L	<1.00	<1.00	<1.00	<1.00	<1.00
Other Pollutants										
Cyclohexanone	EPA5030B/EPA8260C	1.00	µg/L	0.5	15000	<1.00	<1.00	<1.00	<1.00	<1.00
Phthalates (Sum)	EPA3510C/EPA8270D	2.00	µg/L	0.5	5	<2.00	<2.00	<2.00	<2.00	<2.00
Mineral oils	EPA8015B	115	µg/L	50	600	**820**	**914**	**560**	**190**	**2890**
Pyridine	EPA5030B/EPA8260C	1.00	µg/L	0.5	30	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	EPA5030B/EPA8260C	1.00	µg/L	----	630	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrofuran	EPA3510C/EPA8270D	1.00	µg/L	0.5	300	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrahydrothiophene	EPA3510C/EPA8270D	1.00	µg/L	0.5	5000	<1.00	<1.00	<1.00	<1.00	<1.00
Conventional										
pH @ 25 deg C	APHA4500 H+B	0.1	pH Unit	----	----	**7.6**	**6.2**	**6.2**	**5.6**	**6.7**
Biochemical Oxygen Demand (5 days @ 20 deg C)	APHA5210B	2	mg/L	----	----	**40**	**31**	**34**	**40**	**6**
Chemical Oxygen Demand	APHA5220C	1	mg/L	----	----	**81**	**80**	**79**	**81**	**60**
Total Organic Carbon	APHA5310B	0.10	mg/L	----	----	**26.1**	**17.3**	**12.3**	**4.76**	**7.32**
Fluoride as F	APHA4110B	0.10	mg/L	----	----	<0.10	<0.10	<0.10	<0.10	**0.22**
Chloride as Cl	APHA4110B	0.10	mg/L	----	----	**1430**	**3200**	**1470**	**4440**	**154**
Bromide as Br	APHA4110B	0.10	mg/L	----	----	**0.53**	**12.8**	**6.68**	**5.07**	**0.73**
Sulphate as SO4	APHA4110B	0.10	mg/L	----	----	**1.36**	**42.6**	**0.19**	**267**	**55.3**
Ammonia as N	APHA4500B/APHA4500H	0.01	mg/L	----	----	**1.10**	**5.00**	**7.20**	**3.20**	**4.48**
Conductivity	APHA2510B	1.0	µS/cm	----	----	**5540**	**9960**	**5030**	**12900**	**1370**
Total Petroleum Hydrocarbon										
C6 - C9 Fraction	EPA5030B/EPA8015B	5	µg/L	----	----	<5	**14**	<5	<5	**18**

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Sub-Matrix: **GROUNDWATER**

Compound	*Method*	*LOR*	*Unit*	*Client sample ID* / *Sampling date/time*	Target Value	Intervention Value	MW 23 19-DEC-2016 SG1620769-001	MW 25 19-DEC-2016 SG1620769-002	MW 26 19-DEC-2016 SG1620769-003	MW 37 19-DEC-2016 SG1620769-004	MW 38 19-DEC-2016 SG1620769-005
Total Petroleum Hydrocarbon - Continued											
C10 - C14 Fraction	EPA3510C/EPA8015B	10	µg/L		----	----	**150**	**460**	<10	<10	<10
C15 - C28 Fraction	EPA3510C/EPA8015B	50	µg/L		----	----	**580**	**440**	**560**	**190**	**1720**
C29 - C36 Fraction	EPA3510C/EPA8015B	50	µg/L		----	----	**90**	<50	<50	<50	**1150**

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Metals											
Arsenic	EPA3005/EPA6010B	10.0	µg/L	10	60	<10.0	----	----	----	----	
Barium	EPA3005/EPA6010B	20.0	µg/L	50	625	**38.0**	----	----	----	----	
Cadmium	EPA3005/EPA6010B	5.0	µg/L	0.4	6	<5.0	----	----	----	----	
Chromium	EPA3005/EPA6010B	10.0	µg/L	1	30	<10.0	----	----	----	----	
Cobalt	EPA3005/EPA6010B	10.0	µg/L	20	100	<10.0	----	----	----	----	
Copper	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	----	----	----	----	
Mercury	EPA7470	0.10	µg/L	0.05	0.3	<0.10	----	----	----	----	
Lead	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	----	----	----	----	
Molybdenum	EPA3005/EPA6010B	10.0	µg/L	5	300	**11.6**	----	----	----	----	
Nickel	EPA3005/EPA6010B	10.0	µg/L	15	75	<10.0	----	----	----	----	
Zinc	EPA3005/EPA6010B	10.0	µg/L	65	800	**22.7**	----	----	----	----	
Antimony	EPA3005/EPA6010B	10.0	µg/L	----	20	**12.5**	----	----	----	----	
Inorganic Compounds											
Cyanide	EPA9010/EPA9014	10	µg/L	5	1500	<10	----	----	----	----	
Aromatic Compounds											
Benzene	EPA5030B/EPA8260C	1.00	µg/L	0.2	30	<1.00	<1.00	----	----	----	
Ethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	4	150	<1.00	<1.00	----	----	----	
Phenol	EPA3510C/EPA8270D	1.00	µg/L	0.2	2000	<1.00	----	----	----	----	
Cresoles (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	200	<1.00	----	----	----	----	
Toluene	EPA5030B/EPA8260C	1.00	µg/L	7	1000	<1.00	<1.00	----	----	----	
Xylenes (Sum)	EPA5030B/EPA8260C	2.00	µg/L	0.2	70	<2.00	<2.00	----	----	----	
Styrene	EPA5030B/EPA8260C	1.00	µg/L	0.6	300	<1.00	<1.00	----	----	----	
Catechol	EPA3510C/EPA8270D	1.00	µg/L	0.2	1250	<1.00	----	----	----	----	
Resorcinol	EPA3510C/EPA8270D	1.00	µg/L	0.2	600	<1.00	----	----	----	----	
Hydrochinon	EPA3510C/EPA8270D	1.00	µg/L	0.2	800	<1.00	----	----	----	----	
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA3510C/EPA8270D	0.10	µg/L	0.01	70	<0.10	----	----	----	----	
Anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0007	5	<0.10	----	----	----	----	
Phenanthrene	EPA3510C/EPA8270D	0.10	µg/L	0.003	5	<0.10	----	----	----	----	
Fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.003	1	<0.10	----	----	----	----	
Benz(a)anthracene	EPA3510C/EPA8270D	0.10	µg/L	0.0001	0.5	<0.10	----	----	----	----	
Chrysene	EPA3510C/EPA8270D	0.10	µg/L	0.003	0.2	<0.10	----	----	----	----	
Benzo(a)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.001	0.05	<0.10	----	----	----	----	
Benzo(g.h.i)perylene	EPA3510C/EPA8270D	0.10	µg/L	0.0003	0.05	<0.10	----	----	----	----	
Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	----	----	----	----	
Indeno(1.2.3.cd)pyrene	EPA3510C/EPA8270D	0.10	µg/L	0.0004	0.05	<0.10	----	----	----	----	

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Chlorinated Hydrocarbons											
1.1-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L	7	900	<1.00	<1.00	----	----	----
1.2-Dichloroethane	EPA5030B/EPA8260C	1.00	µg/L	7	400	<1.00	<1.00	----	----	----
1.1-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	----	----	----
1.2-Dichloroethene (sum cis & trans)	EPA5030B/EPA8260C	1.00	µg/L	0.01	20	<1.00	<1.00	----	----	----
Dichloropropanes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	0.8	80	<1.00	<1.00	----	----	----
1.1.1-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	300	<1.00	<1.00	----	----	----
1.1.2-Trichloroethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	130	<1.00	<1.00	----	----	----
Trichloroethene	EPA5030B/EPA8260C	1.00	µg/L	24	500	<1.00	<1.00	----	----	----
Tetrachloroethene	EPA5030B/EPA8260C	1.00	µg/L	0.01	40	<1.00	<1.00	----	----	----
Methylene chloride	EPA5030B/EPA8260C	10.0	µg/L	0.01	1000	<10.0	<10.0	----	----	----
Tetrachloromethane	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	----	----	----
Chloroform	EPA5030B/EPA8260C	1.00	µg/L	6	400	<1.00	<1.00	----	----	----
Vinyl chloride	EPA5030B/EPA8260C	2.00	µg/L	0.01	5	<2.00	<2.00	----	----	----
Chlorobenzenes (sum mono, di, tri, tetra, penta, hexa)	EPA8260C	5.00	µg/L	----	----	<5.00	----	----	----	----
Monochlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	7	180	<1.00	<1.00	----	----	----
Dichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	3	50	<1.00	<1.00	----	----	----
Trichlorobenzenes (Sum)	EPA5030B/EPA8260C	1.00	µg/L	0.01	10	<1.00	<1.00	----	----	----
Tetrachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.01	2.5	<1.00	----	----	----	----
Pentachlorobenzenes (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.003	1	<1.00	----	----	----	----
Hexachlorobenzenes (Sum)	EPA3510C/EPA8270D	0.50	µg/L	0.00009	0.5	<0.50	----	----	----	----
Chlorophenols (sum mono, di, tri, tetra, penta)	EPA3510C/EPA8270D	10.0	µg/L	----	----	<10.0	----	----	----	----
Monochlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.3	100	<1.00	----	----	----	----
Dichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.2	30	<1.00	----	----	----	----
Trichlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.03	10	<1.00	----	----	----	----
Tetrachlorophenols (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.01	10	<1.00	----	----	----	----
Pentachlorophenol	EPA3510C/EPA8270D	1.00	µg/L	0.04	3	<1.00	----	----	----	----
Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	6	<1.00	----	----	----	----
Monochloroanilines	EPA3510C/EPA8270D	2.00	µg/L	----	30	<2.00	----	----	----	----
Polychlorobiphenyls (Sum of PCB 28,52,101,118,138,153,180)	EPA3510C/EPA8082	1.00	µg/L	0.01	0.01	<1.00	----	----	----	----
Pesticides											
DDD/DDE/DDT	EPA3510C/EPA8270D	1.00	µg/L	0.004 ng/L	1000 ng/L	<1.00	----	----	----	----
Aldrin,Dieldrin,Endrin (Sum)	EPA3510C/EPA8270D	1.00	µg/L	----	0.1	<1.00	----	----	----	----
Aldrin	EPA3510C/EPA8270D	1.00	µg/L	0.009 ng/L	----	<1.00	----	----	----	----
Dieldrin	EPA3510C/EPA8270D	1.00	µg/L	0.1 ng/L	----	<1.00	----	----	----	----

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	—	—	—
Pesticides - Continued											
Endrin	EPA3510C/EPA8270D	1.00	µg/L	0.04 ng/L	----	<1.00	----	----	----	----	
BHC Compounds (Sum)	EPA3510C/EPA8270D	1.00	µg/L	0.05	1	<1.00	----	----	----	----	
alpha-BHC	EPA3510C/EPA8270D	1.00	µg/L	33 ng/L	----	<1.00	----	----	----	----	
beta-BHC	EPA3510C/EPA8270D	1.00	µg/L	8 ng/L	----	<1.00	----	----	----	----	
gamma-BHC	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	----	<1.00	----	----	----	----	
Atrazine	EPA3510C/EPA8270D	1.00	µg/L	29 ng/L	150000 ng/L	<1.00	----	----	----	----	
Carbaryl	EPA3510C/EPA8270D	1.00	µg/L	2 ng/L	50000 ng/L	<1.00	----	----	----	----	
Carbofuran	EPA3510C/EPA8270D	1.00	µg/L	9 ng/L	100000 ng/L	<1.00	----	----	----	----	
Chlordane	EPA3510C/EPA8270D	1.00	µg/L	0.02 ng/L	200 ng/L	<1.00	----	----	----	----	
Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	0.2 ng/L	0.005 ng/L	<1.00	----	----	----	----	
Heptachlor	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	300 ng/L	<1.00	----	----	----	----	
Heptachlor epoxide	EPA3510C/EPA8270D	1.00	µg/L	0.005 ng/L	3000 ng/L	<1.00	----	----	----	----	
Maneb	EPA3510C/EPA8270D	1.00	µg/L	0.05 ng/L	0.0001 ng/L	<1.00	----	----	----	----	
Other Pollutants											
Cyclohexanone	EPA5030B/EPA8260C	1.00	µg/L	0.5	15000	<1.00	<1.00	----	----	----	
Phthalates (Sum)	EPA3510C/EPA8270D	2.00	µg/L	0.5	5	<2.00	----	----	----	----	
Mineral oils	EPA8015B	115	µg/L	50	600	**160**	----	----	----	----	
Pyridine	EPA5030B/EPA8260C	1.00	µg/L	0.5	30	<1.00	<1.00	----	----	----	
Bromoform	EPA5030B/EPA8260C	1.00	µg/L	----	630	<1.00	<1.00	----	----	----	
Tetrahydrofuran	EPA3510C/EPA8270D	1.00	µg/L	0.5	300	<1.00	----	----	----	----	
Tetrahydrothiophene	EPA3510C/EPA8270D	1.00	µg/L	0.5	5000	<1.00	----	----	----	----	
Conventional											
pH @ 25 deg C	APHA4500 H+B	0.1	pH Unit	----	----	**7.0**	----	----	----	----	
Biochemical Oxygen Demand (5 days @ 20 deg C)	APHA5210B	2	mg/L	----	----	<2	----	----	----	----	
Chemical Oxygen Demand	APHA5220C	1	mg/L	----	----	**250**	----	----	----	----	
Total Organic Carbon	APHA5310B	0.10	mg/L	----	----	**2.02**	----	----	----	----	
Fluoride as F	APHA4110B	0.10	mg/L	----	----	<0.10	----	----	----	----	
Chloride as Cl	APHA4110B	0.10	mg/L	----	----	**14000**	----	----	----	----	
Bromide as Br	APHA4110B	0.10	mg/L	----	----	**50.4**	----	----	----	----	
Sulphate as SO4	APHA4110B	0.10	mg/L	----	----	**2020**	----	----	----	----	
Ammonia as N	APHA4500B/APHA4500H	0.01	mg/L	----	----	**0.04**	----	----	----	----	
Conductivity	APHA2510B	1.0	µS/cm	----	----	**39500**	----	----	----	----	
Total Petroleum Hydrocarbon											
C6 - C9 Fraction	EPA5030B/EPA8015B	5	µg/L	----	----	<5	----	----	----	----	
C10 - C14 Fraction	EPA3510C/EPA8015B	10	µg/L	----	----	<10	----	----	----	----	
C15 - C28 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----	**160**	----	----	----	----	

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Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Total Petroleum Hydrocarbon - Continued											
C29 - C36 Fraction	EPA3510C/EPA8015B	50	µg/L	----	----		<50	----	----	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
				Sampling date/time			19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Conventional											
Phosphate as PO4	APHA4110B	0.10	mg/L	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Monocyclic Aromatic Hydrocarbons											
Isopropylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Propylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3.5-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Oxygenated Compounds											
2-Propanone (Acetone)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl Acetate	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone (MEK)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	<50.0	<50.0	<50.0
4-Methyl-2-pentanone (MIBK)	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone (MBK)	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Sulfonated Compounds											
Carbon disulfide	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	<5.00	<5.00	<5.00
Fumigants											
2.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromoethane (EDB)	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aliphatic Compounds											
Dichlorodifluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Bromomethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	<10.0	<10.0	<10.0
Iodomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Carbon Tetrachloride	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
				Sampling date/time			19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Halogenated Aliphatic Compounds - Continued											
1.3-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.1.1.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
cis-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
1.1.2.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dibromo-3-chloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Halogenated Aromatic Compounds											
Chlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.3-Trichlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Trihalomethanes											
Bromodichloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromochloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Phenolic Compounds											
2-Chlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitrophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dimethylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.6-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloro-3-methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.6-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4.5-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
PolyAromatic Hydrocarbons											
2-Methylnaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Fluorene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pyrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-2-Fluorenyl Acetamide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
				Sampling date/time			19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
PolyAromatic Hydrocarbons - Continued											
Benzo(b) & Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.20	µg/L	----	----	<0.20	<0.20	<0.20	<0.20	<0.20
3-Methylcholanthrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dibenz(a.h)anthracene	EPA3510C/EPA8270D	0.10	µg/L	----	----	<0.10	<0.10	<0.10	<0.10	<0.10
Phthalate Esters											
Dimethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Di-n-butyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Butyl benzyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
bis(2-ethylhexyl) phthalate	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Di-n-octylphthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrosamines											
N-Nitrosomethylethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopyrrolidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosomorpholine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodi-n-propylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosopiperidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodibutylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
N-Nitrosodiphenyl & Diphenylamine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Nitroaromatics and Cyclic Ketones											
2-Picoline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Acetophenone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Isophorone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.6-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2.4-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1-Naphthylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Nitroquinoline-N-oxide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
5-Nitro-o-toluidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Azobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.3.5-Trinitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Phenacetin	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Aminobiphenyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachloronitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethylaminoazobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzilate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 23	MW 25	MW 26	MW 37	MW 38
				Sampling date/time			19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Haloethers											
Bis(2-chloroethyl) ether	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Bis(2-chloroethoxy) methane	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Bromophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorinated Hydrocarbon											
1.3-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.4-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloroethane	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
1.2.4-Trichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloropropylene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobutadiene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorocyclopentadiene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pentachlorobenzene	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobenzene (HCB)	EPA3510C/EPA8270D	0.50	µg/L		----	----	<0.50	<0.50	<0.50	<0.50	<0.50
Anilines and Benzidines											
Aniline	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chloroaniline	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
2-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Dibenzofuran	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
4-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Carbazole	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
3.3`-Dichlorobenzidine	EPA3510C/EPA8270D	2.00	µg/L		----	----	<2.00	<2.00	<2.00	<2.00	<2.00
Polychlorinated Biphenyls											
Aroclor 1232	EPA3510C/EPA8082	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1242	EPA3510C/EPA8082	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1248	EPA3510C/EPA8082	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Aroclor 1254	EPA3510C/EPA8082	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organochlorine Pesticides											
delta-BHC	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
trans-Chlordane	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
cis-Chlordane	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
alpha-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDE	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
beta-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target	Intervention	MW 23	MW 25	MW 26	MW 37	MW 38
				Sampling date/time	Value	Value	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016	19-DEC-2016
Compound	*Method*	*LOR*	*Unit*				**SG1620769-001**	**SG1620769-002**	**SG1620769-003**	**SG1620769-004**	**SG1620769-005**
Organochlorine Pesticides - Continued											
4.4`-DDD	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endosulfan sulfate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
4.4`-DDT	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Endrin ketone	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Organophosphorus Pesticides											
Malathion	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorvos	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Dimethoate	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Diazinon	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos-methyl	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Ethion	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Fenthion	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorpyrifos	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Pirimphos-ethyl	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Prothiofos	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Parathion	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl Parathion	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (E)	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorfenvinphos (Z)	EPA3510C/EPA8270D	1.00	µg/L		----	----	<1.00	<1.00	<1.00	<1.00	<1.00
VOC Surrogates											
1.2-Dichloroethane-D4	EPA5030B/EPA8260C	0.1	%		----	----	**101**	**90.4**	**102**	**88.4**	**91.7**
Toluene-D8	EPA5030B/EPA8260C	0.1	%		----	----	**89.7**	**95.8**	**90.0**	**95.8**	**97.2**
4-Bromofluorobenzene	EPA5030B/EPA8260C	0.1	%		----	----	**102**	**98.4**	**99.6**	**96.9**	**95.0**
Acid Extractable Surrogates											
2-Fluorophenol	EPA3510C/EPA8270D	0.1	%		----	----	**53.0**	**37.0**	**30.2**	**42.0**	**32.9**
Phenol-d5	EPA3510C/EPA8270D	0.1	%		----	----	**44.8**	**36.1**	**32.8**	**39.7**	**37.2**
2.4.6-Tribromophenol	EPA3510C/EPA8270D	0.1	%		----	----	**53.4**	**82.9**	**85.4**	**78.4**	**61.0**
Base/Neutral Extractable Surrogates											
Nitrobenzene-D5	EPA3510C/EPA8270D	0.1	%		----	----	**61.5**	**78.5**	**64.6**	**77.0**	**85.6**
2-Fluorobiphenyl	EPA3510C/EPA8270D	0.1	%		----	----	**53.3**	**72.4**	**64.5**	**70.5**	**56.8**
4-Terphenyl-d14	EPA3510C/EPA8270D	0.1	%		----	----	**46.4**	**77.5**	**71.7**	**82.0**	**66.0**

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

Compound	Method	LOR	Unit	Target Value	Intervention Value	Client sample ID: MW 40	Client sample ID: TRIP BLANK	----	----	----
						Sampling date/time: 19-DEC-2016	19-DEC-2016	----	----	----
						SG1620769-006	SG1620769-007	----	----	----
Conventional										
Phosphate as PO4	APHA4110B	0.10	mg/L	----	----	<0.10	----	----	----	----
Monocyclic Aromatic Hydrocarbons										
Isopropylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
n-Propylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.3.5-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
sec-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2.4-Trimethylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
tert-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
p-Isopropyltoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
n-Butylbenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Oxygenated Compounds										
2-Propanone (Acetone)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	----	----	----
Vinyl Acetate	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	----	----	----
2-Butanone (MEK)	EPA5030B/EPA8260C	50.0	µg/L	----	----	<50.0	<50.0	----	----	----
4-Methyl-2-pentanone (MIBK)	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
2-Hexanone (MBK)	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	----	----	----
Sulfonated Compounds										
Carbon disulfide	EPA5030B/EPA8260C	5.00	µg/L	----	----	<5.00	<5.00	----	----	----
Fumigants										
2.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
cis-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
trans-1.3-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2-Dibromoethane (EDB)	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
Chloromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
Bromomethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
Chloroethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
Trichlorofluoromethane	EPA5030B/EPA8260C	10.0	µg/L	----	----	<10.0	<10.0	----	----	----
Iodomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
trans-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
cis-1.2-Dichloroethene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.1-Dichloropropylene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Carbon Tetrachloride	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Dibromomethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Halogenated Aliphatic Compounds - Continued											
1.3-Dichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.1.1.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
trans-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	----	----	----
cis-1.4-Dichloro-2-butene	EPA5030B/EPA8260C	2.00	µg/L	----	----	<2.00	<2.00	----	----	----
1.1.2.2-Tetrachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2.3-Trichloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Pentachloroethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2-Dibromo-3-chloropropane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Halogenated Aromatic Compounds											
Chlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Bromobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
2-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
4-Chlorotoluene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
1.2.3-Trichlorobenzene	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Trihalomethanes											
Bromodichloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Dibromochloromethane	EPA5030B/EPA8260C	1.00	µg/L	----	----	<1.00	<1.00	----	----	----
Phenolic Compounds											
2-Chlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
4-Methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2-Nitrophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2.4-Dimethylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2.6-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2.4-Dichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
4-Chloro-3-methylphenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2.4.6-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2.4.5-Trichlorophenol	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
PolyAromatic Hydrocarbons											
2-Methylnaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
2-Chloronaphthalene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
Acenaphthylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
Acenaphthene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
Fluorene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
Pyrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----
N-2-Fluorenyl Acetamide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
PolyAromatic Hydrocarbons - Continued											
Benzo(b) & Benzo(k)fluoranthene	EPA3510C/EPA8270D	0.20	µg/L	----	----	<0.20	----	----	----	----	
3-Methylcholanthrene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Dibenz(a.h)anthracene	EPA3510C/EPA8270D	0.10	µg/L	----	----	<0.10	----	----	----	----	
Phthalate Esters											
Dimethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Diethyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Di-n-butyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Butyl benzyl phthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
bis(2-ethylhexyl) phthalate	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
Di-n-octylphthalate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Nitrosamines											
N-Nitrosomethylethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosodiethylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosopyrrolidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosomorpholine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosodi-n-propylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosopiperidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosodibutylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
N-Nitrosodiphenyl & Diphenylamine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
Nitroaromatics and Cyclic Ketones											
2-Picoline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Acetophenone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Nitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Isophorone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
2.6-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
2.4-Dinitrotoluene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
1-Naphthylamine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4-Nitroquinoline-N-oxide	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
5-Nitro-o-toluidine	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Azobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
1.3.5-Trinitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Phenacetin	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4-Aminobiphenyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Pentachloronitrobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Dimethylaminoazobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorobenzilate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Haloethers											
Bis(2-chloroethyl) ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Bis(2-chloroethoxy) methane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4-Chlorophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4-Bromophenyl phenyl ether	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorinated Hydrocarbon											
1.3-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
1.4-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
1.2-Dichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Hexachloroethane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
1.2.4-Trichlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Hexachloropropylene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Hexachlorobutadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Hexachlorocyclopentadiene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Pentachlorobenzene	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Hexachlorobenzene (HCB)	EPA3510C/EPA8270D	0.50	µg/L	----	----	<0.50	----	----	----	----	
Anilines and Benzidines											
Aniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4-Chloroaniline	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
2-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
3-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
Dibenzofuran	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
4-Nitroaniline	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
Carbazole	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
3.3`-Dichlorobenzidine	EPA3510C/EPA8270D	2.00	µg/L	----	----	<2.00	----	----	----	----	
Polychlorinated Biphenyls											
Aroclor 1232	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	----	----	----	----	
Aroclor 1242	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	----	----	----	----	
Aroclor 1248	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	----	----	----	----	
Aroclor 1254	EPA3510C/EPA8082	1.00	µg/L	----	----	<1.00	----	----	----	----	
Organochlorine Pesticides											
delta-BHC	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
trans-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
cis-Chlordane	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
alpha-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4.4`-DDE	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
beta-Endosulfan	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	

No Guideline Evaluation Required

Sub-Matrix: **GROUNDWATER**

				Client sample ID	Target Value	Intervention Value	MW 40	TRIP BLANK	----	----	----
				Sampling date/time			19-DEC-2016	19-DEC-2016	----	----	----
Compound	*Method*	*LOR*	*Unit*				**SG1620769-006**	**SG1620769-007**	----	----	----
Organochlorine Pesticides - Continued											
4.4`-DDD	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Endosulfan sulfate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
4.4`-DDT	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Endrin ketone	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Organophosphorus Pesticides											
Malathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Dichlorvos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Dimethoate	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Diazinon	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorpyrifos-methyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Ethion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Fenthion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorpyrifos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Pirimphos-ethyl	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Prothiofos	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Methyl Parathion	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorfenvinphos (E)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
Chlorfenvinphos (Z)	EPA3510C/EPA8270D	1.00	µg/L	----	----	<1.00	----	----	----	----	
VOC Surrogates											
1.2-Dichloroethane-D4	EPA5030B/EPA8260C	0.1	%	----	----	**88.7**	**88.9**	----	----	----	
Toluene-D8	EPA5030B/EPA8260C	0.1	%	----	----	**93.3**	**89.6**	----	----	----	
4-Bromofluorobenzene	EPA5030B/EPA8260C	0.1	%	----	----	**93.1**	**95.2**	----	----	----	
Acid Extractable Surrogates											
2-Fluorophenol	EPA3510C/EPA8270D	0.1	%	----	----	**46.8**	----	----	----	----	
Phenol-d5	EPA3510C/EPA8270D	0.1	%	----	----	**37.6**	----	----	----	----	
2.4.6-Tribromophenol	EPA3510C/EPA8270D	0.1	%	----	----	**81.3**	----	----	----	----	
Base/Neutral Extractable Surrogates											
Nitrobenzene-D5	EPA3510C/EPA8270D	0.1	%	----	----	**70.7**	----	----	----	----	
2-Fluorobiphenyl	EPA3510C/EPA8270D	0.1	%	----	----	**72.6**	----	----	----	----	
4-Terphenyl-d14	EPA3510C/EPA8270D	0.1	%	----	----	**85.8**	----	----	----	----	

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Acceptance Limits (%)	
Compound	*Method*	*Low*	*High*
VOC Surrogates			
1,2-Dichloroethane-D4	EPA5030B/EPA8260C	76	114
Toluene-D8	EPA5030B/EPA8260C	88	110
4-Bromofluorobenzene	EPA5030B/EPA8260C	86	115
Acid Extractable Surrogates			
2-Fluorophenol	EPA3510C/EPA8270D	21	110
Phenol-d5	EPA3510C/EPA8270D	10	110
2,4,6-Tribromophenol	EPA3510C/EPA8270D	10	123
Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	EPA3510C/EPA8270D	35	114
2-Fluorobiphenyl	EPA3510C/EPA8270D	43	116
4-Terphenyl-d14	EPA3510C/EPA8270D	33	141

Appendix T
Ambient Air Quality Baseline Monitoring Report

Delivering a better world

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Co Reg No: 198403076R

Our Ref: SG2102991

Date: 12 April 2021

ENVIRONMENTAL IMPACT STUDY
AT BERLAYER CREEK (DUST MONITORING)

FOR

AECOM SINGAPORE PTE LTD
300 BEACH ROAD #23-00 THE CONCOURSE
SINGAPORE 199555

Edmundo II Dio Casapao
Environmental Engineer

Tan Teong Huat
Assistant General Manager (ENV)

This Laboratory is accredited under Singapore Accreditation Council and comply with the requirements specified in ISO/IEC 17025. Results apply to the sample(s) as submitted. The laboratory declares that the results relate only to the items tested and do not substitute any other documents. This report supersedes any previous report(s) with this reference. This report should not be reproduced except in full, without written approval from the management of ALS Technichem (S) Pte Ltd.

Executive Summary

ALS Technichem (S) Pte Ltd is appointed by AECOM Singapore Pte Ltd to carry out Ambient Air Monitoring for the Environmental Impact Study at Berlayer Creek (Dust Monitoring – PM_{10} and $PM_{2.5}$). The monitoring was undertaken to determine the ambient air quality of Particulate Matter as 2.5um and 10um ($PM_{2.5}$ and PM_{10}), for 7 days continuously from 22nd to 29th March 2021. The objective of this monitoring is to understand establish a baseline ambient air quality at the selected point and compare whether it is in compliance with the limits stipulated by Singapore Ambient Air Quality Targets by 2020 and the Long-Term Targets.

The monitoring results for $PM_{2.5}$ are in compliance to the Singapore Ambient Air Quality Long Term Targets for all 7 days. The results range from 4.28 to 14.0 μgm^{-3}.

For PM_{10}, the monitoring results are in compliance with the Singapore Ambient Air Quality Targets by 2020 for all 7 days. The results range from 6.17 to 17.7 μgm^{-3}.

It should be noted that the Ambient Air Monitoring project was carried out to the best of our knowledge and ability as well as responsibility towards the code of practice in the performance and reliability of our business to be accurate, precise and representative at the date/time and locations sampled so as to achieve a satisfactory baseline study.

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List of Abbreviations

PM_{10}	Particulate matter with aerodynamic diameter less than 10µm
$PM_{2.5}$	Particulate matter with aerodynamic diameter less than 2.5µm
μgm^{-3}	Microgram per cubic metre
mgm^{-3}	Milgram per cubic metre
LOR	Limit of Reporting

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1.0 Monitoring Requirement

1.1 Introduction

ALS Technichem (S) Pte Ltd (hereafter as "ALS") has been appointed as the contractor to perform Ambient Air Monitoring at the selected location for the Environmental Impact Study at Berlayer Creek (Dust Monitoring – PM_{10} and $PM_{2.5}$) at the request of AECOM Singapore Pte Ltd (hereafter as "AECOM").

The ambient air monitoring is aimed to provide an air quality baseline information on the targeted area which was pre-determined by AECOM and to evaluate the results whether it is in compliance against National Environmental Agency- Singapore Ambient Air Quality Targets by 2020 and the Long-Term Targets.

1.2 Scope of Work

The scope of works for the ambient air quality monitoring includes:

1. Preparation of an Ambient Air Monitoring Plan;

2. Ambient air monitoring station setup and sampling at selected sampling point, identified as AQ01 (sampling point was dictated by AECOM);

3. Collected air samples were analysed for:
   - Particulate Matter as 10um and 2.5um (PM_{10} & $PM_{2.5}$);

4. Assessing the analytical results against Singapore Ambient Air Quality Targets by 2020 and the Long-Term Targets

5. Providing a report outlining the findings and results of the study.

1.3 Monitoring Requirement

Ambient air monitoring was conducted near Berlayer Creek. Particulate Matter as 10um and 2.5um (PM_{10} & $PM_{2.5}$), were monitored as required. Monitored parameters were dictated by AECOM and compared with the Singapore Ambient Air Quality Targets by 2020 and the Long-Term Targets. Table 1.1 lists the details of the limits of each parameter in this study.

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Table 1.1: Summary of test parameters and limits for ambient air monitoring

Parameters	Limits (mgm^{-3} or μgm^{-3})	Guidelines
$PM_{2.5}$	25 μgm^{-3} (24-hour averaging period)	Singapore Ambient Air Quality Long Term Targets
PM_{10}	50 μgm^{-3} (24-hour averaging period)	Singapore Ambient Air Quality Targets by 2020

2.0 Sampling and Field Monitoring

2.1 Sampling Equipment

The following equipment was mobilized and used during the environmental monitoring activities.

Parameter	Instrument Type
Particulate matter (PM_{10} & $PM_{2.5}$)	TSI Environmental DustTrak Monitoring System

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2.2 Monitoring Location (★ indicates air monitoring location)

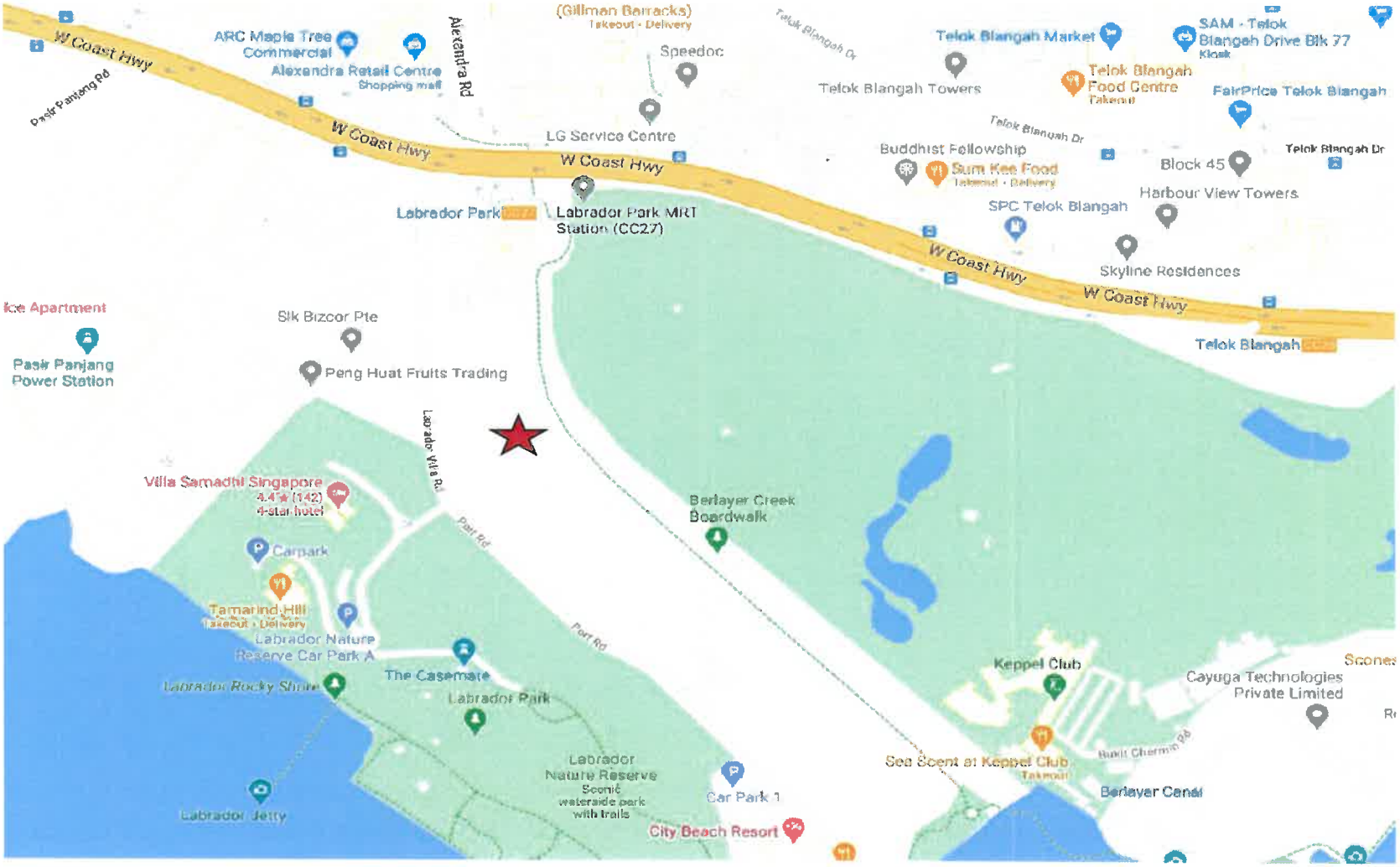


Figure 2.1: AQ01, Berlayer Creek

2.3 Detail Ambient Air Monitoring Point

The air monitoring point identified as AQ01 was dictated by AECOM. The details of the monitoring point is listed in Table 2.1 below.

Table 2.1: Details of monitoring points

Sampling ID	Monitoring Point	Parameter	Sampling Start		Sampling Stop	
			Date	Time (hr)	Date	Time (hr)
AQ01	Berlayer Creek	PM_{10} & $PM_{2.5}$ (24 hours)	22 March 2021	1200	29 March 2021	1200

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3.0 Sampling and Analysis Methodology

Brief method description, method reference and reporting limit of the analytical methods are provided in Table 3.1.

Table 3.1: Summary of methodologies and limit of reporting (LOR)

No.	Parameter	Referenced Analytical Method	Description of Method	LOR
1.	Particulate matter (PM_{10} & $PM_{2.5}$)	TSI Environmental DustTrak Monitoring System Operation Manual	Concentrations of PM_{10} & $PM_{2.5}$ were measured by Light scattering laser photometer principle using an Environmental DustTrak Monitoring Equipment coupled with heated inlet for 5 minutes interval data log over 7 days continuous sampling period	1.0 μgm^{-3}

3.1 Quality Assurance / Quality Control

The certificate of field equipment calibration is attached below.

CERTIFICATE OF CALIBRATION AND TESTING

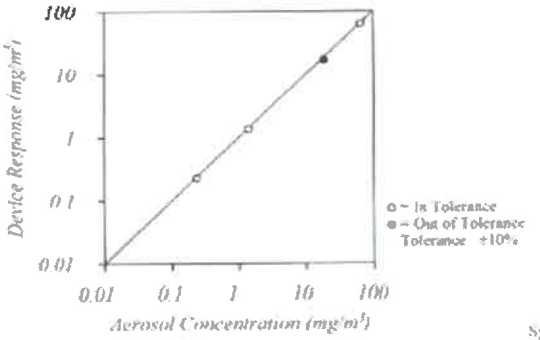
TSI Singapore Pte Ltd 150, Kampong Ampat
#05-05, KA Centre Singapore 368324
Phone: +65 6595 6391

Environment Conditions		
Temperature	22.8	°C
Relative Humidity	54	%RH
Barometric Pressure	1005.1	hPa

Model	8543
Serial Number	8543191207

☐ As Left ☐ In Tolerance
☒ As Found ☒ Out of Tolerance

Concentration Linearity Plot



System ID DTI04-01

FLOW AND PRESSURE VERIFICATION — **SYSTEM DTI04-01**

Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.00	3.06	2.85 – 3.15	Pressure kPa	100.7	100.9	95.66 – 105.73
Full Flow lpm	N/A	5.94	>3.80				

Pump run time 2133 Hours, Pump voltage 1023 Bits

TSI Incorporated does hereby certify that all materials, components and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1 A1 test dust (Arizona dust). One calibration error is greater than 1.2 I

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E020115	10-01-20	31-01-21	Photometer	E020114	15-01-20	31-01-21
Microbalance	E020125	23-01-20	31-01-21	1 um PSL	608880	n/a	n/a
3 um PSL	206030	n/a	n/a	10 um PSL	212455	n/a	n/a
Pressure	E020123	22-01-20	31-01-21	Flowmeter	E020119	28-04-20	30-04-21

Mukhlis Zakariah
Verified

28 June, 2020
Date

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4.0 Results of Monitoring at AQ01

Table 4.1: Summary of results for Particulate Matter as $PM_{2.5}$, and PM_{10} based on 24-hour average at AQ01

Sampling Point	Day	Particulate Matter ($PM_{2.5}$), μgm^{-3}	Particulate Matter (PM_{10}), μgm^{-3}
AQ01 Berlayer Creek	22 to 23 March 2021	14.0	17.7
	23 to 24 March 2021	11.3	16.3
	24 to 25 March 2021	9.25	13.9
	25 to 26 March 2021	6.81	11.9
	26 to 27 March 2021	4.28	6.17
	27 to 28 March 2021	8.56	13.0
	28 to 29 March 2021	9.44	11.7
Limits (μgm^{-3})		25[a]	50[b]

Notes:

[a] Denotes as per client request, the results are compared to the limits stipulated by Singapore Ambient Air Quality Long Term Targets

[b] Denotes results are compared to the limits stipulated by Singapore Ambient Air Quality Targets by 2020.

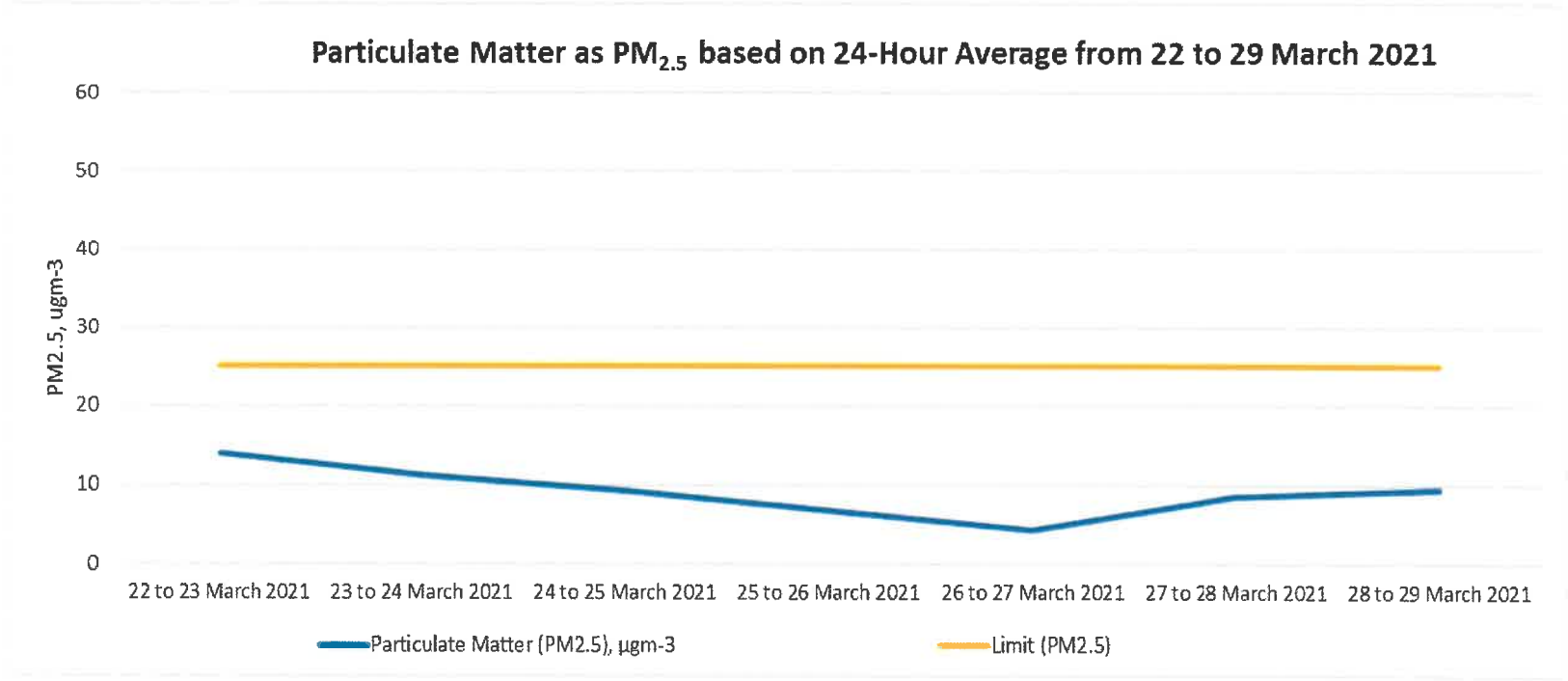


Figure 4.1: 24-Hour Average for $PM_{2.5}$ at AQ01 from 22 to 29 March 2021

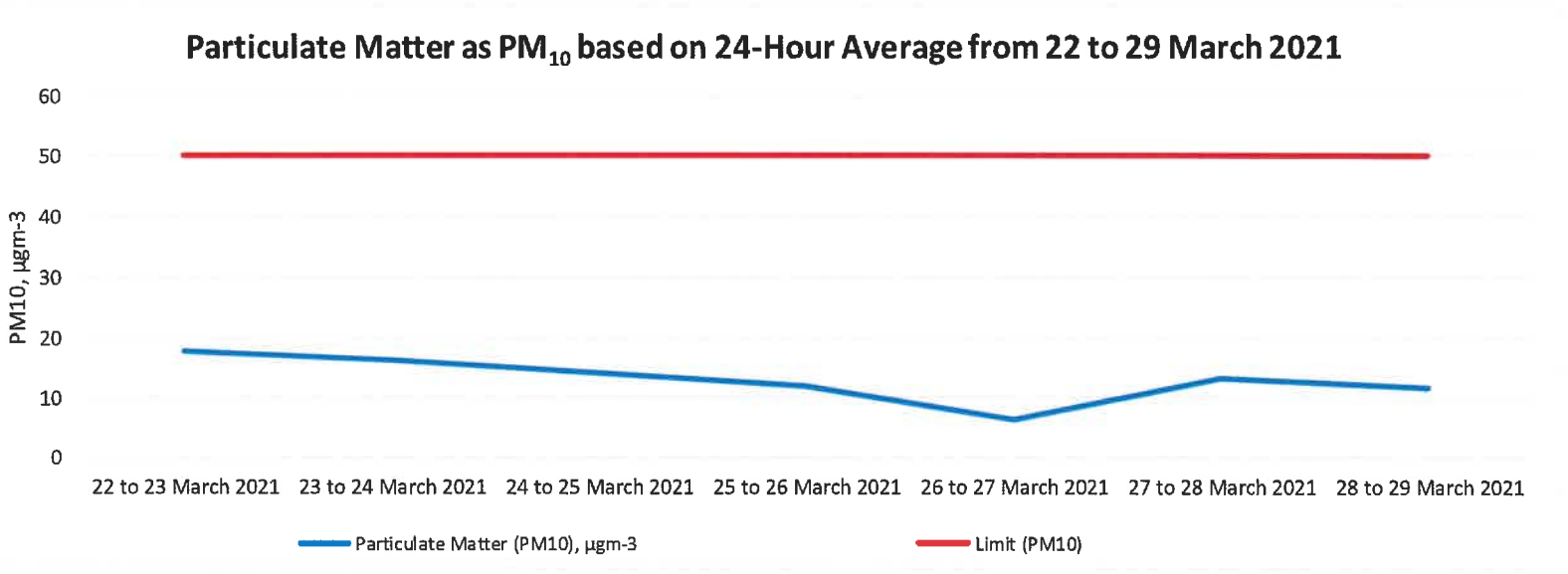


Figure 4.2: 24-Hour Average for PM_{10} at AQ01 from 22 to 29 March 2021

7.0 Conclusion

The monitoring results are summarized in Table 4.1. The monitoring results for $PM_{2.5}$ are in compliance to the Singapore Ambient Air Quality Long Term Targets for all 7 days. The results range from 4.28 to 14.0 μgm^{-3}.

For PM_{10}, the monitoring results are in compliance with the Singapore Ambient Air Quality Targets by 2020 for all 7 days. The results range from 6.17 to 17.7 μgm^{-3}.

It should be noted that the Ambient Air Monitoring project was carried out to the best of our knowledge and ability as well as responsibility towards the code of practice in the performance and reliability of our business to be accurate, precise and representative at the date/time and locations sampled so as to achieve a satisfactory baseline study.

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APPENDIX 1: **Site Photos**





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Appendix U
Air Quality
Receptors List

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Table U-1: Air Sensitive Receptors for Construction Worksite Area

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
For Earthworks				
Within 20m	Residential: 1. 5, 8, 11 Reflections at Keppel Bay Condominium	>100		
Between 20m to 50m	Residential: 1. 1, 3, 5, 7, 8, 9, 11, 19, 23, 25, 31, 33 Reflections at Keppel Bay Condominium Commercial: 1. Telok Blangah MRT Station	>100 >100		
Between 50m to 100m	Residential: 1. 1, 3, 5, 7, 8, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31, 33 Reflections at Keppel Bay Condominium 2. HDB Block 44, Telok Blangah Dr 3. 608 Skyline Residences Nursing Home: 1. St Andrew's Nursing Home (Henderson) Place of Worship: 1. Acts Baptist Church 2. Ting Kong Beo Temple 3. Telok Ayer Chinese Methodist Church 4. Grace Methodist Church 5. Christian Community Chapel 6. Pasir Panjang Tamil Methodist Church Commercial: 1. Yeo's Building 2. 991D, 991 E Commercial Building 3. Esso Telok Blangah Road 4. Shell Telok Blangah Road 5. SPC Telok Blangah 6. Labrador Park MRT Station 7. Seventynine 79, 79 Wishart Road 8. SP PowerGrid 9. Telok Blangah Pumping Statin 10. San Laksa Steamboat 11. Star Living @ Labrador 12. Shipmart Pte Ltd, Faber Health Resource Centre 13. Ibis Budget Singapore Mt Faber 14. Fragrance Hotel	>100 10-100 >100 >100	Priority 1	Priority 1

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
Between 100m to 200m	Residential: 1. 110 A – F, J, K, L – N, P, 112, 114, 114A, 116, 116A, 118, 120 Wishart Road 2. 100, 102, 104, 106, 108 The Foresta @ Mount Faber 3. 608, 610, 612 Skyline Residences 4. HDB Block 44, 45, 46, 47 Telok Blangah Dr 5. 2, 38, 40, 42, 44, 46 Caribbean at Keppel Bay 6. 13, 15, 17, 27, 29 Reflections at Keppel Bay Condominium Nursing Home: 1. Moral Welfare Home 2. St Andrew's Nursing Home (Henderson) 3. The Methodist Church of Singapore, Ruth Home Place of Worship: 1. Telok Ayer Chinese Methodist Church 2. Grace Methodist Church 3. Ting Kong Beo Temple 4. Telok Blangah SOKA Peace Centre Commercial: 1. Yeo's Building 2. Fragrance Hotel – Viva 3. Shell Telok Blangah 4. Labrador Park MRT Station 5. SP PowerGrid 6. 991B, 991C, 991D, 991E Commercial Building 7. Seventynine 79, 79 Wishart Road 8. 16 Morse Road 9. Telok Blangah Complex 10. Star Living @ Labrador 11. Telok Blangah SPPG Recreational: 1. Berlayer Creek	>100 10-100 >100 >100 >100		
Between 200m to 350m	Residential: 1. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 Caribbean at Keppel Bay 2. 50, 51, 51A, 52, 54 Telok Blangah Drive, Blangah View 3. 78B Telok Blangah Street 32	>100		

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
	4. 80A, 80B, 80C, 80D Telok Blangah Street 31, Telok Blangah Tower 5. HDB Block 45, 47, 48 Blangah Ct 6. 1, 2, 3, 4, 4A, 4-1, 5, 7A Pender Road Place of Worship: 1. Koon Seng Ting Temple 2. Ban Siew San Kuan Imm Tong Commercial: 1. 82 Telok Blangah Street 31, Telok Blangah Service Centre 2. Academy of Singapore Teachers 3. 991, 991B, 991G Commercial Buildings 4. Hopscotch 5. NTU CCA Singapore Exhibitions 6. BurgerLabo 7. Singapore Arts Club, Richard Koh Fine Art, Art Outreach Playeum (Children's Centre for Creativity) 8. Alexandra Retail Centre 9. mTower 10. Villa Samadhi Singapore 11. The Three Peacocks 12. National Parks Building Recreational: 1. Labrador Park 2. Labrador Nature Reserve	 >100 >100 >100		
For Construction				
Within 20m	Residential: 1. 1, 5, 8, 11, 21 Reflections at Keppel Bay Condominium Ecological[#]: 1. Berlayer Creek	>100	Priority 1	Priority 1
Between 20m to 50m	Residential: 1. 1, 3, 5, 7, 8, 9, 11, 15, 19, 21, 23, 31 Reflections at Keppel Bay Condominium Recreational: 1. Labrador Nature Reserve Ecological[#]: 1. Berlayer Creek 2. Labrador Nature Reserve	>100 >100		

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
Between 50m to 100m	Residential: 1. 1, 3, 5, 7, 8, 9, 11, 13, 15, 17, 19, 21, 23, 27, 31 Reflections at Keppel Bay Condominium 2. 40, 46 Keppel Bay Drive Caribbean, Keppel Bay 3. 350 Telok Blangah Drive 4. 608 Telok Blangah Road Skyline Residence Nursing Home: 1. St Andrew's Nursing Home Place of Worship: 1. Ting Kong Beo Temple 2. Telok Ayer Chinese Methodist Church 3. Grace Methodist Church 4. Christian Community Chapel 5. Pasir Panjang Tamil Methodist Church Commercial: 1. Yeo's Building 2. Telok Blangah SP Power Grid Depot 3. Esso Telok Blangah Road 4. Shell Telok Blangah Road 5. Ibis Budget Singapore Mt Faber 6. Fragrance Hotel 7. Telok Blangah Soka Centre 8. SPC Telok Blangah Road 9. Dancespiration Dance Studio 10. Singapore Ninjutsu 11. 11 Telok Blangah Street 31 Recreational: 1. Labrador Park 2. Labrador Nature Reserve	>100 10-100 >100 >100 >100		
Between 100m to 200m	Residential: 1. 2, 38 ,40, 42, 44, 46 Reflections at Keppel Bay Condominium 2. 16 Morse Road 3. 100, 102, 106, 108 The Foresta@ Mount Fiber 4. 110A, 110B, 110C, 110D, 110E, 110F, 110G, 110J, 110K,110L, 110M, 110N, 110P, 112, 114, 114A, 116, 116A, 118, 120 Wishart Road 5. 44, 45, 46, 47, 48, 49 Blangah Drive, Blangah Court 6. 21 Telok Blangah Drive, Harbour View Tower	>100		

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
	7. 608, 610, 612 Telok Blangah Road Skyline Residence 8. 2A, 17, 19, 21 Labrador Villa Road Nursing Home: 1. Moral Welfare Home Place of Worship: 1. Telok Ayer Chinese Methodist Church 2. Grace Methodist Church 3. Pasir Panjang Tamil Methodist Church 4. Ting Kong Beo Temple Commercial: 1. Villa Samdhi Singapore 2. Tamarind Hill Restaurant 3. SPC Telok Blangah Road 4. Telok Blangah SP Power Grid Depot 5. mTower 6. 11 Pasir Panjang Road 7. 11 Telok Blangah Street 31 8. Telok Blangah Complex Recreational: 1. Labrador Park 2. Labrador Nature Reserve	10-100 >100 >100 >100		
Between 200m to 350m	Residential: 1. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 Reflections at Keppel Bay Condominium 2. 50, 51, 54 Telok Blangah Drive, Blangah View 3. 78B Telok Blangah Street 32 4. 80A, 80B, 80C, 80D Telok Blangah Street 31, Telok Blangah Tower 5. 1, 2, 3, 4A, 4-1, 5, 7A Pender Road Place of Worship: 1. Kong Seng Ting Temple 2. Ban Siew San Kuan IMM Tong Educational Institution: 1. River Valley High School Commercial: 1. Marina at Keppel Bay 2. Telok Blangah Market 3. West Coast TC 4. Telok Blangah Food Court 5. 991, 991C Alexandra Road 6. Fragrance Empire Building	>100 >100 >100 >100		

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
	7. mTower 8. Maple Tree Business City 9. NTU CCA Singapore Exhibitions 10. Art Outreach Singapore 11. Hopscotch 12. Telok Blangah Neighbourhood Police Post 13. Telok Blangah SP Power Grid Depot 14. Telok Blangah Complex Recreational: 1. Labrador Park 2. Labrador Nature Reserve	 >100		
For Trackout				
Within 20m	-		Priority 1	-*
Between 20m to 50m	Residential: 1. 44, 46 Blangah Drive, Blangah Court 2. 608 Telok Blangah Road, Skyline Residence 3. 23, 31 Reflections at Keppel Bay Condominium Nursing Home: 1. St. Andrew's Nursing Home Place of Worship 1. Christian Community Chapel 2. Grace Methodist Church 3. Telok Ayer Chinese Methodist Church 4. Ting Kong Temple Commercial: 1. Telok Blangah Soka Centre 2. Ibis Budget Singapore Mount Faber 3. ESSO Telok Blangah Road 4. Shell Telok Blangah Road 5. SPC Telok Blangah Road 6. Yeo's Building 7. Telok Blangah SP Power Grid Depot 8. mTower 9. Bayanihan Centre 10. Dancespiration Dance Studio 11. Singapore Ninjutsu 12. 11 Telok Blangah Street 31	>100 10-100 >100 >100		
Between 50m to 100m	Residential: 1. 44, 45, 46 Blangah Drive, Blangah Court	>100		

Distance	Land Use	Number of Receivers	Sensitivity of the Area (Human Health)	Sensitivity of the Area (Ecological)
	2. 608 Telok Blangah Road, Skyline Residence 3. 1, 8, 9, 11, 15, 23, 27, 31 Reflections at Keppel Bay Condominium 4. 2, 4, 6, 8, 10, 12, 46 Keppel Bay Drive Caribbean, Keppel Bay 5. 100, 102, 104 Wishart Road The Foresta @ Mount Faber 6. 112, 114, 114A, 116, 116A, 118, 120 Wishart Road 7. 21 Harbour View Tower Nursing Home: 1. St Andrew's Nursing Home 2. Moral Welfare Home Place of Worship 1. Christian Community Chapel 2. Grace Methodist Church 3. Telok Ayer Chinese Methodist Church 4. Ting Kong Temple 5. Pasir Panjang Tamil Methodist Church Commercial: 1. Bank of America Merrill Lynch Harbourfront 2. Seah Im Food Centre 3. Fragrance Hotel 4. Telok Blangah Soka Centre 5. Yeo's Building 6. Telok Blangah SP Power Grid Depot 7. mTower 8. Maple Tree Business City 9. Harbourside Building 2 10. Bayanihan Centre 11. Harbourfront Bus Interchange 12. 11 Telok Blangah Street 31 13. Telok Blangah Complex	>100 >100 >100		

Note:
[#] In line with the IAQM Guidance, the review of Ecologically Sensitive Receptors was only performed for Within 20m and Between 20-50m from the emission source
* Berlayer Creek is located > 50 m from the indicative potential access road. Therefore, in line with the IAQM Guidance, the Earthworks and Trackout activities are expected to have insignificant impact on the ecological receptors. However, it shall be noted that impact on ecological receptors is still expected from Construction activities.

Appendix V
Baseline Airborne Noise Monitoring Results

Delivering a better world

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1. Introduction

Under the contract URA/T/20/001, Urban Redevelopment Authority appointed AECOM Singapore Pte Ltd (AECOM) to undertake an Environmental Impact Study (EIS) to assess the potential environmental impacts arising from, and associated with, the construction and operational phase of the proposed residential development of within the Indicative Study Area provided by URA (hereafter referred to as the "Project").

The study will involve the assessment of the noise impacts arising from the construction and operational activities of the Project. This report details the noise monitoring plan to carry out the baseline airborne noise monitoring at the Project worksites due to the construction of the proposed residential development and the associated operational activities once said proposed residential development is complete. The purpose of conducting baseline airborne noise monitoring is to determine the existing noise levels near the locations of the proposed Project worksites/ Indicative Study Area for further assessments and validation of noise level predictions.

1.1 Airborne Noise Monitoring Schedule

Unattended noise monitoring was conducted at the proposed locations to capture the existing noise level profiles in the vicinity. The monitoring dates and locations of the monitoring points are reflected in Table 1 below.

Table 1 Baseline Monitoring Locations

No.	Monitoring ID	Monitoring Location	Monitoring Date
1	N1	Berlayer Creek Lookout Point	5 May 2021 – 11 May 2021
2	N2	Along Bukit Chermin Road	17 February 2021 – 23 February 2021
3	N3	HDB Block 44 Telok Blangah Drive	5 May 2021 – 11 May 2021
4	N4	Outside of Labrador Nature Reserve	17 February 2021 – 23 February 2021

1.2 Airborne Noise Monitoring Equipment

Three (3) Norsonic 131 Sound Level Meter (SLM) with microphones were utilized to collect data for the Project. For the purpose of QA/QC, the SLM was calibrated before each monitoring session without any drift in calibration before and after monitoring to ensure that equipment readings remain within acceptable margins of error. In order to reduce the changes to recording unwanted noise caused by the wind, a windshield was attached to the microphone. Noise levels were recorded in 1-minute intervals using the L_{Aeq} descriptor, under a 'fast' time-weighting. Calibration certificates of the noise monitoring equipment as per Table 2 are presented in **Annex A**.

Table 2 Airborne Noise Monitoring Equipment

Instrument	Brand	Model	Serial Numbers	Type
Norsonic 131	Norsonic	Norsonic 131	1313950	1
Norsonic 131	Norsonic	Norsonic 131	1313979	1
Norsonic 131	Norsonic	Norsonic 131	1313989	1



Figure 1 Airborne Noise Monitoring Setup

1.3 Baseline Airborne Noise Monitoring Data

The daily baseline airborne noise monitoring results for N1 to N4 for are listed in this section. The time period of 7:00am – 7:00pm, 7:00pm – 7:00am, 7:00pm – 10:00pm and 10:00pm – 7:00am will be used for the airborne noise impact assessment for the Construction Phase and will cover of Weekdays (Monday to Saturday) and Weekend/ Public Holidays (i.e. Sunday and Public Holidays) for $L_{Aeq(12\ hours)}$, $L_{Aeq(1\ hour)}$ and $L_{Aeq(5\ mins)}$. It should be noted that as the construction worksites within the Project Site/ Indicative Study Area are not definitive at this stage, current presented results shall only serve as a reference to the baseline airborne noise levels at locations surrounding the entire Indicative Study Area as provided in the pre-design stage. Baseline airborne noise monitoring should be conducted with noise monitoring locations proposed in vicinity of proposed construction worksites once preliminary design stage commences.

While for the operational phase, which considers noise impacts arising from land traffic noise and air-conditioning and mechanical ventilation (ACMV) systems, as potential road networks and boundary of individual buildings within the Project Site/ Indicative Study Area are not definitive at this stage, the overall baseline noise monitoring results for $L_{Aeq(1\ hour)}$ (no specific time period) for land traffic noise, and for $L_{Aeq(15\ mins)}$ for the time periods of 7:00am – 7:00pm, 7:00pm – 11:00pm and 11:00pm – 7:00am for ACMV noise impacts shall only serve as reference for the potential baseline airborne noise levels. Baseline noise monitoring should be conducted again once design of road networks and boundary of individual buildings have been confirmed.

The corresponding graphs for the daily monitoring data are displayed in **Annex A**. The recorded background noise levels in Table 3 to Table 6 are used to calculate the "adjusted maximum permissible noise level", in line with the directions given in the applicable legislation for the construction airborne noise impact assessment and guideline on boundary noise limits for ACMV systems in non-industrial buildings.

Table 3 N1 Baseline Airborne Noise Monitoring Results

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB			$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 11:00 pm	11:00 pm – 7:00 am
5-May-21	Min			46	43		45	41		45	42
	Max			48	53		52	57		51	54
	Average / Overall		48	47	46		47	46		47	46
6-May-21	Min			48	43	45	44	42	46	46	42
	Max			48	55	59	51	57	56	50	57
	Average / Overall	50	49	48	47	49	48	47	49	48	47
7-May-21	Min			45	42	46	44	40	49	45	41
	Max			66	52	73	74	57	68	72	56
	Average / Overall	58	56	52	45	54	49	44	55	48	44
8-May-21	Min			49	54	44	46	51	45	47	52
	Max			52	57	73	53	58	72	57	57
	Average / Overall	66	55	50	56	53	50	56	53	52	56
9-May-21	Min			49	44	44	46	43	46	47	43
	Max			50	51	66	54	56	61	52	54
	Average / Overall	51	47	49	48	49	49	47	50	49	45
10-May-21	Min			54	43	44	45	42	46	44	42
	Max			55	52	60	60	57	59	59	54
	Average / Overall	53	50	55	45	51	52	45	51	52	45
11-May-21	Min			54	42	45	46	41	46	43	41
	Max			57	59	71	65	65	66	61	63
	Average / Overall	55	53	56	48	51	53	46	52	52	47

Table 4 N2 Baseline Airborne Noise Monitoring Results

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB			$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 11:00 pm	11:00 pm – 7:00 am
17-Feb-21	Min			55	49		53	47		53	48
	Max			57	59		61	62		59	60
	Average / Overall		61	56	53		56	52		56	52
18-Feb-21	Min			56	49	54	54	45	56	54	47
	Max			59	63	80	65	67	76	61	65
	Average / Overall	60	57	57	53	59	57	52	60	57	52
19-Feb-21	Min			53	50	55	53	46	57	52	48
	Max			58	61	73	64	61	71	61	58
	Average / Overall	61	60	56	53	60	56	52	60	55	52
20-Feb-21	Min			54	47	54	52	45	56	50	45
	Max			59	57	77	67	62	73	57	58
	Average / Overall	59	55	56	51	59	56	50	59	53	50
21-Feb-21	Min			53	47	52	50	45	54	52	46
	Max			58	58	71	64	63	67	60	60
	Average / Overall	58	57	55	54	57	56	53	58	55	49
22-Feb-21	Min			54	48	54	52	45	56	49	46
	Max			55	59	74	62	64	70	60	61
	Average / Overall	59	59	54	51	58	55	50	59	54	51
23-Feb-21	Min			54	46	52	53	43	56	50	44
	Max			57	56	76	61	63	71	59	60
	Average / Overall	59	51	55	51	59	56	50	60	55	50

Table 5 N3 Baseline Airborne Noise Monitoring Results

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB			$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 11:00 pm	11:00 pm – 7:00 am
5-May-21	Min			69	59		67	57		67	58
	Max			70	69		72	73		71	69
	Average / Overall		66	69	63		69	63		69	63
6-May-21	Min			68	60	69	67	57	69	67	59
	Max			70	69	72	71	75	71	72	70
	Average / Overall	70	66	69	64	70	69	64	70	69	63
7-May-21	Min			69	61	68	68	58	69	68	60
	Max			70	70	74	73	76	72	73	70
	Average / Overall	70	67	70	65	70	70	64	70	70	64
8-May-21	Min			69	61	66	68	57	67	68	60
	Max			70	69	81	71	75	79	72	70
	Average / Overall	71	67	69	65	70	69	64	70	69	64
9-May-21	Min			68	60	66	67	56	67	67	58
	Max			70	69	73	74	77	70	72	73
	Average / Overall	69	66	69	66	69	69	66	69	69	63
10-May-21	Min			68	60	68	67	57	69	67	59
	Max			70	68	71	71	72	71	70	70
	Average / Overall	70	66	69	63	70	69	63	70	68	63
11-May-21	Min			68	59	69	66	56	69	67	57
	Max			70	68	73	71	72	72	71	69
	Average / Overall	70	66	69	64	70	69	63	70	68	63

Table 6 N4 Baseline Airborne Noise Monitoring Results

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB			$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 11:00 pm	11:00 pm – 7:00 am
17-Feb-21	Min			53	49		51	48		52	48
	Max			54	55		56	59		56	56
	Average / Overall		54	54	52		54	51		54	51
18-Feb-21	Min			53	49	49	50	47	52	52	47
	Max			55	55	72	58	58	70	56	54
	Average / Overall	59	54	54	51	56	54	50	57	54	50
19-Feb-21	Min			54	49	52	49	47	54	53	48
	Max			56	55	65	57	59	62	57	58
	Average / Overall	57	55	55	52	56	54	52	57	55	52
20-Feb-21	Min			55	52	52	53	46	54	52	47
	Max			58	59	68	65	67	65	61	63
	Average / Overall	58	56	56	54	57	56	52	58	55	53
21-Feb-21	Min			54	48	53	51	45	55	51	46
	Max			55	53	67	58	60	66	57	54
	Average / Overall	59	54	55	53	58	55	52	58	54	50
22-Feb-21	Min			52	47	51	49	45	53	51	46
	Max			53	55	66	63	57	62	60	54
	Average / Overall	56	53	53	50	55	53	49	56	53	49
23-Feb-21	Min			53	46	51	50	45	53	51	45
	Max			56	52	65	62	57	61	58	54
	Average / Overall	57	49	54	49	56	54	49	57	54	49

1.4 Summary of Baseline Airborne Noise Monitoring Results for Construction Noise Impact Assessment

The baseline airborne noise monitoring results from N1 to N4 are summarized in this section for results recorded for Weekdays (Monday – Saturday) and Weekend/ Public Holidays (i.e. Sunday and Public Holidays) for the construction phase. These data with background noise correction factor applied will be used to develop the noise criteria for this Project. It should be noted that as the Project is at the pre-design stage, construction worksites within the Project Site/ Indicative Study Area are yet to be defined. Baseline airborne noise monitoring should be conducted in the vicinity of the proposed construction worksites when design is available at a later stage.

Baseline Airborne Noise Monitoring Results (Weekdays)

Table 7 Summary of Baseline Airborne Noise Monitoring Results for Weekdays (Monday – Saturday) at N1

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
5 May 2021 – 8 May 2021 & 10 May 2021 – 11 May 2021	Min			45	42	44	44	40
	Max			66	59	64/ 73*	74	65
	Average / Overall	56	52	51	48	52	50	47
** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N1 on certain days during the Weekday.*								

Table 8 Summary of Baseline Airborne Noise Monitoring Results for Monday- Saturday at N2

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
17 Feb 2021 – 20 Feb 2021 & 22 Feb 2021 – 23 Feb 2021	Min			53	46	52	52	43
	Max			59	63	80	67	67
	Average / Overall	59	57	56	52	59	56	51

Table 9 Summary of Baseline Airborne Noise Monitoring Results for Monday- Saturday at N3

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
5 May 2021 – 8 May 2021 & 10 May 2021 – 11 May 2021	Min			68	59	66	66	56
	Max			70	70	81	73	76
	Average / Overall	70	66	69	64	70	69	64

Table 10 Summary of Baseline Airborne Noise Monitoring Results for Monday- Saturday at N4

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	**7:00 pm – 7:00 am**	**7:00 pm – 10:00 pm**	**10:00 pm – 7:00 am**	**7:00 am – 7:00 pm**	**7:00 pm – 10:00 pm**	**10:00 pm – 7:00 am**
17 Feb 2021 – 20 Feb 2021 & 22 Feb 2021 – 23 Feb 2021	Min			52	46	49	49	45
	Max			58	59	68/ 72*	65	67
	Average / Overall	57	53	54	51	56	54	51
** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N4 on certain days during the Weekday.*								

Baseline Airborne Noise Monitoring Results (Weekend/ Public Holidays)

Table 11 Summary of Baseline Airborne Noise Monitoring Results for Sunday and Public Holiday at N1

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
9 May 2021	Min			49	44	44	46	43
	Max			50	51	66	54	56
	Average / Overall	51	47	49	48	49	49	47

Table 12 Summary of Baseline Airborne Noise Monitoring Results for Sunday and Public Holiday at N2

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
21 Feb 2021	Min			53	47	52	50	45
	Max			58	58	71	64	63
	Average / Overall	58	57	55	54	57	56	53

Table 13 Summary of Baseline Airborne Noise Monitoring Results for Sunday and Public Holiday at N3

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
9 May 2021	Min			68	60	66	67	56
	Max			70	69	73	74	77
	Average / Overall	69	66	69	66	69	69	66

Table 14 Summary of Baseline Airborne Noise Monitoring Results for Sunday and Public Holiday at N4

Monitoring period		$L_{Aeq(12hours)}$, dB		$L_{Aeq(1hour)}$, dB		$L_{Aeq(5mins)}$, dB		
		7:00 am – 7:00 pm	7:00 pm – 7:00 am	7:00 pm – 10:00 pm	10:00 pm – 7:00 am	7:00 am – 7:00 pm	7:00 pm – 10:00 pm	10:00 pm – 7:00 am
21 Feb 2021	Min			54	48	53	51	45
	Max			55	53	67	58	60
	Average / Overall	59	54	55	53	58	55	52

1.5 Summary of Baseline Airborne Noise Monitoring Results for Operational Noise Impact Assessment

The overall baseline airborne noise monitoring results from N1 to N4 for the time periods of 7:00am – 7:00pm, 7:00pm – 11:00pm and 11:00pm – 7:00am for the operational phase for ACMV noise impacts are presented below. These data with background noise correction factor applied will be used to develop an indicative noise criterion for this Project. It should be noted that at this stage as the definitive boundary of buildings have yet to be defined, current monitored baseline results should only serve as reference for the pre-design stage. Baseline noise monitoring should be conducted in the vicinity of buildings with defined boundaries in the future when possible.

Similarly, baseline airborne noise results to assess land traffic noise impacts imposed by new road networks should be done upon preliminary design stage/ where information is available. As of current, the $L_{Aeq(1\ hour)}$ results reflected in Section 1.4 can be referenced as the indicative baseline noise levels at the four (4) proposed locations around and within the Project Site.

Table 15 Summary of Baseline Airborne Noise Monitoring Results at N1

Monitoring period		$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	**7:00 pm – 11:00 pm**	**11:00 pm – 7:00 am**
Overall	Min	45	43	41
	Max	62/ 72*	65	63
	Average / Overall	52	49	47
** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N1 on certain days during the Weekday.*				

Table 16 Summary of Baseline Airborne Noise Monitoring Results at N2

Monitoring period		$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	**7:00 pm – 11:00 pm**	**11:00 pm – 7:00 am**
Overall	Min	54	49	44
	Max	76	61	65
	Average / Overall	59	55	51

Table 17 Summary of Baseline Airborne Noise Monitoring Results at N3

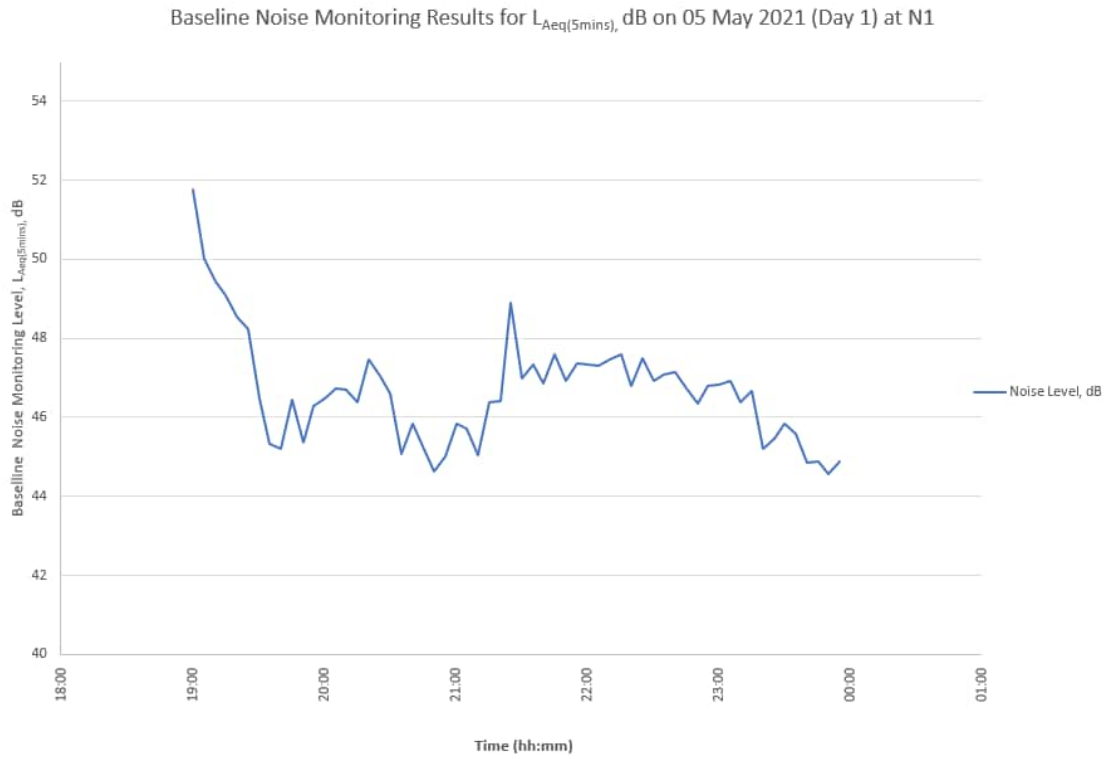
Monitoring period		$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	**7:00 pm – 11:00 pm**	**11:00 pm – 7:00 am**
Overall	Min	67	67	57
	Max	79	73	73
	Average / Overall	70	69	63

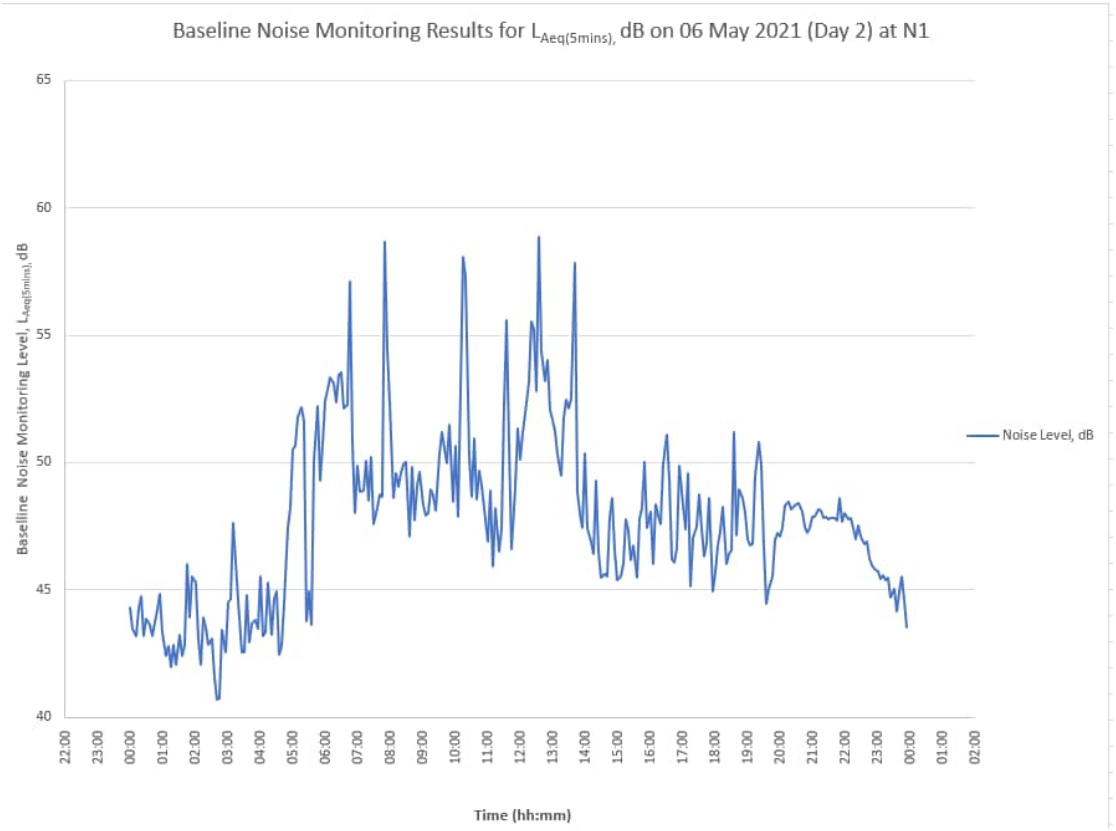
Table 18 Summary of Baseline Airborne Noise Monitoring Results at N4

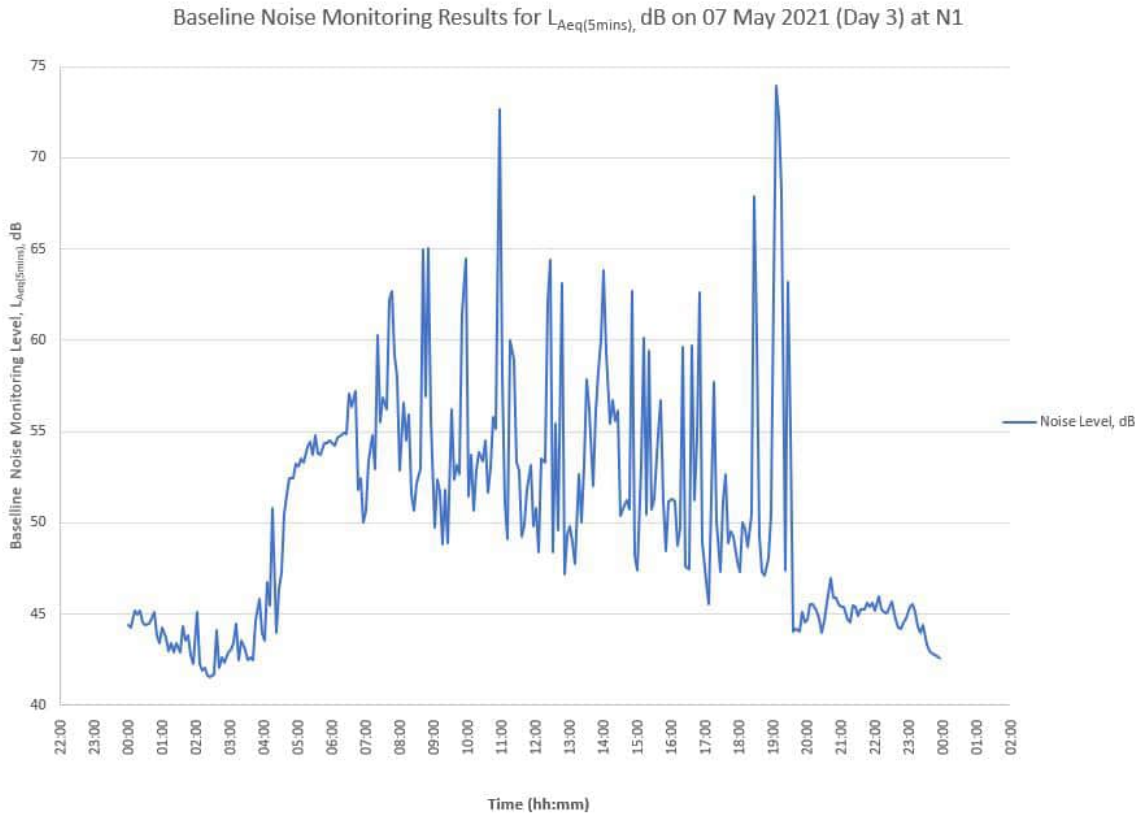
Monitoring period		$L_{Aeq(15mins)}$, dB		
		7:00 am – 7:00 pm	**7:00 pm – 11:00 pm**	**11:00 pm – 7:00 am**
Overall	Min	52	51	45
	Max	65/ 70*	61	63
	Average / Overall	57	54	51
** Significantly higher baseline noise levels were recorded for only one (1) day of the week of monitoring potentially due to higher volumes of human traffic at N4 on certain days during the Weekday.*				

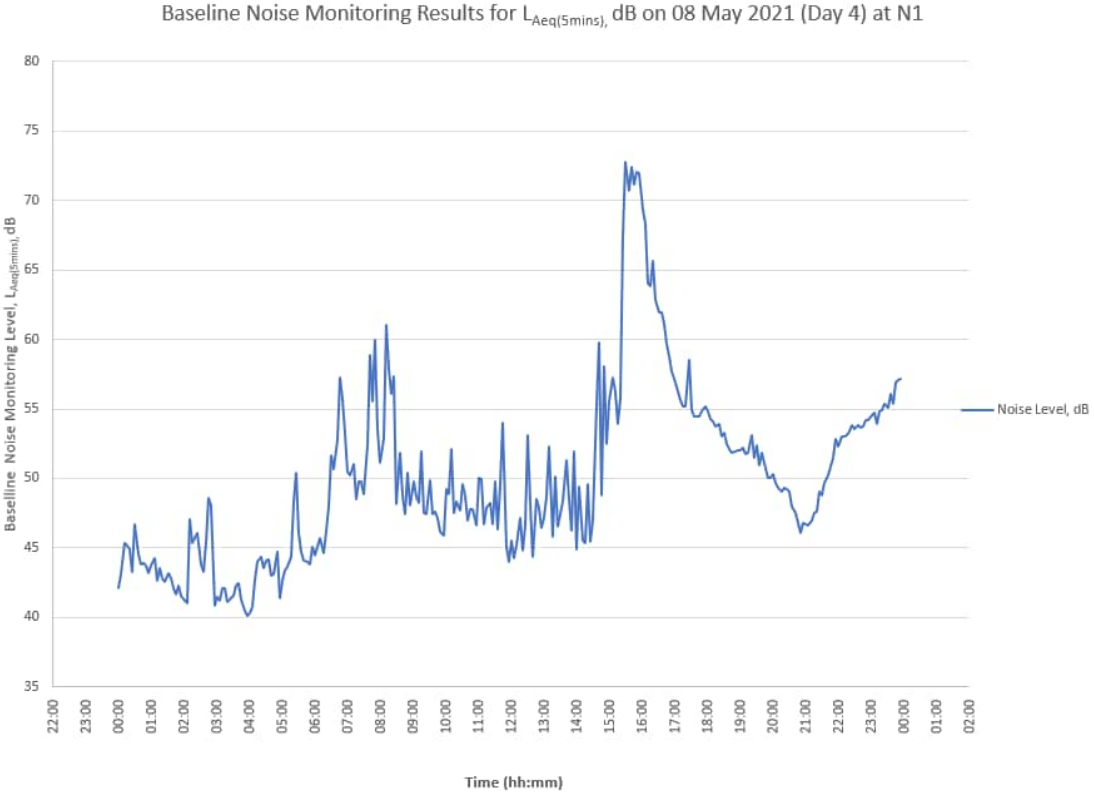
Annex A

Graphs reflecting $L_{Aeq(5mins)}$ Baseline Noise Monitoring Results recorded at N1

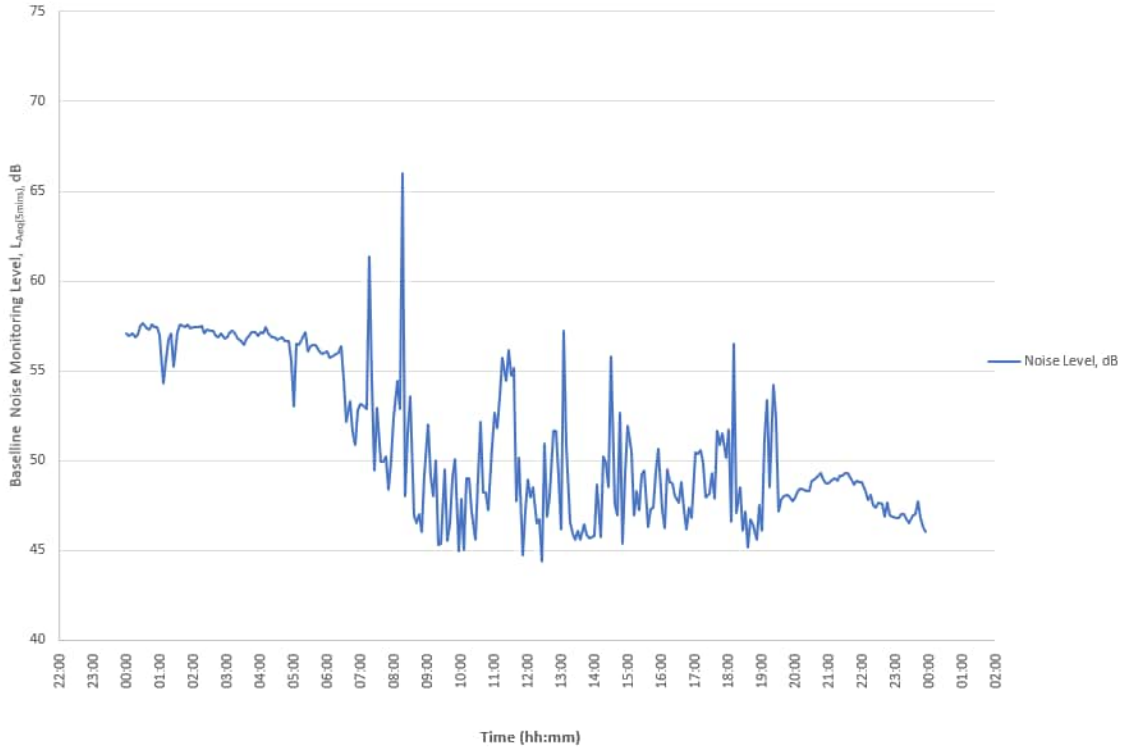




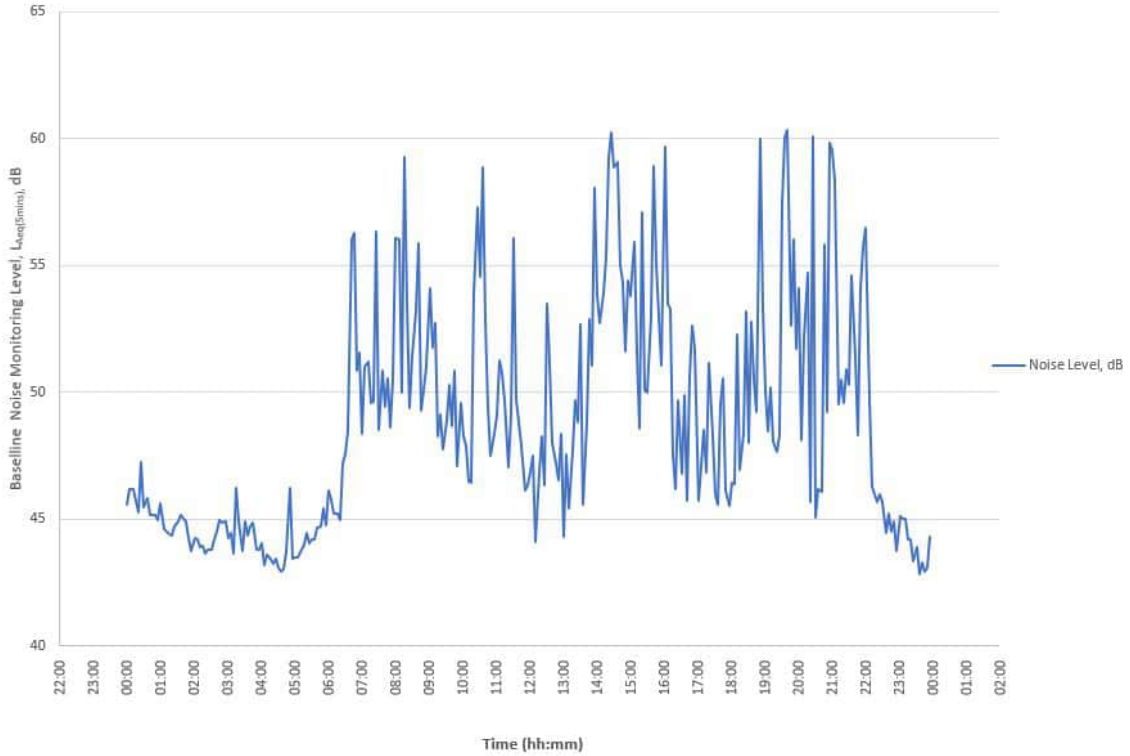

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 07 May 2021 (Day 3) at N1
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

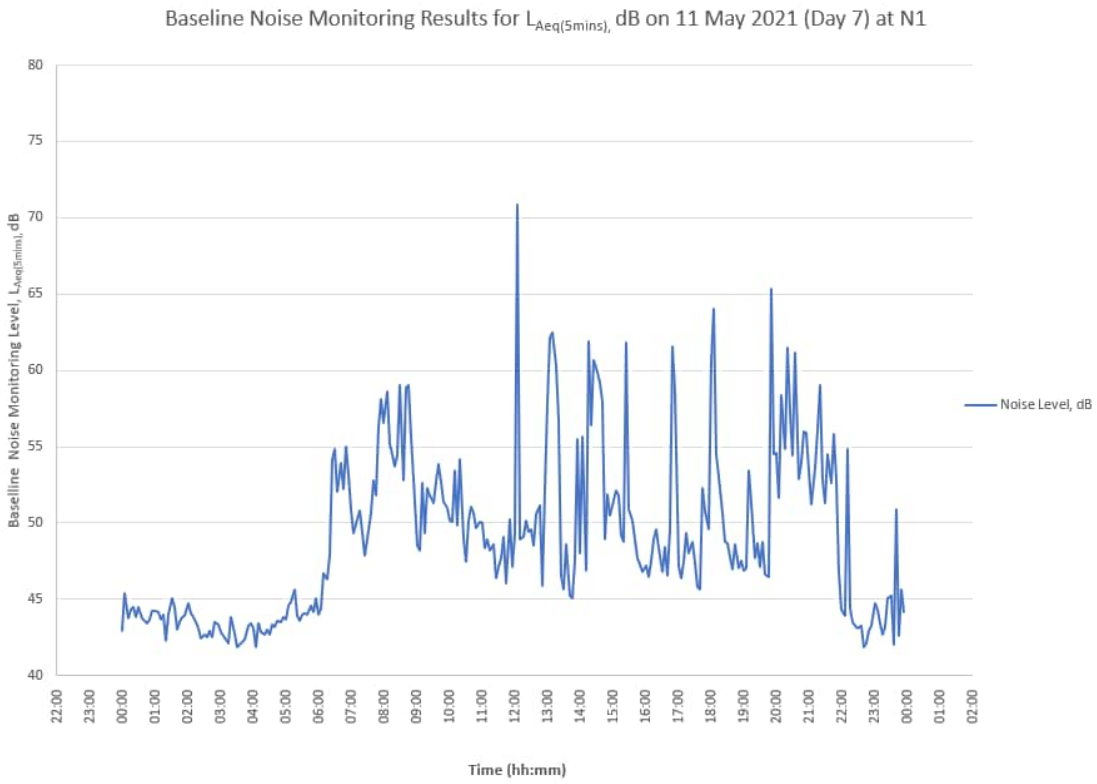

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 08 May 2021 (Day 4) at N1
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
80
75
70
65
60
55
50
45
40
35
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 09 May 2021 (Day 5) at N1

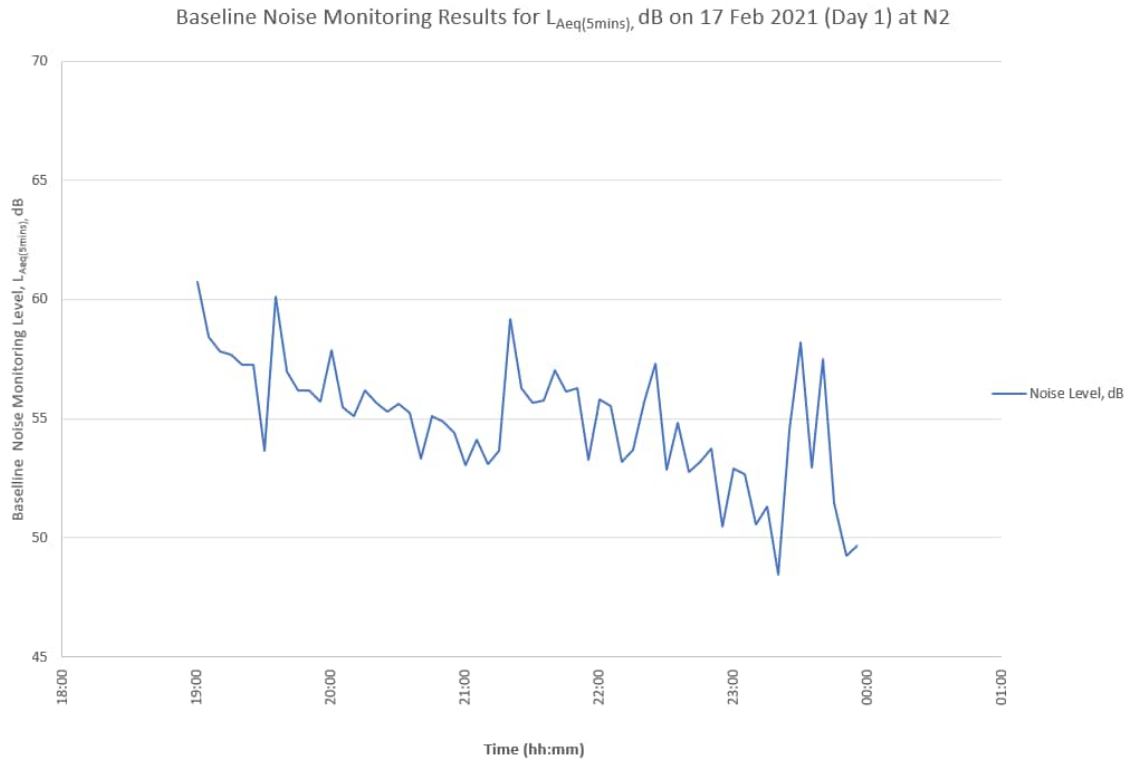


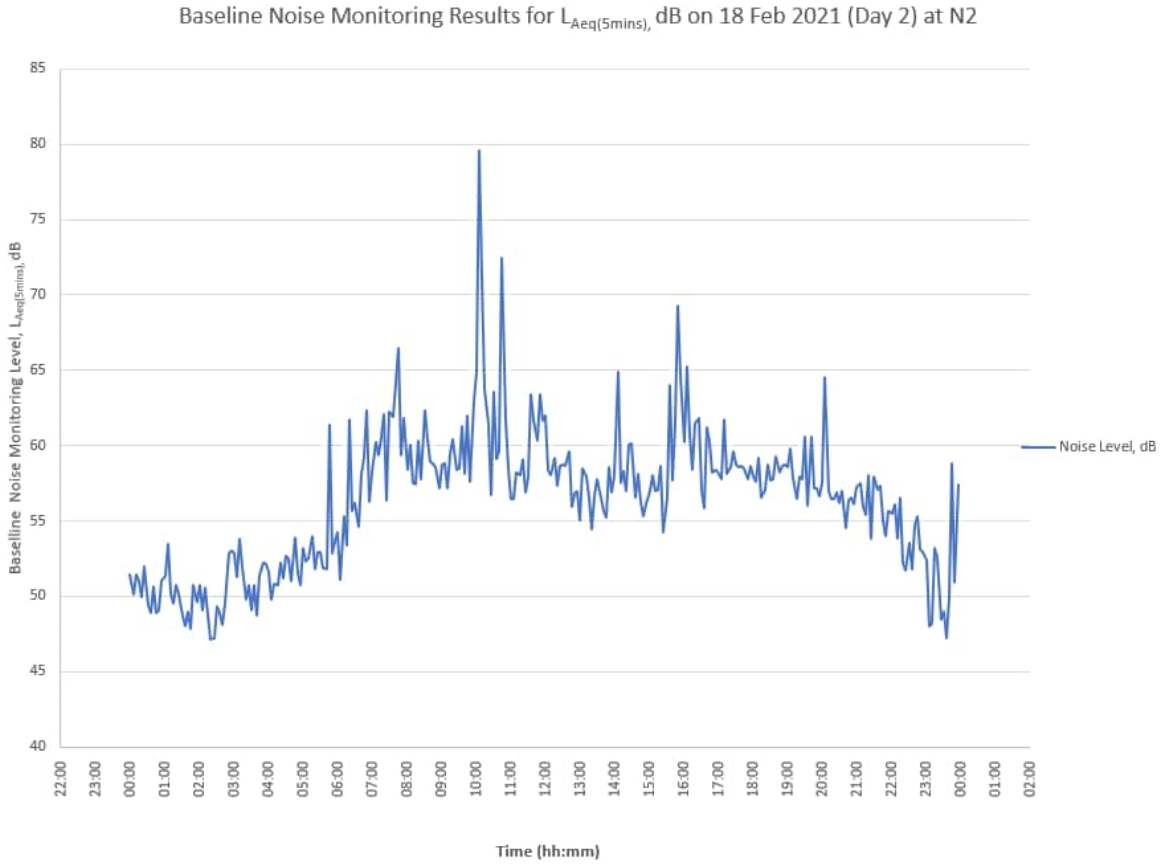
Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 10 May 2021 (Day 6) at N1



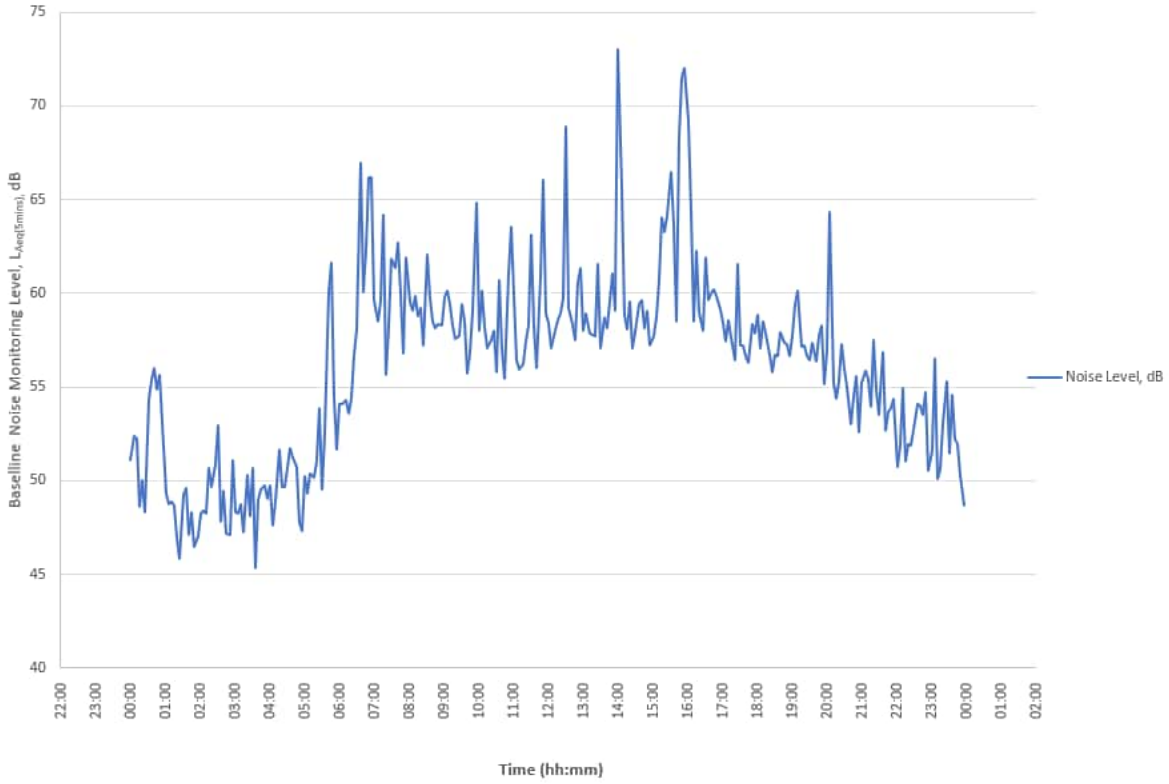

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 11 May 2021 (Day 7) at N1
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
80
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

Graphs reflecting $L_{Aeq(5mins)}$ Baseline Noise Monitoring Results recorded at N2

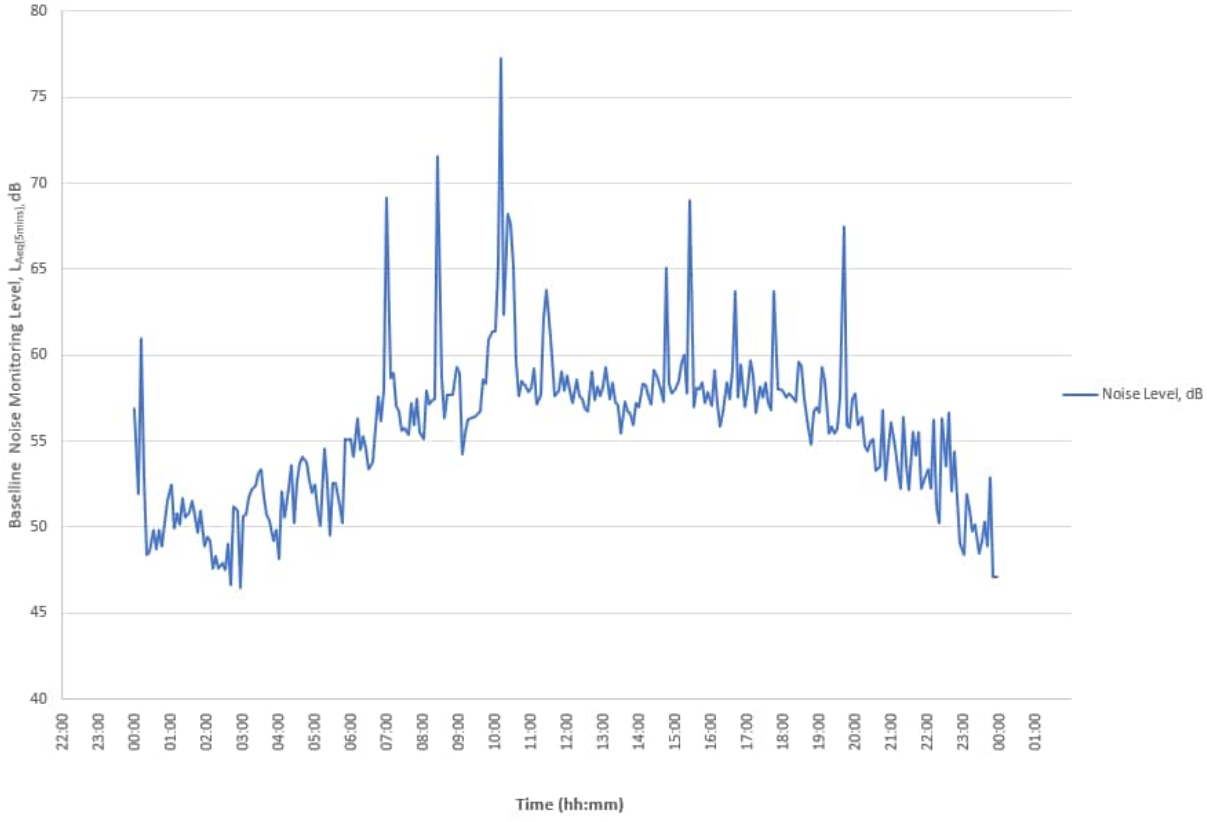


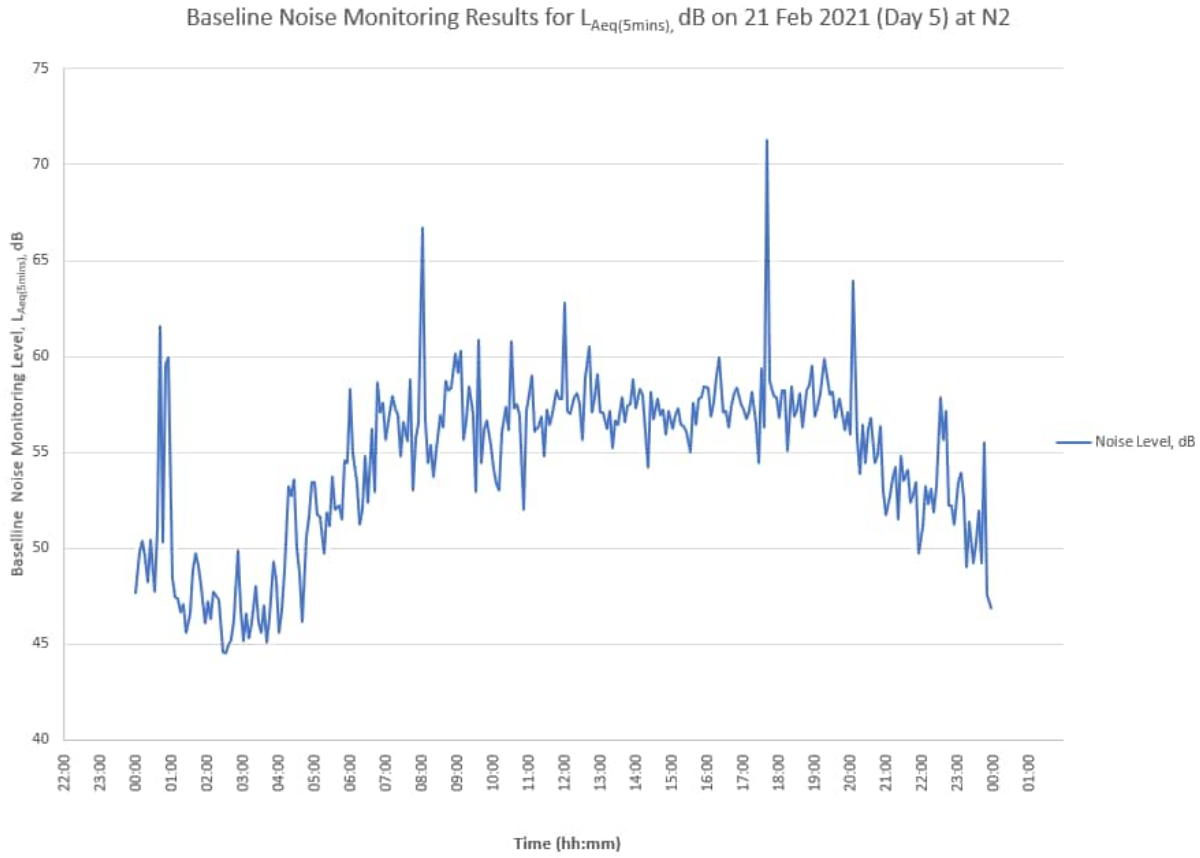


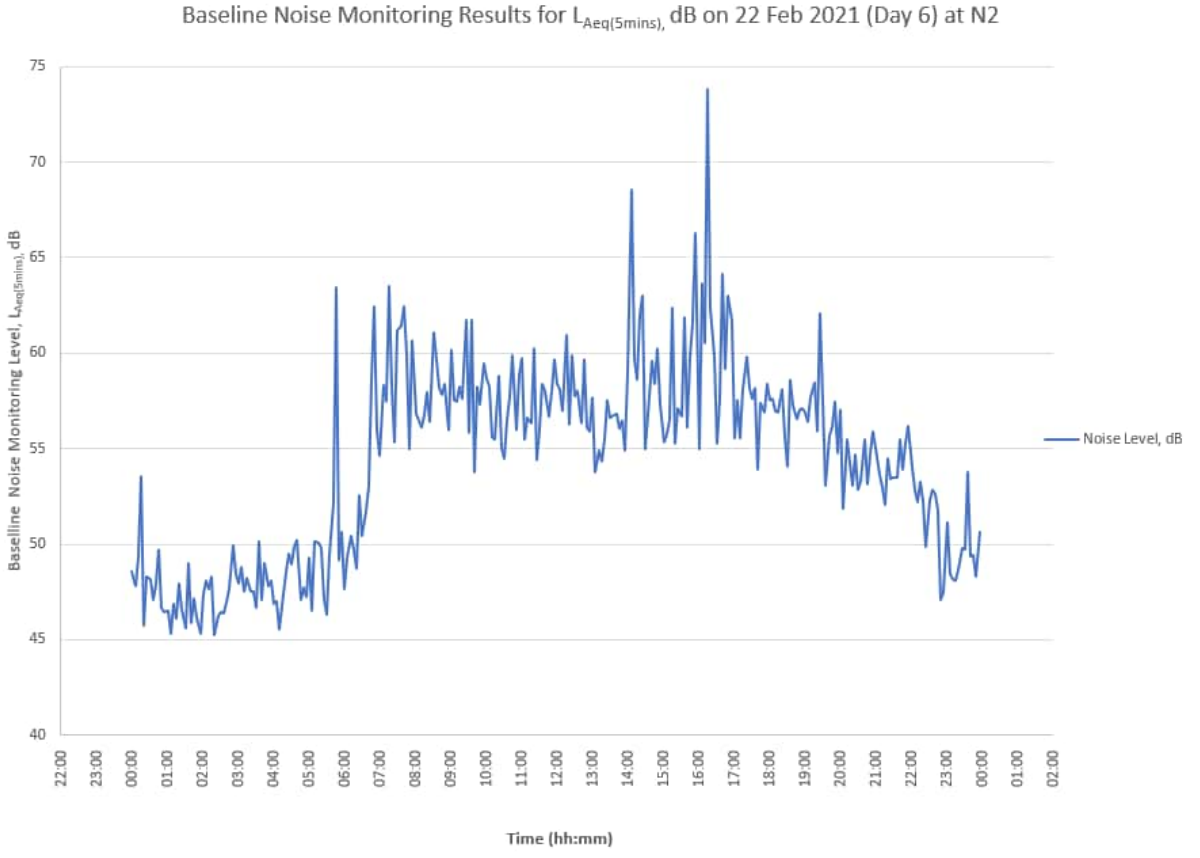
Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 19 Feb 2021 (Day 3) at N2

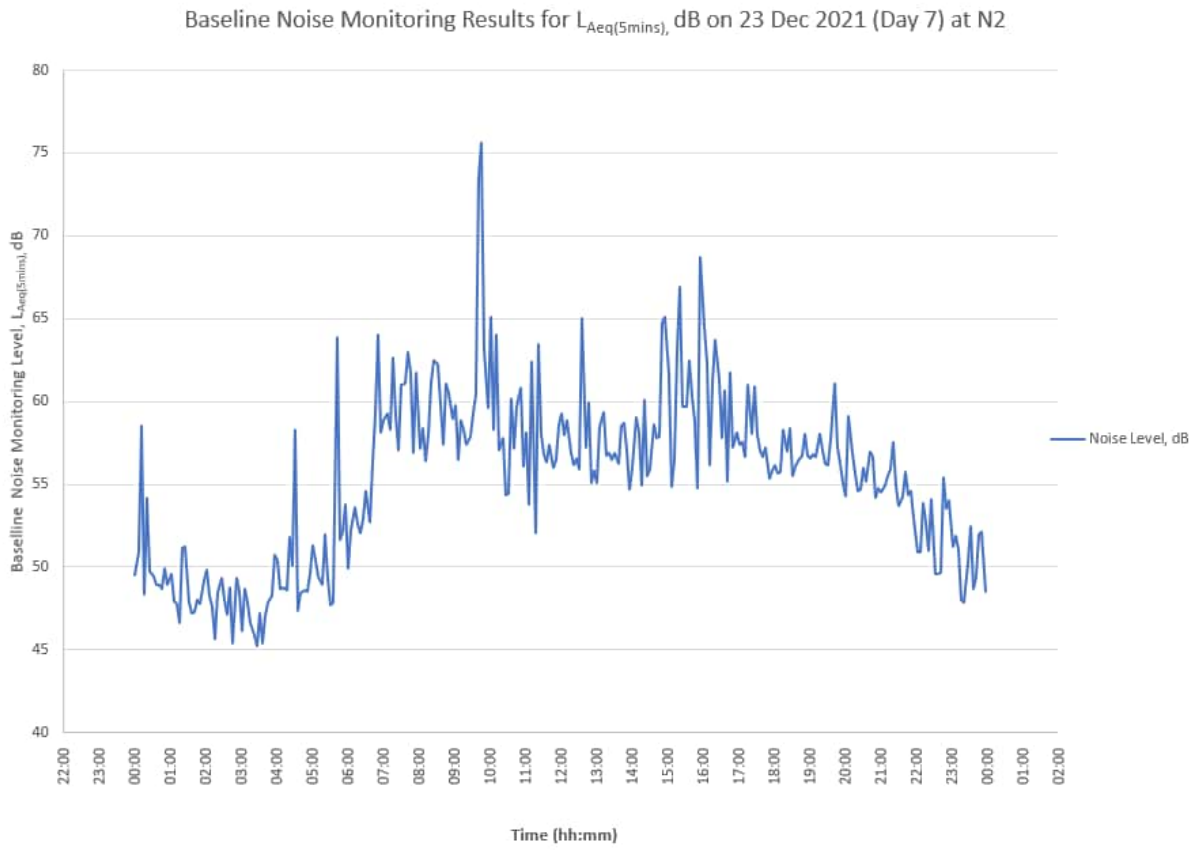


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 20 Feb 2021 (Day 4) at N2

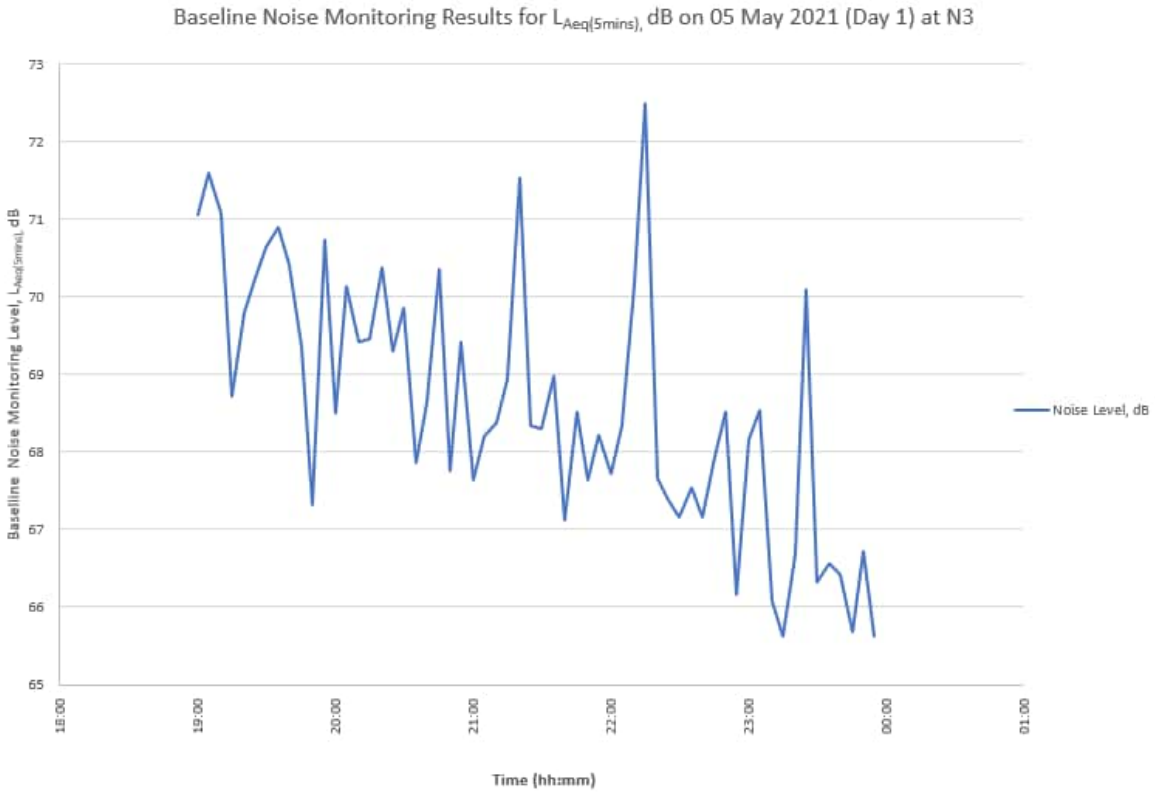


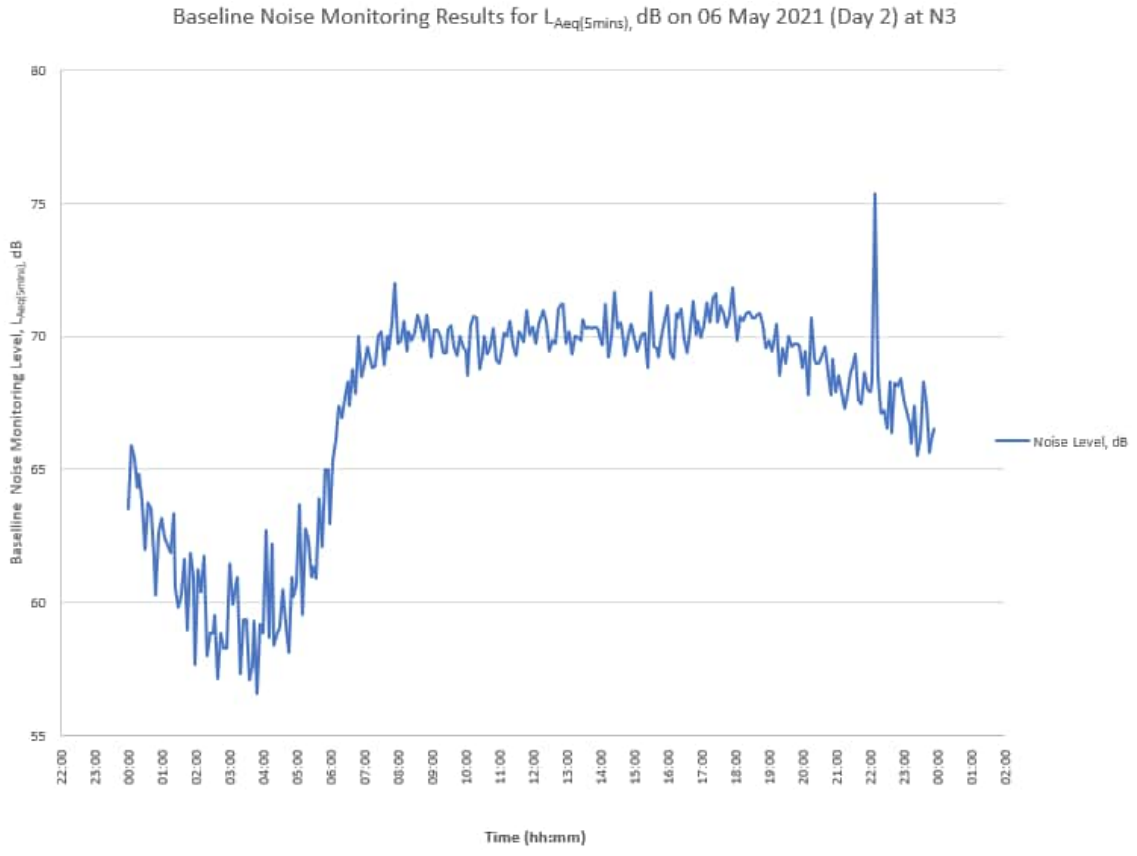

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 21 Feb 2021 (Day 5) at N2
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
Time (hh:mm)
Noise Level, dB


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 22 Feb 2021 (Day 6) at N2
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

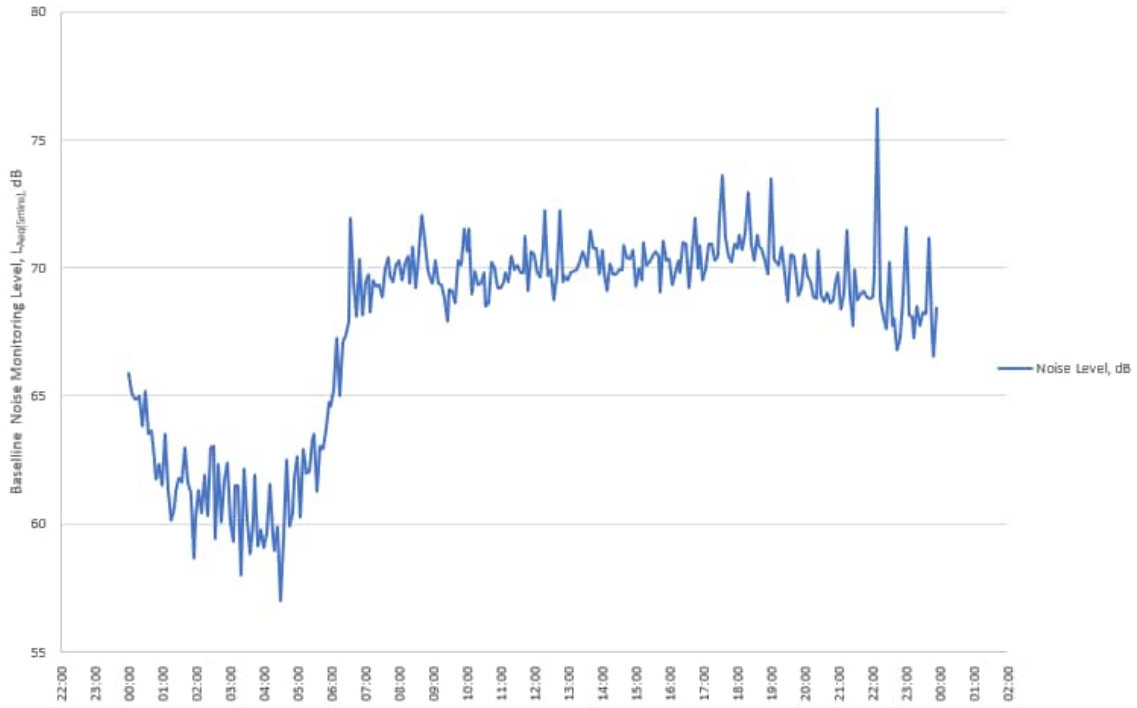

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 23 Dec 2021 (Day 7) at N2
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
80
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

Graphs reflecting $L_{Aeq(5mins)}$ Baseline Noise Monitoring Results recorded at N3

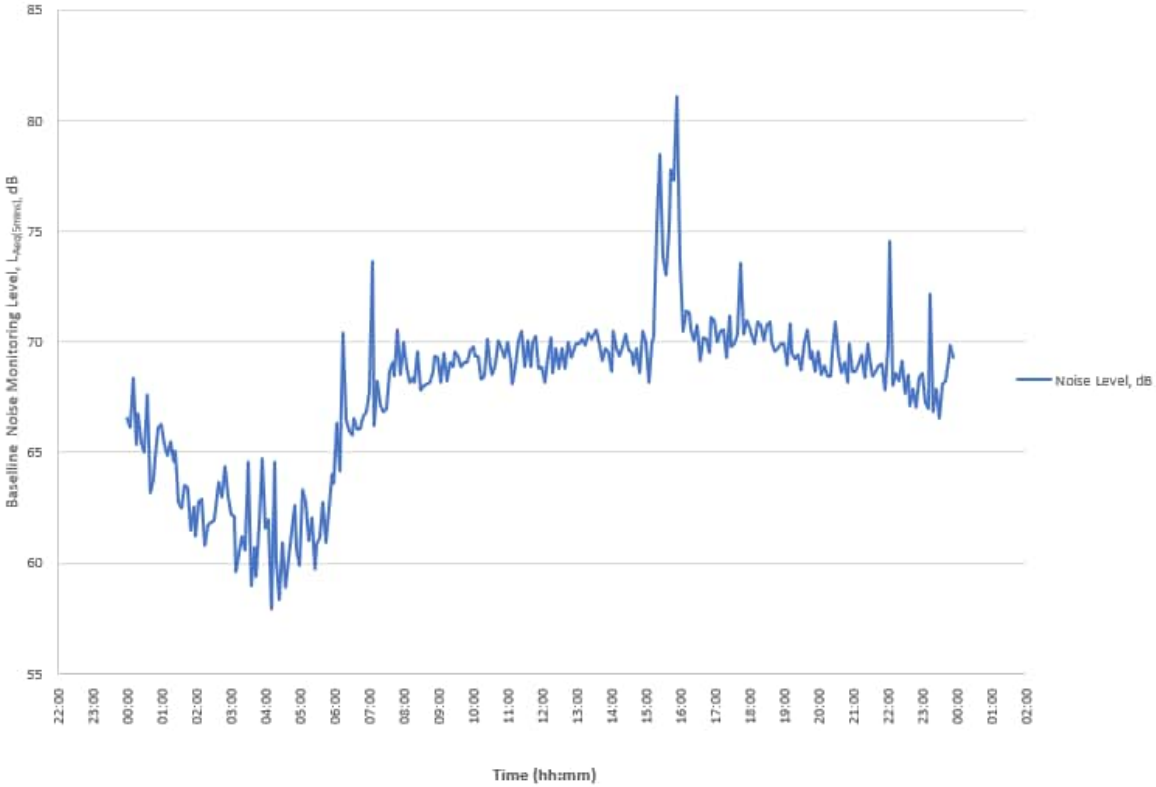


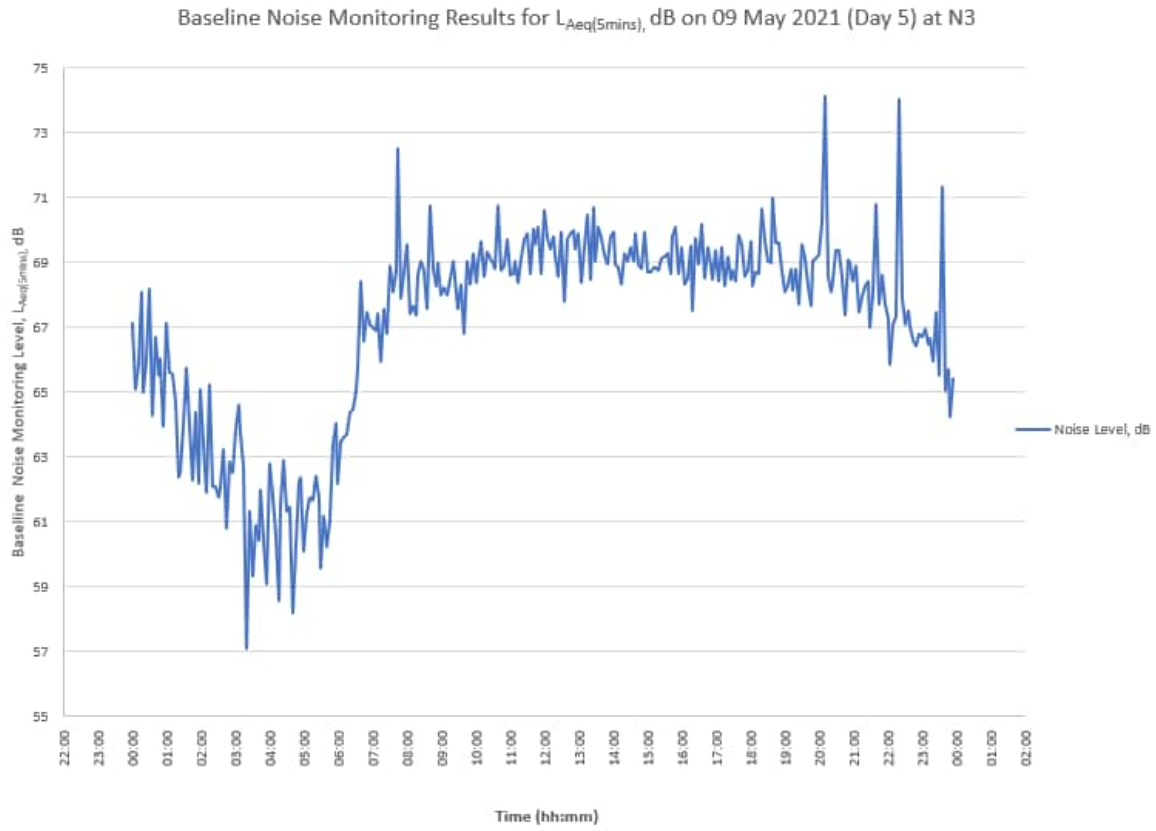


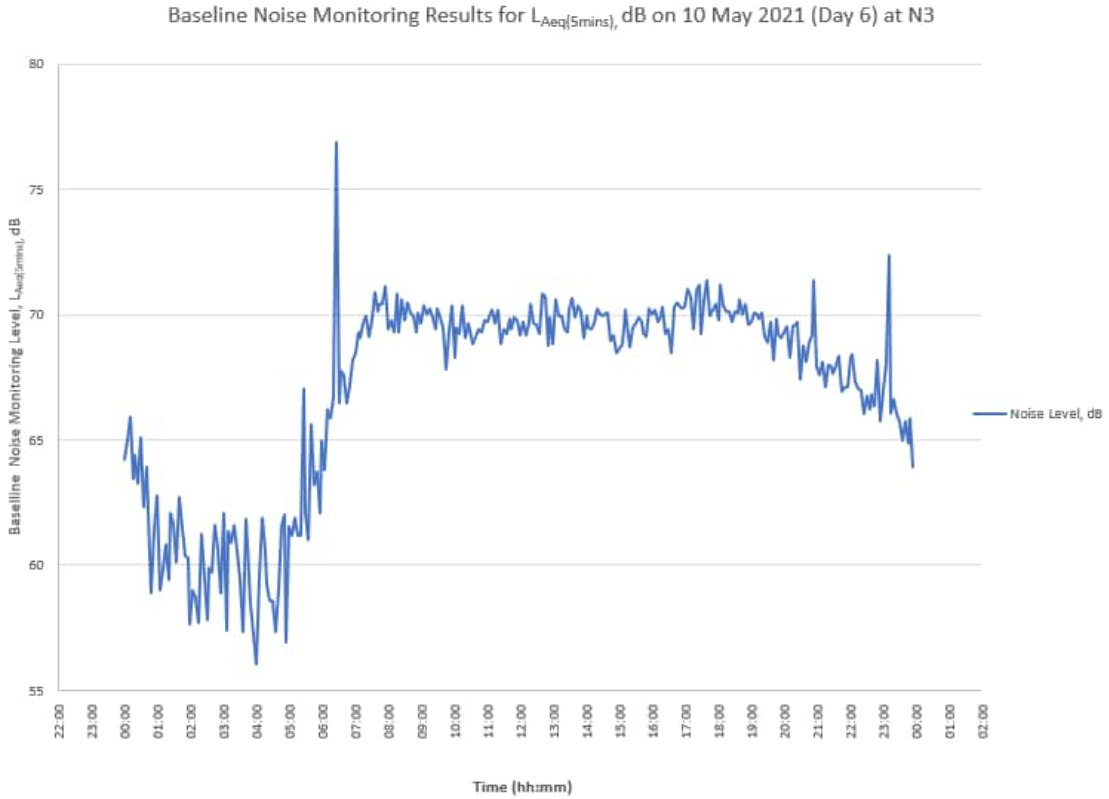
Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 07 May 2021 (Day 3) at N3

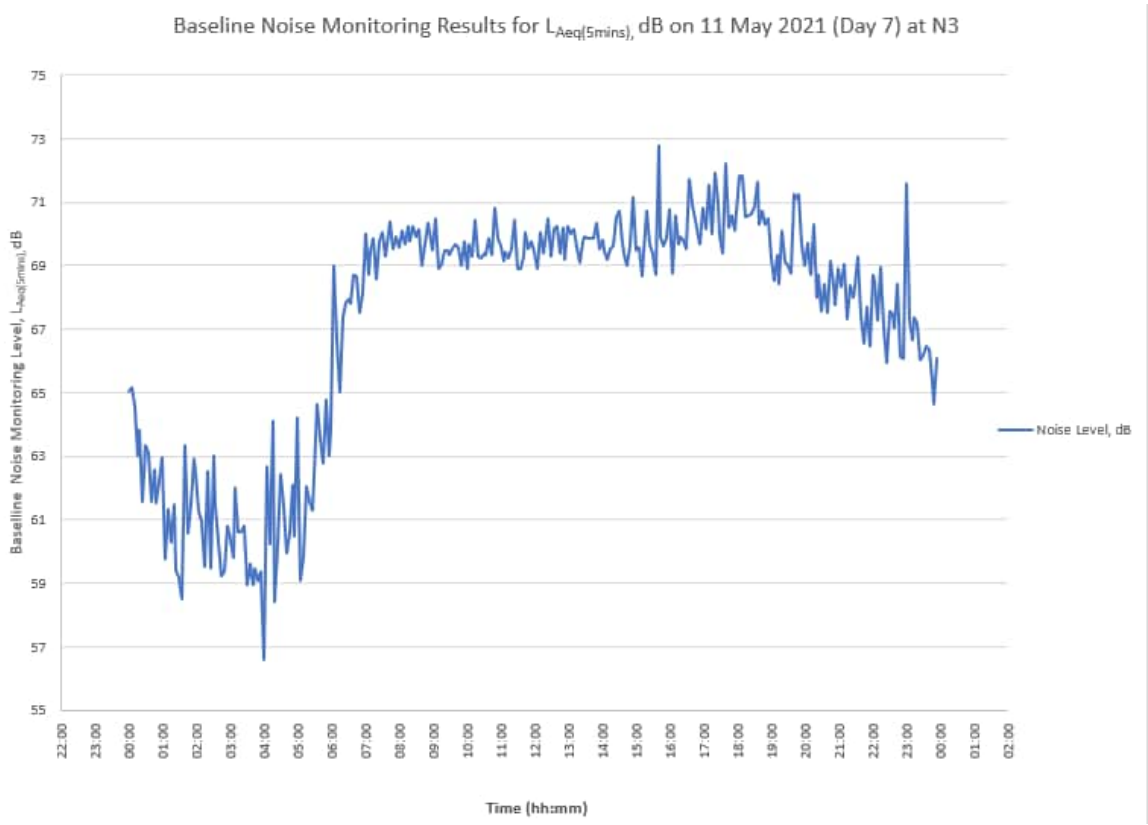


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 08 May 2021 (Day 4) at N3

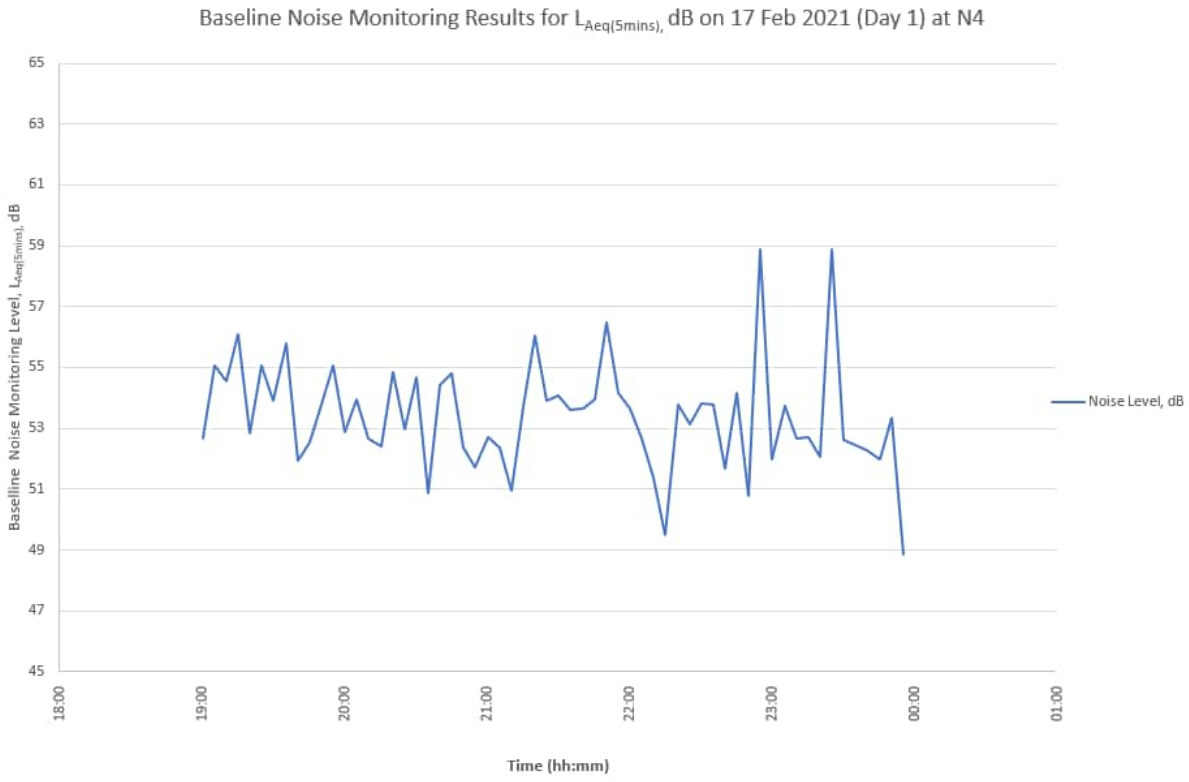


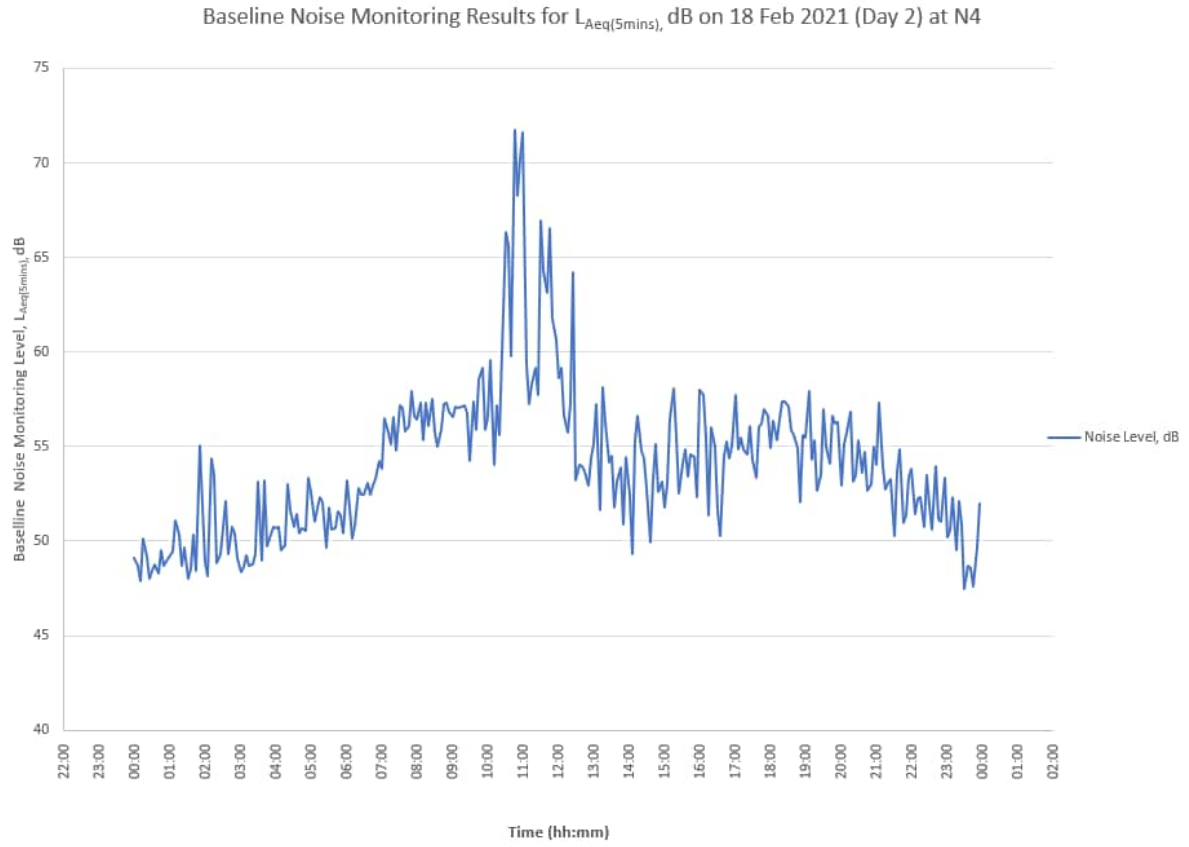

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 09 May 2021 (Day 5) at N3
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
Time (hh:mm)
Noise Level, dB

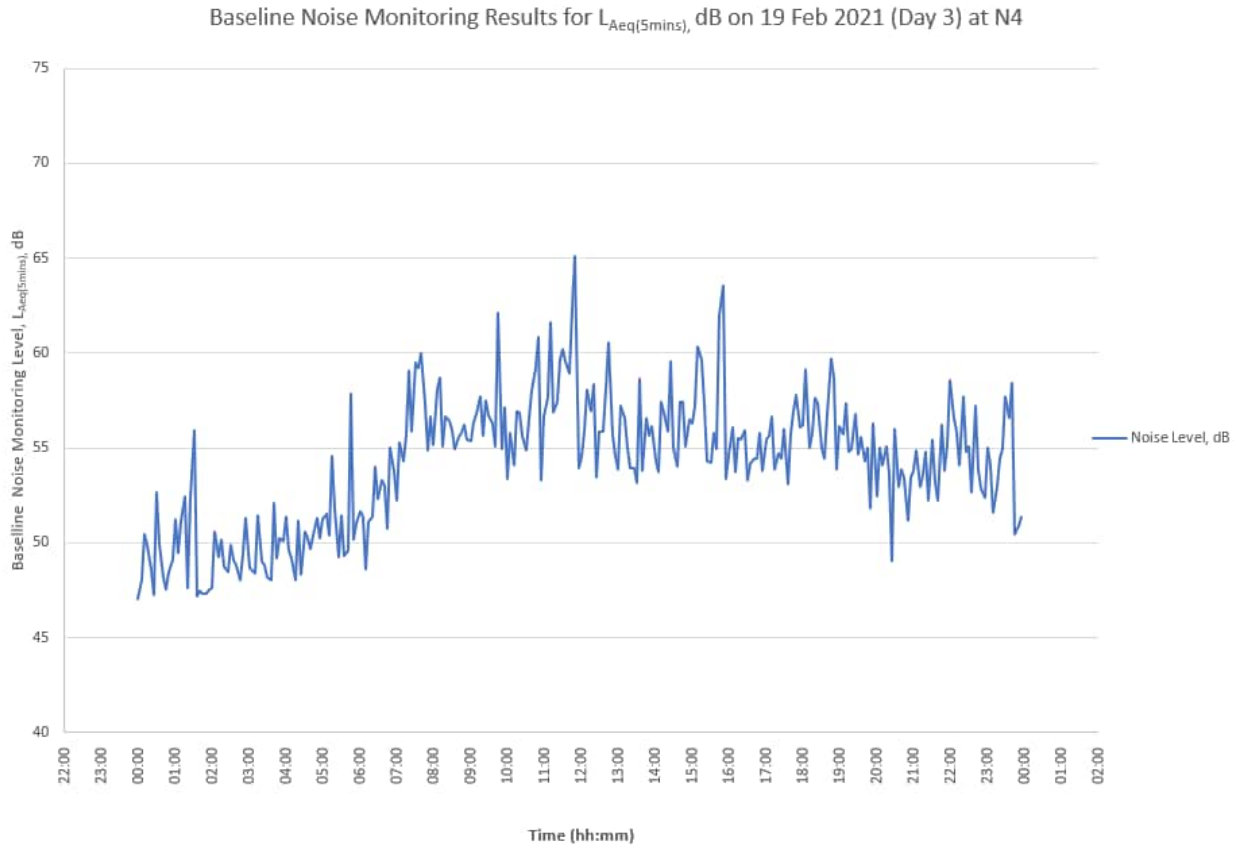

Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 10 May 2021 (Day 6) at N3
Baselline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
Time (hh:mm)
Noise Level, dB

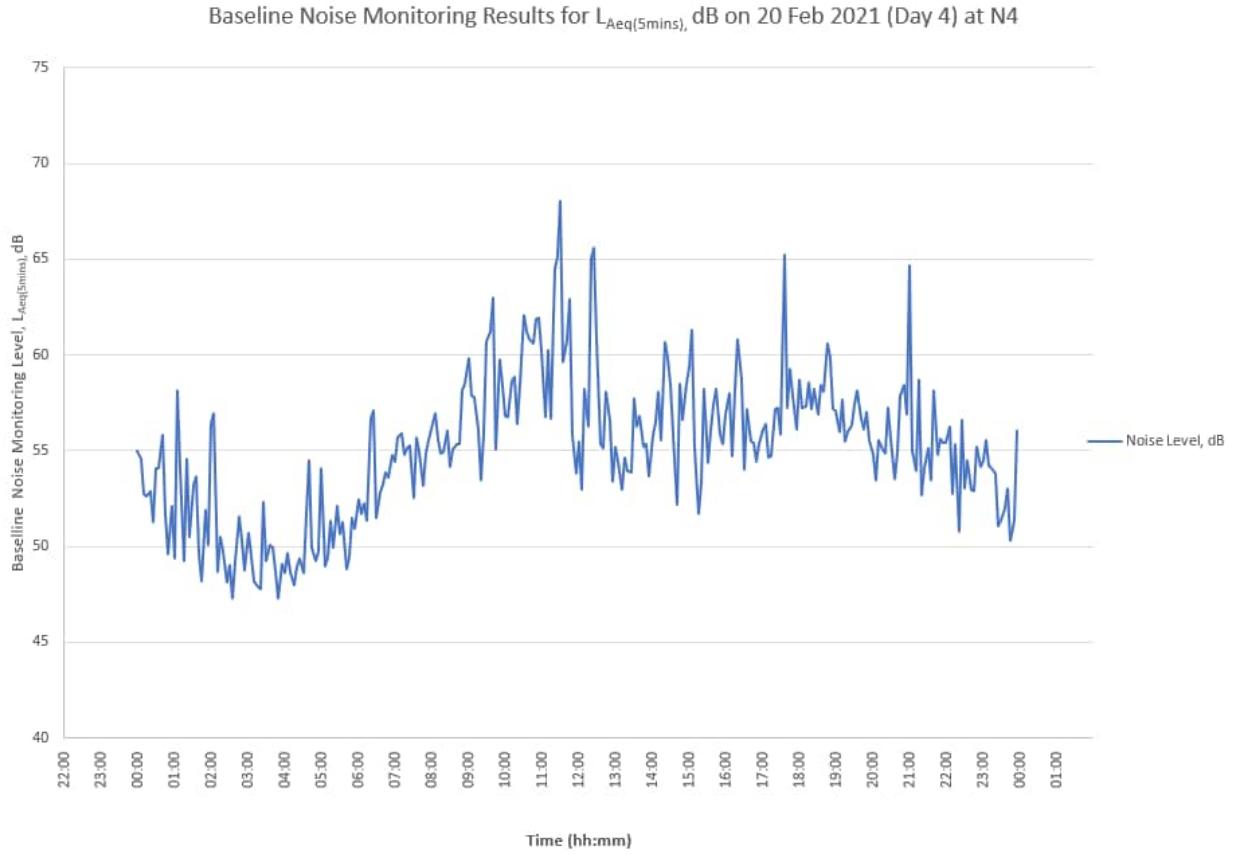

Baseline Noise Monitoring Results for $L_{Aeq(5mins)}$, dB on 11 May 2021 (Day 7) at N3
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
73
71
69
67
65
63
61
59
57
55
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

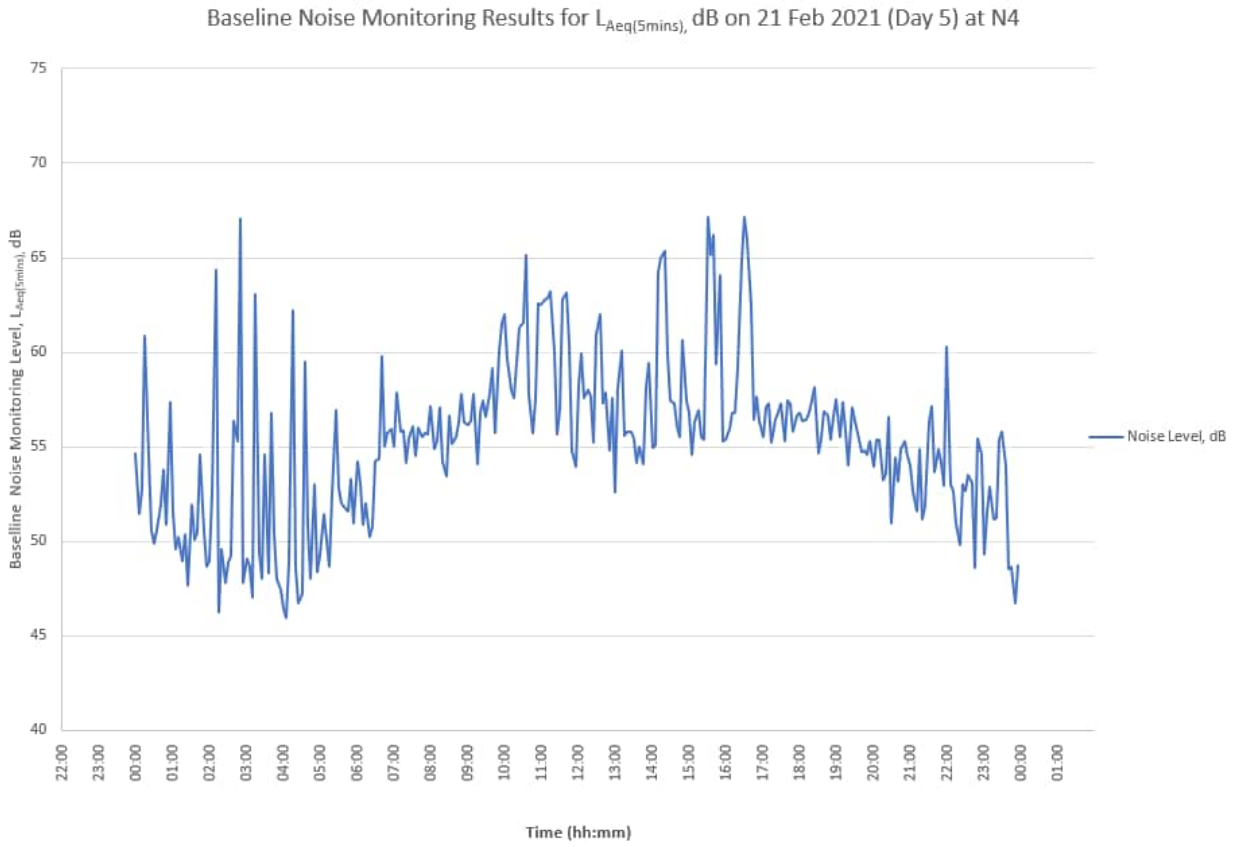
Graphs reflecting $L_{Aeq(5mins)}$ Baseline Noise Monitoring Results recorded at N4

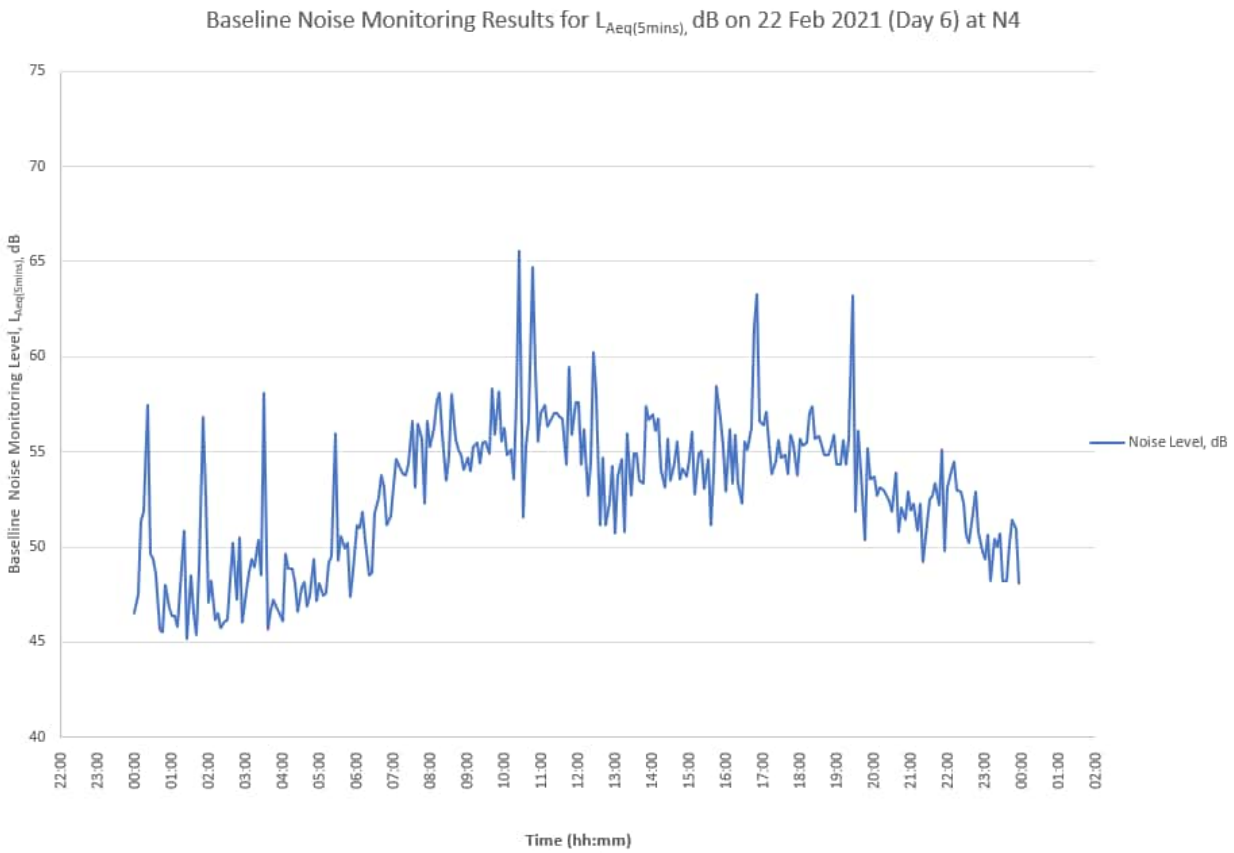


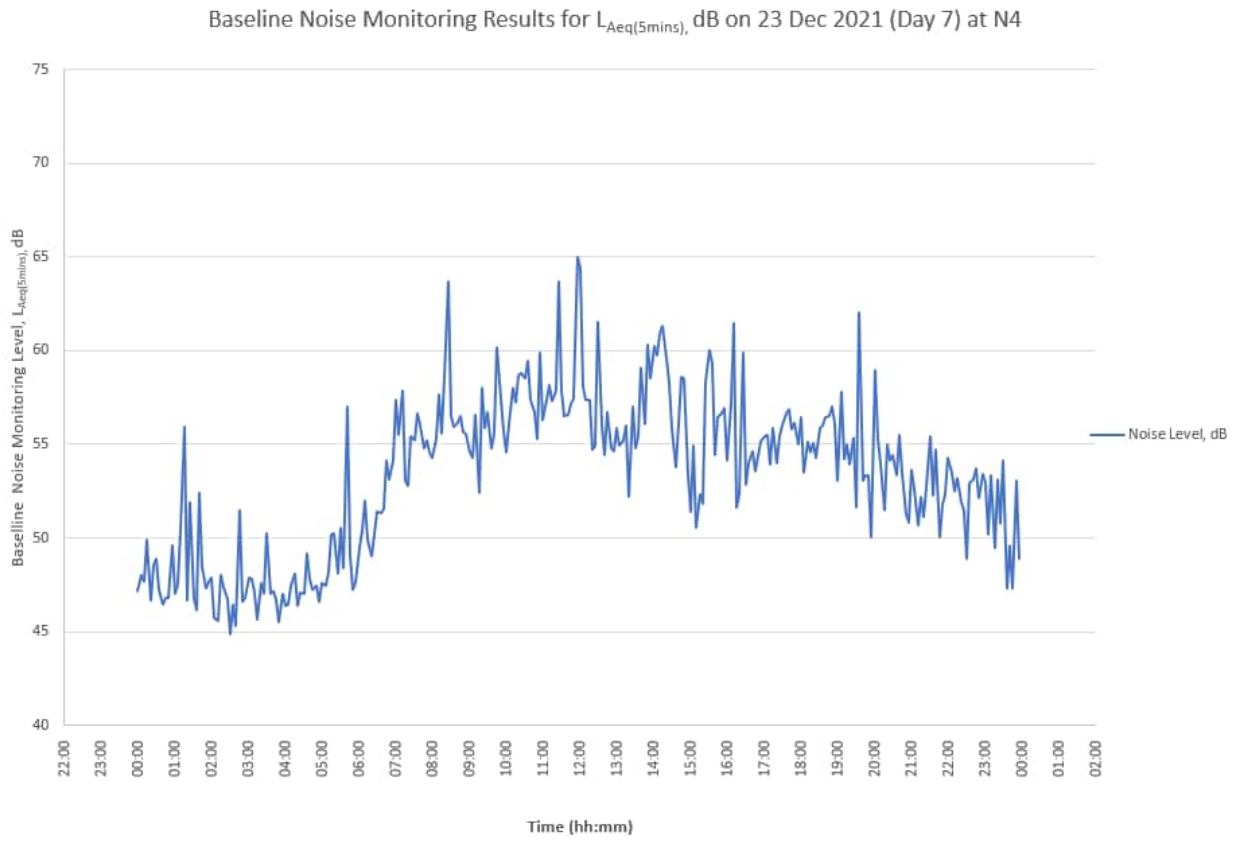



Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 19 Feb 2021 (Day 3) at N4
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 20 Feb 2021 (Day 4) at N4
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
Time (hh:mm)
Noise Level, dB


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 21 Feb 2021 (Day 5) at N4
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
Time (hh:mm)
Noise Level, dB


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 22 Feb 2021 (Day 6) at N4
Baselline Noise Monitoring Level, $L_{Aeq(5mins)}$, dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB


Baseline Noise Monitoring Results for $L_{Aeq(5mins),}$ dB on 23 Dec 2021 (Day 7) at N4
Baseline Noise Monitoring Level, $L_{Aeq(5mins),}$ dB
75
70
65
60
55
50
45
40
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
Time (hh:mm)
Noise Level, dB

Annex B

Certificate of Calibration

Certificate No.: 475054772

Object:	Precision Sound Level Meter Nor131
Supplier:	Norsonic AS
Type:	Nor131
Serial number:	1313979
Client:	TME Systems Pte. Ltd

This instrument is tested and calibrated in accordance to the Norsonic production standard set for Nor131, ensuring that the instrument conforms to the following standards;

IEC 61672-1:2002 class 1
IEC 61260-1 class 1 Ed 1.0 2014-02
ANSI S1.4-1983 (R2001) with amd. S1.4A-1985 class 1
ANSI S1.43-1997 (R2002) class 1
ANSI S1.11-2004 class 1
DIN 45 657, Applicable parts
IEC 61094 part 4

Instrumentation used for calibration traceable to:

Electrical Parameters: MT, Norway
Acoustical Parameters: PTB, Germany
Environmental Parameters: Justervesenet. Norway

FW version:	4.0.1312 2019-03-20 13:16r
Id no.:	5054772
Accessories:	Preamplifier type: 1207 S.no: 21124 Microphone type: 1228 S.no: 02786
Comments:	None

Date of calibration:	**Calibration interval recommended:**
2019-06-06	2 years

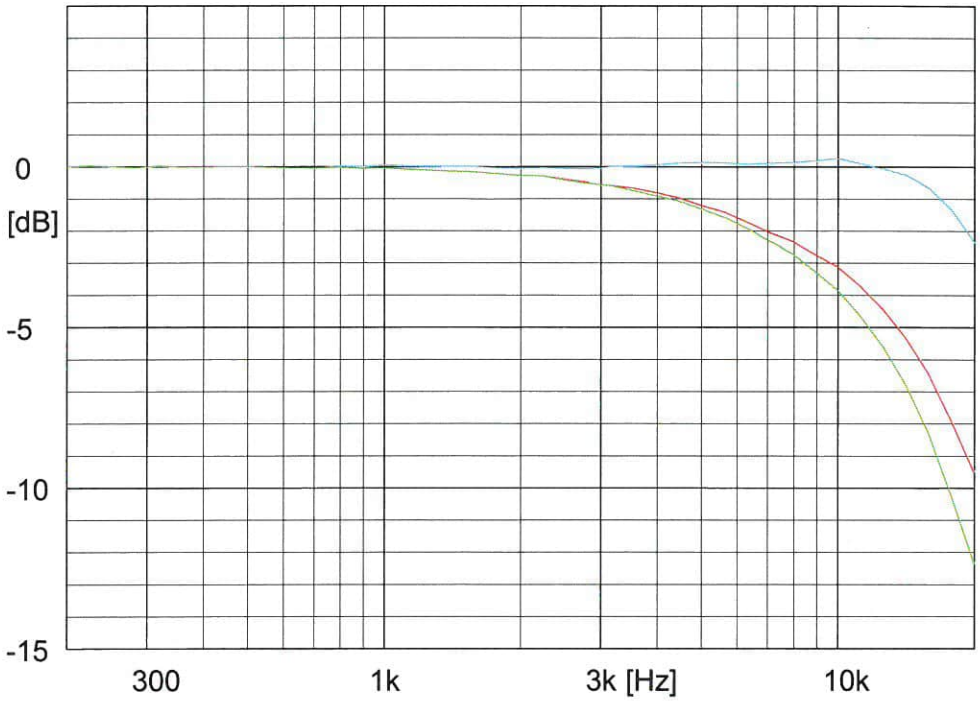
The environmental parameters applicable to this calibration are kept well within limits ensuring negligible deviation on obtained measurement results.

Calibrated by:
Anders Amundsen

Sign. _____

Norsonic AS, P.B 24, 3421 Lierskogen. Visitor address: Gunnersbråtan 2, Tranby, Norway.
Phone +47 32858900 Fax.: +47 32852208. email: info@norsonic.com

Microphone Calibration Certificate



Norsonic
Type: 1228

Serial no: 02786

Sensitivity: 48,1 mV/Pa
-26,4 dB re. 1 V/Pa
Capacitance: 12,7 pF
Date: 2019-03-22

Signature: E. March

Measurement conditions:

Polarisation voltage:	0,0 V
Pressure:	99,41 kPa
Temperature:	24,1 °C
Relative humidity:	40,4 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure (Actuator) response

Norsonic AS
www.norsonic.com

Microphone Specifications

Calibration of your microphone cartridge has been made with utmost care to meet all your needs for a high quality measurement device. The calibration is traceable to PTB in Germany.

Nominal Specifications

Ambient temperature coeffecient: 0.01 dB/°C
Ambient pressure coeffecient: -1×10^{-5} dB/Pa
Temperature range: -30 to +70°C
Diameter: 13.2 mm with protection grid on,
12.7 mm without protection grid
Thread for preamp mounting: 11.7 mm 60 UNS

Reference Values

Temperature: 23°C
Relative humidity: 50%
Ambient pressure: 101.325 kPa
Test frequency for sensitivity: 250 Hz

Norsonic Warranty Statement

The warranty period for microphones is 36 months after the time of delivery.
The warranty does not include damage due to improper handling, overload, force majeur, or normal wear and tear. The warranty is not granted if the buyer make modifications or repairs without our written consent. Norsonic can choose either to repair or replace microphones having defects due to material or workmanship. Defective goods should be returned to our factory or one of our distributors, and shipments are to be paid and insured by the buyer unless otherwise agreed.

Certificate of Calibration

Certificate No.: 475066674

Object:	Precision Sound Level Meter Nor131
Supplier:	Norsonic AS
Type:	Nor131
Serial number:	1313980
Client:	TME Systems Pte. Ltd

This instrument is tested and calibrated in accordance to the Norsonic production standard set for Nor131, ensuring that the instrument conforms to the following standards;

IEC 61672-1:2002 class 1
IEC 61260-1 class 1 Ed 1.0 2014-02
ANSI S1.4-1983 (R2001) with amd. S1.4A-1985 class 1
ANSI S1.43-1997 (R2002) class 1
ANSI S1.11-2004 class 1
DIN 45 657, Applicable parts
IEC 61094 part 4

Instrumentation used for calibration traceable to:

Electrical Parameters: MT, Norway
Acoustical Parameters: PTB, Germany
Environmental Parameters: Justervesenet. Norway

FW version:	4.0.1312 2019-03-20 13:16r
Id no.:	5066674
Accessories:	Preamplifier type: 1207 S.no: 21125 Microphone type: 1228 S.no: 03256
Comments:	None

Date of calibration:	**Calibration interval recommended:**
2019-06-06	2 years

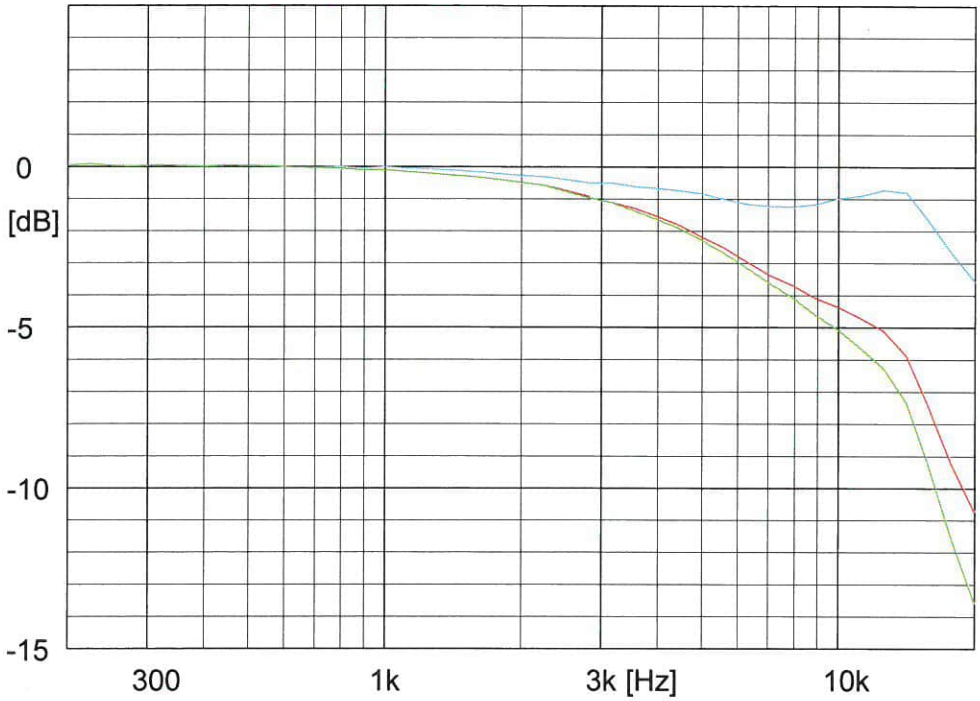
The environmental parameters applicable to this calibration are kept well within limits ensuring negligible deviation on obtained measurement results.

Calibrated by:
Anders Amundsen

Sign. AA

Norsonic AS, P.B 24, 3421 Lierskogen. Visitor address: Gunnersbråtan 2, Tranby, Norway.
Phone +47 32858900 Fax.: +47 32852208. email: info@norsonic.com

Microphone Calibration Certificate



Norsonic
Type: 1228

Serial no: 03256

Sensitivity: 51,8 mV/Pa
-25,7 dB re. 1 V/Pa
Capacitance: 15,9 pF
Date: 2019-03-22

Signature: E March

Measurement conditions:

Polarisation voltage:	0,0 V
Pressure:	99,37 kPa
Temperature:	24,2 °C
Relative humidity:	41,3 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure (Actuator) response

Norsonic AS
www.norsonic.com

Microphone Specifications

Calibration of your microphone cartridge has been made with utmost care to meet all your needs for a high quality measurement device. The calibration is traceable to PTB in Germany.

Nominal Specifications

Ambient temperature coeffecient: 0.01 dB/°C
Ambient pressure coeffecient: -1×10^{-5} dB/Pa
Temperature range: -30 to +70°C
Diameter: 13.2 mm with protection grid on,
12.7 mm without protection grid
Thread for preamp mounting: 11.7 mm 60 UNS

Reference Values

Temperature: 23°C
Relative humidity: 50%
Ambient pressure: 101.325 kPa
Test frequency for sensitivity: 250 Hz

Norsonic Warranty Statement

The warranty period for microphones is 36 months after the time of delivery.
The warranty does not include damage due to improper handling, overload, force majeur, or normal wear and tear. The warranty is not granted if the buyer make modifications or repairs without our written consent. Norsonic can choose either to repair or replace microphones having defects due to material or workmanship. Defective goods should be returned to our factory or one of our distributors, and shipments are to be paid and insured by the buyer unless otherwise agreed.

Certificate of Calibration

Certificate No.: 475066194

Object:	Precision Sound Level Meter Nor131
Supplier:	Norsonic AS
Type:	Nor131
Serial number:	1313989
Client:	AECOM SINGAPORE PTE LTD

This instrument is tested and calibrated in accordance to the Norsonic production standard set for Nor131, ensuring that the instrument conforms to the following standards;

IEC 61672-1:2002 class 1
IEC 61260-1 class 1 Ed 1.0 2014-02
ANSI S1.4-1983 (R2001) with amd. S1.4A-1985 class 1
ANSI S1.43-1997 (R2002) class 1
ANSI S1.11-2004 class 1
DIN 45 657, Applicable parts
IEC 61094 part 4

Instrumentation used for calibration traceable to:

Electrical Parameters: MT, Norway
Acoustical Parameters: PTB, Germany
Environmental Parameters: Justervesenet. Norway

FW version:	4.0.1312 2019-03-20 13:16r
Id no.:	5066194
Accessories:	Preamplifier type: 1207 S.no: 21146 Microphone type: 1228 S.no: 03138
Comments:	None

Date of calibration:	**Calibration interval recommended:**
2019-08-01	2 years

The environmental parameters applicable to this calibration are kept well within limits ensuring negligible deviation on obtained measurement results.

Calibrated by:
Anders Amundsen

Sign.

Norsonic
PO.BOX 24, N 3420 LIERSKOGEN, NORWAY
TEL: +47 32 85 89 00

Norsonic AS, P.B 24, 3421 Lierskogen. Visitor address: Gunnersbråtan 2, Tranby, Norway.
Phone +47 32858900 Fax.: +47 32852208. email: info@norsonic.com

Norsonic **Calibration Chart**

Model: Nor 1228 Serial No: 03138

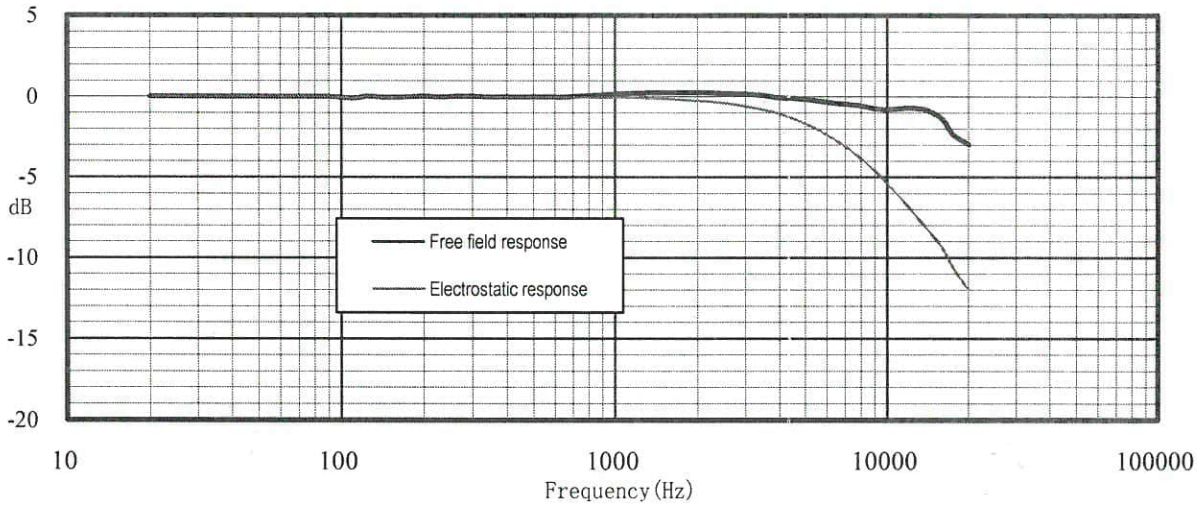
Open Circuit Sensitivity Level:

-26.0dB ref 1 V/Pa or 50.2mV/Pa @ 250Hz

Signature: _____ Date: 03/06/2019

Test Conditions:

Polarization Voltage : 0 V
Relative Humidity: 47%
Temperature: 22 ℃



Certificate of Calibration

Certificate No.: 475066660

Object:	Precision Sound Level Meter Nor131
Supplier:	Norsonic AS
Type:	Nor131
Serial number:	1313950
Client:	AECOM SINGAPORE

This instrument is tested and calibrated in accordance to the Norsonic production standard set for Nor131, ensuring that the instrument conforms to the following standards;

IEC 61672-1:2002 class 1
IEC 61260-1 class 1 Ed 1.0 2014-02
ANSI S1.4-1983 (R2001) with amd. S1.4A-1985 class 1
ANSI S1.43-1997 (R2002) class 1
ANSI S1.11-2004 class 1
DIN 45 657, Applicable parts
IEC 61094 part 4

Instrumentation used for calibration traceable to:

Electrical Parameters: MT, Norway
Acoustical Parameters: PTB, Germany
Environmental Parameters: Justervesenet. Norway

FW version:	4.0.1282 2018-11-02 12:39r
Id no.:	5066660
Accessories:	Preamplifier type: 1207 S.no: 21094 Microphone type: 1228 S.no: 03148
Comments:	None

Date of calibration:	**Calibration interval recommended:**
2019-02-14	2 years

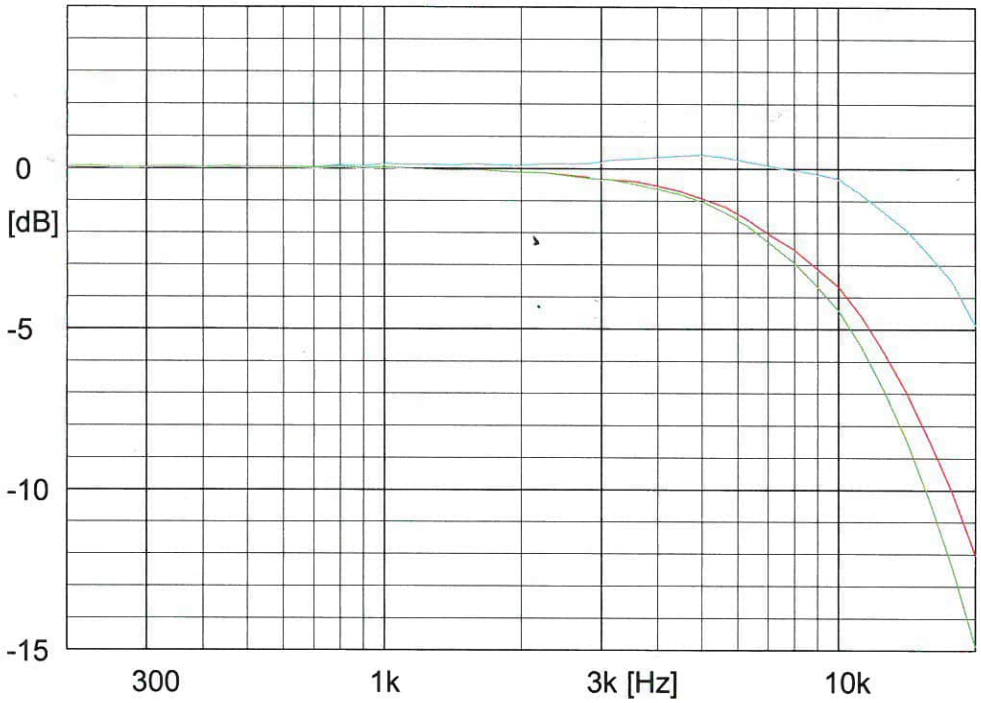
The environmental parameters applicable to this calibration are kept well within limits ensuring negligible deviation on obtained measurement results.

Calibrated by:
Anders Amundsen

Sign.

Norsonic AS, P.B 24, 3421 Lierskogen. Visitor address: Gunnersbråtan 2, Tranby, Norway.
Phone +47 32858900 Fax.: +47 32852208. email: info@norsonic.com

Microphone Calibration Certificate



Norsonic
Type: 1228

Serial no: 03148

Sensitivity: 49,1 mV/Pa
-26,2 dB re. 1 V/Pa
Capacitance: 10,4 pF
Date: 2019-02-13

Signature: E. Hoch

Measurement conditions:

Polarisation voltage:	0,0 V
Pressure:	98,80 kPa
Temperature:	24,4 °C
Relative humidity:	43,0 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure (Actuator) response

Norsonic AS
www.norsonic.com

Microphone Specifications

Calibration of your microphone cartridge has been made with utmost care to meet all your needs for a high quality measurement device. The calibration is traceable to PTB in Germany.

Nominal Specifications

Ambient temperature coeffecient: 0.01 dB/°C
Ambient pressure coeffecient: -1×10^{-5} dB/Pa
Temperature range: -30 to +70°C
Diameter: 13.2 mm with protection grid on,
12.7 mm without protection grid
Thread for preamp mounting: 11.7 mm 60 UNS

Reference Values

Temperature: 23°C
Relative humidity: 50%
Ambient pressure: 101.325 kPa
Test frequency for sensitivity: 250 Hz

Norsonic Warranty Statement

The warranty period for microphones is 36 months after the time of delivery.
The warranty does not include damage due to improper handling, overload, force majeur, or normal wear and tear. The warranty is not granted if the buyer make modifications or repairs without our written consent. Norsonic can choose either to repair or replace microphones having defects due to material or workmanship. Defective goods should be returned to our factory or one of our distributors, and shipments are to be paid and insured by the buyer unless otherwise agreed.

Appendix W
Equipment Inventory List

Delivering a better world

Proposed Residential Development at Keppel								LAeq(12 hours) (7am - 7pm)			LAeq(5 mins) (7am - 7pm)		
Activity by sequence [General activity in sequence]	[Typical construction activity for each general activity]	PME [Breakdown of all Construction Equipment used for that particular construction activity]	ID	No [Quantity of that particular construction equipment used for that particular construction activity]	On-time(%) / daily working hours [how long in percentage that particular equipment will be used in a day]	Approximate no of months for this activity [in months]	Working hours per day [please indicate the working hours of every phase . Eg., 7am to 7pm, 6am to 10pm or 24 hrs]	Day Time (7am - 7pm) Equipment No.	Day Time (7am - 7pm) On-Time (%)	PWL, dB(A)	Day Time (7am - 7pm) Equipment No.	Day Time (7am - 7pm) On-Time (%)	PWL, dB(A)
1. Demolition - 9 months (from 3Q 2022)													
1	Removal of abandon steel element, debris eg damage window frames,doors, internal & external building furnitures etc and delivery steel plates, scaffoldings and hoarding boards for Safety Nets & dust control curtains	Lorry Cranes	LC	2	50%	9	8am to 7pm	2	50%	88	2	100%	91
2	Hacking of minor structure	Hand held Breaker	HB	4	50%	9		4	50%	116	4	100%	119
3	Hacking of major structural on buildings	Excavator mounted with Breaker	ER	4	50%	9		4	50%	103	4	100%	106
4	Removal of foundation & spoils	Excavator	E	4	50%	9		4	50%	99	4	100%	102
5	Removal of Debris	Dump Trucks	DT	4	50%	9		4	50%	100	4	100%	103
2. Clearance for Construction Area - 36 months (from 4Q 2022)										116			119
1	Site Clearance and Earthworks to prepare platform	Excavator	E	8	50%	36	8am to 7pm	8	50%	102	8	100%	105
		Lorry	LC	50	50%			50	50%	102	50	100%	105
		Generator	G	2	50%			2	50%	86	2	100%	89
		Excavator	E	4	50%			4	50%	99	4	100%	102
		Concrete Vibrator	V	1	50%			1	50%	94	1	100%	97
		Air Compressor	C	1	50%			1	50%	80	1	100%	83
		Concrete truck	RMC	1	50%			1	50%	95	1	100%	98
2	Construction Access	Lorry	LC	1	50%	36		1	50%	85	1	100%	88
		Excavator	E	1	50%			1	50%	93	1	100%	96
3. Foundation Works (Substructures including piles and pile caps) - 10 months (from 3Q 2025)										107			110
1	Erection of crawler crane & boring rig	Mobile Crane	MC	1	50%	8	8am to 7pm	1	50%	97	1	100%	100
2	Installation of Casing	Crawler Crane	CCA	3	50%	8		3	50%	112	3	100%	115
3	Boring Work	Bored Piling Machine	BBPM	6	50%	8		6	50%	114	6	100%	117
4	Rebar Cage & Tremix Pipe Installation	Crawler Crane	CCA	3	50%	8		3	50%	112	3	100%	115
5	Concreting works	Ready Mix Concrete Truck & crawler crane	RMC	3	50%	8		3	50%	100	3	100%	103
6	Pile Head hacking	Excavator via breaker and 40 pounds breaker	ER	3	50%	8		3	50%	102	3	100%	105
7	Hot works - welding of steel beams, brackets, etc	Welding Equipment	WE	1	50%	8		1	50%	78	1	100%	81
8	Delivery of Steel sections	40 ft Trailer	T	2	50%	8		2	50%	108	2	100%	111
9	Hoisting of Waler & Struts	Excavator with lifting appliance	E	1	50%	2		1	50%	93	1	100%	96
10	Stage excavation for walers & struts	Excavator with lifting appliance	E	1	50%	2		1	50%	93	1	100%	96
11	Stage Excavation	Excavator	E	4	50%	2		4	50%	99	4	100%	102
		Mini Excavator	ME	2	50%			2	50%	86	2	100%	89
12	Spoi and slurry removal	Dump trucks	DT	2	50%	2		2	50%	97	2	100%	100
4. Superstructure (Prefab installation) - from 2Q 2026										118			121
1	Pumping of water from ground or rain	Temporary Water Pump	TWP	2	50%	40	8am to 7pm	2	50%	93	2	100%	96
2	Power supply for lighting, pumps and temporary ventilation fans	Generator	G	2	50%	40		2	50%	86	2	100%	89
3	Excavation below surface for working platform	Excavator	E	4	50%	40		4	50%	99	4	100%	102
4	Stage Excavation to prepare Lean concrete	Mini Excavator	ME	2	50%	40		2	50%	86	2	100%	89
5	Excavation below surface - removal of spoil	Crane	CR	2	50%	40		2	50%	88	2	100%	91
6	Spoil removal	Dump Trucks	DT	2	50%	40		2	50%	97	2	100%	100
7	Air compressor for cleaning formwork before casting	Compressor	C	1	50%	40		1	50%	80	1	100%	83
8	Handle re-bar & hoisting of false work, scaffolding, temporary working platforms	Mobile Crane	MC	1	50%	40		1	50%	97	1	100%	100
9	For Casting	Ready Mix Concrete Truck	RMC	2	50%	40		2	50%	98	2	100%	101
		Concrete pump	CP	1	50%			1	50%	83	1	100%	86
5. Landscape Works - from 1Q 2028										104			107
1	Landscape works	Generator	G	2	50%	20	8am to 7pm	2	50%	86	2	100%	89
		Excavator mounted sheet pile vibrator	EVD	2	50%	20		2	50%	116	2	100%	119
		Mobile Crane, 50T	M	2	50%	20		2	50%	95	2	100%	98
		welding/cutting equipment	WE	4	50%	20		4	50%	84	4	100%	87
6. Removal of temporary works and re-instatement - from 4Q 2028										116			119
1	Removal of ERSS	Generator	G	2	50%	10	8am to 7pm	2	50%	86	2	100%	89
		Excavator mounted sheetpile vibrator	EVD	2	50%	10		2	50%	116	2	100%	119
		Mobile Crane, 50T	M	2	50%	10		2	50%	95	2	100%	98
		Welding/Cutting equipment	WE	4	50%	10		4	50%	84	4	100%	87
2	Reininstate working area to original condition or required condition	Lorry	LC	2	50%	10		2	50%	88	2	100%	91
										116			119

Appendix X
Airborne Noise Construction Criteria Calculations (Construction Phase)

Delivering a better world

Table 1 Baseline Noise Criteria for $L_{Aeq(12\ hours)}$ for Ecological Receptors

Baseline Noise Levels	Noise Criteria for $L_{Aeq(12hrs)}$, dB (Monday to Saturday)								Noise Criteria for $L_{Aeq(12hrs)}$, dB (Sunday & Public Holiday)							
	N1		N2		N3		N4		N1		N2		N3		N4	
	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am
Overall baseline noise level	56	52	61	54	70	66	58	53	51	47	58	53	69	66	59	52

Table 2 Baseline Noise Criteria for $L_{Aeq(1\ hour)}$ for Ecological Receptors

Baseline Noise Levels	Noise Criteria for $L_{Aeq(1hr)}$, dB (Monday to Saturday)							
	N1		N2		N3		N4	
	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am
Overall baseline noise level	51	48	56	52	69	64	55	51

Table 3 Baseline Noise Criteria for $L_{Aeq(15\ mins)}$ for Ecological Receptors

Type of Affected Premises	Noise Criteria for $L_{Aeq(15mins)}$, dB											
	N1			N2			N3			N4		
	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am
Overall baseline noise level	52	50	48	59	55	51	70	69	63	57	54	51

Table 4 Baseline Noise Criteria for $L_{Aeq(5\ mins)}$ for Ecological Receptors

Baseline Noise Levels	Noise Criteria for $L_{Aeq(5mins)}$, dB (Monday to Saturday)												Noise Criteria $L_{Aeq(5mins)}$, dB (Sunday & Public Holiday)											
	N1			N2			N3			N4			N1			N2			N3			N4		
	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am
Overall baseline noise level	52	50	47	59	56	51	70	69	64	56	54	51	49	49	47	57	56	56	69	69	66	58	55	52

Table 5 Background Noise Correction Calculations for $L_{Aeq(12\ hours)}$ for Human Receptors

Types of Affected Buildings	Noise Criteria for $L_{Aeq(12hrs)}$, dB (Monday to Saturday)								Noise Criteria for $L_{Aeq(12hrs)}$, dB (Sunday & Public Holiday)							
	N1		N2		N3		N4		N1		N2		N3		N4	
	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am
(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.																
Construction noise criteria	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50
Overall baseline noise level	56	52	61	54	70	66	58	53	51	47	58	53	69	66	59	52
Difference between maximum permissible construction noise level and overall baseline noise level	4	2	1	4	10	16	2	3	9	3	2	3	9	16	1	2
Background noise correction factor	2	3	3	1	0	0	2	2	1	2	2	2	1	0	3	2
Corrected noise sensitive receptor criteria	62	55	64	55	70	66	62	55	61	52	62	55	70	66	63	54
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted																
Construction noise criteria	75	NA	75	NA	75	NA	75	NA	75	NA	75	NA	75	NA	75	NA
Overall baseline noise level	56	52	61	54	70	66	58	53	51	47	58	53	69	66	59	52
Difference between maximum permissible construction noise level and overall baseline noise level	19	NA	14	NA	5	NA	17	NA	24	NA	17	NA	6	NA	16	NA
Background noise correction factor	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Corrected noise sensitive receptor criteria	75	NA	75	NA	76	NA	75	NA	75	NA	75	NA	76	NA	75	NA
(c) Buildings (other than those in paragraphs (a) and (b))																
Construction noise criteria	75	65	75	65	75	65	75	65	75	65	75	65	75	65	75	65
Overall baseline noise level	56	52	61	54	70	66	58	53	51	47	58	53	69	66	59	52
Difference between maximum permissible construction noise level and overall baseline noise level	19	13	14	11	5	1	17	13	24	18	17	12	6	1	16	13
Background noise correction factor	0	0	0	0	1	3	0	0	0	0	0	0	1	3	0	0

Types of Affected Buildings	Noise Criteria for $L_{Aeq(12hrs)}$, dB (Monday to Saturday)								Noise Criteria for $L_{Aeq(12hrs)}$, dB (Sunday & Public Holiday)							
	N1		N2		N3		N4		N1		N2		N3		N4	
	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am	7am – 7pm	7pm – 7am
Corrected noise sensitive receptor criteria	75	65	75	65	76	69	75	65	75	65	75	65	76	69	75	65

Table 6 Background Noise Correction Calculations for $L_{Aeq(1\ hour)}$ for Human Receptors

Types of Affected Buildings	Noise Criteria for $L_{Aeq(1hr)}$, dB (Monday to Saturday)							
	N1		N2		N3		N4	
	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am	7pm – 10pm	10pm – 7am
Residential buildings located less than 150 m from the construction site where the noise is being emitted								
Construction noise criteria	65	55	65	55	65	55	65	55
Overall baseline noise level	51	48	56	52	69	64	55	51
Difference between maximum permissible construction noise level and overall baseline noise level	14	7	9	3	4	9	10	4
Background noise correction factor	0	1	1	2	1	1	0	2
Corrected noise sensitive receptor criteria	65	56	66	57	70	65	65	57

Table 7 Background Noise Correction Calculations for $L_{Aeq(15\ mins)}$ for Human Receptors

Type of Affected Premises	Noise Criteria for $L_{Aeq(15mins)}$, dB											
	N1			N2			N3			N4		
	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am
Noise Sensitive Premises such as hospital, home for the aged sick, library, etc.												
Construction noise criteria	60	55	50	60	55	50	60	55	50	60	55	50
Overall baseline noise level	52	50	48	59	55	51	70	69	63	57	54	51
Difference between maximum permissible construction noise level and overall baseline noise level	8	5	2	1	0	1	10	14	13	3	1	1
Background noise correction factor	1	1	2	3	3	3	0	0	0	2	3	3
Corrected noise sensitive receptor criteria	61	56	52	63	58	54	70	69	63	62	58	54
Residential Premises												
Construction noise criteria	65	60	55	65	60	55	65	60	55	65	60	55
Overall baseline noise level	52	50	48	59	55	51	70	69	63	57	54	51
Difference between maximum permissible construction noise level and overall baseline noise level	13	10	7	6	5	4	5	9	8	8	6	4
Background noise correction factor	0	0	1	1	1	2	1	1	1	1	1	1
Corrected noise sensitive receptor criteria	65	60	56	66	61	57	71	70	64	66	61	56
Others												
Construction noise criteria	70	65	60	70	65	60	70	65	60	70	65	60
Overall baseline noise level	52	50	48	59	55	51	70	69	63	57	54	51

Type of Affected Premises	Noise Criteria for $L_{Aeq(15mins)}$, dB											
	N1			N2			N3			N4		
	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am	7am - 7pm	7pm - 11pm	11pm - 7am
Difference between maximum permissible construction noise level and overall baseline noise level	18	15	12	11	10	9	0	4	3	13	11	9
Background noise correction factor	0	0	0	0	1	1	3	2	2	0	0	1
Corrected noise sensitive receptor criteria	70	65	60	70	66	61	73	71	65	70	65	61

Table 8 Background Noise Correction Calculations for $L_{Aeq(5\ mins)}$ for Human Receptors

Types of Affected Buildings	Noise Criteria for $L_{Aeq(5mins)}$, dB (Monday to Saturday)												Noise Criteria $L_{Aeq(5mins)}$, dB (Sunday & Public Holiday)											
	N1			N2			N3			N4			N1			N2			N3			N4		
	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am
(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.																								
Construction noise criteria	75	55	55	75	55	55	75	55	55	75	55	55	75	55	55	75	55	55	75	55	55	75	55	55
Overall baseline noise level	52	50	47	59	56	51	70	69	64	56	54	51	49	49	47	57	56	56	69	69	66	58	55	52
Difference between maximum permissible construction noise level and overall baseline noise level	23	5	8	16	1	4	5	14	9	19	1	4	26	6	8	18	1	1	6	14	11	17	0	3
Background noise correction factor	0	1	1	0	3	2	1	0	1	0	3	1	0	1	1	0	3	3	1	0	0	0	3	2
Corrected noise sensitive receptor criteria	75	56	56	75	59	57	76	69	65	75	58	56	75	56	56	75	59	59	76	69	66	75	58	57
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted																								
Construction noise criteria	90	70	55	90	70	55	90	70	55	90	70	55	75	55	55	75	55	55	75	55	55	75	55	55
Overall baseline noise level	52	50	47	59	56	51	70	69	64	56	54	51	49	49	47	57	56	56	69	69	66	58	55	52
Difference between maximum permissible construction noise level and overall baseline noise level	38	20	8	31	14	4	20	1	9	34	16	4	26	6	8	18	1	1	6	14	11	17	0	3
Background noise correction factor	0	0	1	0	0	2	0	3	1	0	0	1	0	1	1	0	3	3	1	0	0	0	3	2
Corrected noise sensitive receptor criteria	90	70	56	90	70	57	90	73	65	90	70	56	75	56	56	75	59	59	76	69	66	75	58	57
(c) Buildings (other than those in paragraphs (a) and (b))																								
Construction noise criteria	90	70	70	90	70	70	90	70	70	90	70	70	90	70	70	90	70	70	90	70	70	90	70	70
Overall baseline noise level	52	50	47	59	56	51	70	69	64	56	54	51	49	49	47	57	56	56	69	69	66	58	55	52

Types of Affected Buildings	Noise Criteria for $L_{Aeq(5mins)}$, dB (Monday to Saturday)												Noise Criteria $L_{Aeq(5mins)}$, dB (Sunday & Public Holiday)											
	N1			N2			N3			N4			N1			N2			N3			N4		
	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 10pm	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am	7am – 7pm	7pm – 7am	10pm – 7am
Difference between maximum permissible construction noise level and overall baseline noise level	38	20	23	31	14	19	20	1	6	34	16	19	41	21	23	33	14	14	21	1	4	32	15	18
Background noise correction factor	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0
Corrected noise sensitive receptor criteria	90	70	70	90	70	70	90	73	71	90	70	70	90	70	70	90	70	70	90	73	71	90	70	70

Table 9 Project Criteria for Construction Noise Impact Assessment

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(12hours)}$, dB		Noise Criteria for $L_{Aeq(1hour)}$, dB		Noise Criteria for $L_{Aeq(5mins)}$, dB		
		7am - 7pm	7pm - 7am	7pm - 10pm	10pm - 7am	7am - 7pm	7pm - 10pm	10pm - 7am
Monday to Saturday								
N1	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55	NA	NA	75	56	56
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	65	56	90	70	56
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	NA	NA	90	70	70
N2	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	64	55	NA	NA	75	59	57
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	66	57	90	70	57
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	NA	NA	90	70	70
N3	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	70	66	NA	NA	76	69	65
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	76	NA	70	65	90	73	65
	(c) Buildings (other than those in paragraphs (a) and (b))	76	69	NA	NA	90	73	71
N4	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55	NA	NA	75	58	56
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	65	57	90	70	56
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	NA	NA	90	70	70

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(12hours)}$, dB		Noise Criteria for $L_{Aeq(5mins)}$, dB		
		7am - 7pm	7pm - 7am	7am - 7pm	7pm - 10pm	10pm - 7am
Sunday and Public Holiday						
N1	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	61	52	75	56	56
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	75	56	56
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	90	70	70
N2	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	55	75	59	59
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	75	59	59
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	90	70	70
N3	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	70	66	76	69	66
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	76	69	66
	(c) Buildings (other than those in paragraphs (a) and (b))	76	69	90	73	71
N4	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	63	54	75	58	57
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	NA	75	58	57
	(c) Buildings (other than those in paragraphs (a) and (b))	75	65	90	70	70

Table 10 Project Criteria for Operational Noise Impact Assessment (ACMV)

No	Types of Affected Buildings	Noise Criteria for $L_{Aeq(15\ min)}$, dB		
		Day 7am - 7pm	Evening 7pm - 11pm	Night 11pm - 7am
N1	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	61	56	52
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	65	60	56
	(c) Buildings (other than those in paragraphs (a) and (b))	70	65	60
N2	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	63	58	54
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	66	61	57
	(c) Buildings (other than those in paragraphs (a) and (b))	70	66	61
N3	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	70	69	63
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	71	70	64
	(c) Buildings (other than those in paragraphs (a) and (b))	73	71	65
N4	(a) Hospitals, schools, institutions of higher learning, homes for the aged or sick etc.	62	58	54
	(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	66	61	56
	(c) Buildings (other than those in paragraphs (a) and (b))	70	65	61

Appendix Y
List of Airborne Noise Ecological Receptors

Delivering a better world

No.	Taxon	Family	Species	Common Name	Global Status	Local Status	Species of Conservation Significance	Probable Species	Recorded	Auditory-sensitivity
1	Butterfly	Hesperiidae	*Ampittia dioscorides camertes*	Bush hopper	Not Assessed	Not Assessed	No	Yes	No	2
2	Butterfly	Hesperiidae	*Ancistroides nigrita maura*	Chocolate demon	Not Assessed	Not Assessed	No	Yes	No	2
3	Butterfly	Hesperiidae	*Astictopterus jama jama*	Forest hopper	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
4	Butterfly	Hesperiidae	*Baoris farri farri*	Bamboo paintbrush swift	Not Assessed	Not Assessed	No	Yes	No	2
5	Butterfly	Hesperiidae	*Baoris oceia*	Paintbrush swift	Not Assessed	Not Assessed	No	Yes	No	2
6	Butterfly	Hesperiidae	*Borbo cinnara*	Formosan swift	Not Assessed	Endangered	Yes	Yes	No	2
7	Butterfly	Hesperiidae	*Burara harisa consobrina*	Orange awlet	Not Assessed	Not Assessed	No	Yes	No	2
8	Butterfly	Hesperiidae	*Caltoris cormasa*	Full stop swift	Not Assessed	Not Assessed	No	Yes	No	2
9	Butterfly	Hesperiidae	*Cephrenes acalle niasicus*	Plain palm dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
10	Butterfly	Hesperiidae	*Erionota hiraca apicalis*	White tipped skipper	Not Assessed	Not Assessed	No	Yes	No	2
11	Butterfly	Hesperiidae	*Erionota thrax thrax*	Banana skipper	Not Assessed	Not Assessed	No	Yes	Yes	2
12	Butterfly	Hesperiidae	*Erionota torus*	Torus skipper	Not Assessed	Not Assessed	No	Yes	No	2
13	Butterfly	Hesperiidae	*Hasora chromus chromus*	Common banded awl	Not Assessed	Not Assessed	No	Yes	Yes	2
14	Butterfly	Hesperiidae	*Hidari irava*	Coconut skipper	Not Assessed	Not Assessed	No	Yes	No	2
15	Butterfly	Hesperiidae	*Iambrix salsala salsala*	Chestnut bob	Not Assessed	Not Assessed	No	Yes	Yes	2
16	Butterfly	Hesperiidae	*Matapa aria*	Common redeye	Not Assessed	Not Assessed	No	Yes	No	2
17	Butterfly	Hesperiidae	*Notocrypta paralysos varians*	Banded demon	Not Assessed	Not Assessed	No	Yes	No	2
18	Butterfly	Hesperiidae	*Odontoptilum angulatum angulatum*	Chestnut angle	Not Assessed	Not Assessed	No	Yes	No	2
19	Butterfly	Hesperiidae	*Oriens gola pseudolus*	Common dartlet	Not Assessed	Not Assessed	No	Yes	No	2
20	Butterfly	Hesperiidae	*Pelopidas assamensis*	Great swift	Not Assessed	Not Assessed	No	Yes	No	2
21	Butterfly	Hesperiidae	*Pelopidas conjunctus conjunctus*	Conjoined swift	Not Assessed	Not assessed	No	Yes	No	2
22	Butterfly	Hesperiidae	*Pelopidas mathias mathias*	Small branded swift	Not Assessed	Not Assessed	No	Yes	Yes	2
23	Butterfly	Hesperiidae	*Plastingia naga*	Chequered lancer	Not Assessed	Not Assessed	No	Yes	No	2
24	Butterfly	Hesperiidae	*Polytremis lubricans lubricans*	Contiguous swift	Not Assessed	Not Assessed	No	Yes	No	2
25	Butterfly	Hesperiidae	*Potanthus omaha omaha*	Lesser dart	Not Assessed	Not Assessed	No	Yes	Yes	2
26	Butterfly	Hesperiidae	*Potanthus serina*	Large dart	Not Assessed	Not assessed	No	Yes	No	2
27	Butterfly	Hesperiidae	*Potanthus trachala tytleri*	Detached dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
28	Butterfly	Hesperiidae	*Pyroneura latoia latoia*	Yellow vein lancer	Not Assessed	Not Assessed	No	Yes	No	2
29	Butterfly	Hesperiidae	*Suastus gremius gremius*	Palm bob	Not Assessed	Not Assessed	No	Yes	No	2
30	Butterfly	Hesperiidae	*Taractrocera archias quinta*	Yellow grass dart	Not Assessed	Not Assessed	No	Yes	No	2
31	Butterfly	Hesperiidae	*Taractrocera ardonia lamia*	Spotted grass dart	Not Assessed	Not Assessed	No	Yes	No	2
32	Butterfly	Hesperiidae	*Telicota augias augias*	Pale palm dart	Not Assessed	Not Assessed	No	Yes	No	2
33	Butterfly	Hesperiidae	*Telicota besta bina*	Besta palm dart	Not Assessed	Not Assessed	No	Yes	No	2
34	Butterfly	Hesperiidae	*Telicota colon stinga*	Common palm dart	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
35	Butterfly	Hesperiidae	*Telicota linna*	Linna palm dart	Not Assessed	Not assessed	No	Yes	No	2
36	Butterfly	Hesperiidae	*Udaspes folus*	Grass demon	Not Assessed	Not Assessed	No	Yes	No	2
37	Butterfly	Hesperiidae	*Unkana ambasa batara*	Hoary palmer	Not Assessed	Not Assessed	No	Yes	No	2
38	Butterfly	Hesperiidae	*Zographetus doxus*	Spotted flitter	Not Assessed	Not Assessed	No	Yes	No	2
39	Butterfly	Hesperiidae	*Badamia exclamationis*	Brown awl	Not Assessed	Not Assessed	No	Yes	No	2
40	Butterfly	Hesperiidae	*Cephrenes trichopepla*	Yellow palm dart	Not Assessed	Not assessed	No	Yes	No	2
41	Butterfly	Hesperiidae	*Hasora badra badra*	Common awl	Not Assessed	Not Assessed	No	Yes	No	2
42	Butterfly	Hesperiidae	*Pelopidas agna agna*	Bengal swift	Not Assessed	Endangered	Yes	Yes	No	2
43	Butterfly	Lycaenidae	*Acytolepis puspa lambi*	Common hedge blue	Not Assessed	Not Assessed	No	Yes	No	2
44	Butterfly	Lycaenidae	*Allotinus unicolor unicolor*	Lesser darkwing	Not Assessed	Not Assessed	No	Yes	No	2
45	Butterfly	Lycaenidae	*Ancema blanka blanka*	Silver royal	Not Assessed	Critically Endangered	Yes	Yes	No	2
46	Butterfly	Lycaenidae	*Anthene emolus goberus*	Ciliate blue	Not Assessed	Not Assessed	No	Yes	No	2
47	Butterfly	Lycaenidae	*Anthene lycaenina miya*	Pointed ciliate blue	Not Assessed	Not Assessed	No	Yes	Yes	2
48	Butterfly	Lycaenidae	*Arhopala amphimuta amphimuta*	NA	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
49	Butterfly	Lycaenidae	*Arhopala major major*	NA	Not Assessed	Data Deficient	No	Yes	No	2
50	Butterfly	Lycaenidae	*Bindahara phocides phocides*	Plane	Not Assessed	Not Assessed	No	Yes	No	2
51	Butterfly	Lycaenidae	*Catochrysops panormus exiguus*	Silver forget-me-not	Not Assessed	Not Assessed	No	Yes	Yes	2
52	Butterfly	Lycaenidae	*Catochrysops strabo strabo*	Forget-me-not	Not Assessed	Not Assessed	No	Yes	No	2
53	Butterfly	Lycaenidae	*Catopyrops ancyra*	Ancyra blue	Not Assessed	Vulnerable	Yes	Yes	No	2
54	Butterfly	Lycaenidae	*Cheritra freja frigga*	Common imperial	Least Concern	Not Assessed	No	Yes	No	2
55	Butterfly	Lycaenidae	*Curetis saronis sumatrana*	Sumatran sunbeam	Not Assessed	Not Assessed	No	Yes	No	2
56	Butterfly	Lycaenidae	*Deudorix elioti*	Eliot's cornelian	Not Assessed	Not Assessed	No	Yes	No	2
57	Butterfly	Lycaenidae	*Deudorix epijarbas cinnabarus*	Cornelian	Not Assessed	Not Assessed	No	Yes	No	2
58	Butterfly	Lycaenidae	*Drupadia ravindra moorei*	Common posy	Not Assessed	Not Assessed	No	Yes	No	2
59	Butterfly	Lycaenidae	*Euchrysops cnejus cnejus*	Gram blue	Not Assessed	Not Assessed	No	Yes	No	2
60	Butterfly	Lycaenidae	*Flos apidanus saturatus*	Plain plushblue	Not Assessed	Not Assessed	No	Yes	No	2
61	Butterfly	Lycaenidae	*Horaga syrinx maenala*	Ambon onyx	Not Assessed	Not Assessed	No	Yes	No	2
62	Butterfly	Lycaenidae	*Hypolycaena erylus teatus*	Common tit	Not Assessed	Not Assessed	No	Yes	No	2
63	Butterfly	Lycaenidae	*Ionolyce helicon merguiana*	Pointed line blue	Not Assessed	Not Assessed	No	Yes	No	2
64	Butterfly	Lycaenidae	*Iraota rochana boswelliana*	Scarce silverstreak	Not Assessed	Not Assessed	No	Yes	No	2
65	Butterfly	Lycaenidae	*Jacoona anasuja anasuja*	Great imperial	Not Assessed	Data Deficient	No	Yes	No	2
66	Butterfly	Lycaenidae	*Jamides alecto ageladas*	Metallic caerulean	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
67	Butterfly	Lycaenidae	*Jamides bochus nabonassar*	Dark caerulean	Not Assessed	Not Assessed	No	Yes	Yes	2
68	Butterfly	Lycaenidae	*Jamides celeno aelianus*	Common caerulean	Not Assessed	Not Assessed	No	Yes	No	2
69	Butterfly	Lycaenidae	*Jamides elpis pseudelpis*	Glistening caerulean	Not Assessed	Data Deficient	No	Yes	No	2
70	Butterfly	Lycaenidae	*Lampides boeticus*	Pea blue	Not Assessed	Not Assessed	No	Yes	No	2
71	Butterfly	Lycaenidae	*Liphyra brassolis abbreviata*	Moth butterfly	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
72	Butterfly	Lycaenidae	*Logania marmorata damis*	Pale mottle	Not Assessed	Not Assessed	No	Yes	No	2
73	Butterfly	Lycaenidae	*Loxura atymnus fuconius*	Yamfly	Not Assessed	Not Assessed	No	Yes	No	2
74	Butterfly	Lycaenidae	*Megisba malaya sikkima*	Malayan	Not Assessed	Not Assessed	No	Yes	No	2
75	Butterfly	Lycaenidae	*Miletus biggsii biggsii*	Bigg's brownwing	Not Assessed	Not Assessed	No	Yes	No	2
76	Butterfly	Lycaenidae	*Miletus gopara gopara*	NA	Not Assessed	Nationally Extinct	Yes	Yes	No	2
77	Butterfly	Lycaenidae	*Miletus symethus petronius*	Blue brownwing/great brownie	Not Assessed	Not Assessed	No	Yes	No	2
78	Butterfly	Lycaenidae	*Nacaduba angusta kerriana*	White fourline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
79	Butterfly	Lycaenidae	*Nacaduba berenice icena*	Rounded sixline blue	Not Assessed	Not Assessed	No	Yes	No	2
80	Butterfly	Lycaenidae	*Nacaduba beroe neon*	Opaque sixline blue	Not Assessed	Not Assessed	No	Yes	No	2
81	Butterfly	Lycaenidae	*Nacaduba biocellata*	Two spotted line blue	Not Assessed	Not Assessed	No	Yes	No	2
82	Butterfly	Lycaenidae	*Nacaduba kurava nemana*	Transparent sixline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	Yes	2
83	Butterfly	Lycaenidae	*Nacaduba pactolus odon*	Large fourline blue	Not Assessed	Nationally Extinct (Rediscovered)	No	Yes	No	2
84	Butterfly	Lycaenidae	*Petrelaea dana*	Dingy line blue	Not Assessed	Not Assessed	No	Yes	No	2
85	Butterfly	Lycaenidae	*Pratapa deva relata*	White royal	Not Assessed	Critically Endangered	Yes	Yes	No	2
86	Butterfly	Lycaenidae	*Prosotas aluta nanda*	Barred line blue	Not Assessed	Not assessed	No	Yes	No	2
87	Butterfly	Lycaenidae	*Prosotas dubiosa lumpura*	Tailless line blue	Not Assessed	Not Assessed	No	Yes	Yes	2
88	Butterfly	Lycaenidae	*Prosotas nora superdates*	Common line blue	Not Assessed	Not Assessed	No	Yes	No	2
89	Butterfly	Lycaenidae	*Rapala iarbus iarbus*	Common red flash	Not Assessed	Not Assessed	No	Yes	No	2
90	Butterfly	Lycaenidae	*Rapala manea chozeba*	Slate flash	Not Assessed	Not Assessed	No	Yes	Yes	2
91	Butterfly	Lycaenidae	*Rapala pheretima sequeira*	Copper flash	Not Assessed	Not Assessed	No	Yes	Yes	2
92	Butterfly	Lycaenidae	*Rapala varuna orseis*	Indigo flash	Not Assessed	Not Assessed	No	Yes	No	2
93	Butterfly	Lycaenidae	*Remelana jangala travana*	Chocolate royal	Not Assessed	Not Assessed	No	Yes	No	2
94	Butterfly	Lycaenidae	*Semanga superba deliciosa*	NA	Not Assessed	Not Assessed	No	Yes	No	2
95	Butterfly	Lycaenidae	*Spalgis epius epius*	Apefly	Not Assessed	Not Assessed	No	Yes	No	2
96	Butterfly	Lycaenidae	*Spindasis lohita senama*	Long banded silverline	Not Assessed	Not Assessed	No	Yes	No	2
97	Butterfly	Lycaenidae	*Spindasis syama terana*	Club silverline	Not Assessed	Not Assessed	No	Yes	No	2
98	Butterfly	Lycaenidae	*Surendra vivarna amisena*	Acacia blue	Not Assessed	Not Assessed	No	Yes	No	2
99	Butterfly	Lycaenidae	*Tajuria cippus maxentius*	Peacock royal	Not Assessed	Not Assessed	No	Yes	No	2
100	Butterfly	Lycaenidae	*Tajuria dominus dominus*	NA	Not Assessed	Not Assessed	No	Yes	No	2
101	Butterfly	Lycaenidae	*Tajuria mantra mantra*	Felder's royal	Not Assessed	Not Assessed	No	Yes	No	2
102	Butterfly	Lycaenidae	*Zeltus amasa maximinianus*	Fluffy tit	Not Assessed	Not Assessed	No	Yes	No	2
103	Butterfly	Lycaenidae	*Zizeeria maha serica*	Pale grass blue	Not Assessed	Not Assessed	No	Yes	Yes	2
104	Butterfly	Lycaenidae	*Zizina otis lampa*	Lesser grass blue	Not Assessed	Not Assessed	No	Yes	Yes	2
105	Butterfly	Lycaenidae	*Zizula hylax pygmaea*	Pygmy grass blue	Not Assessed	Not Assessed	No	Yes	Yes	2
106	Butterfly	Lycaenidae	*Arhopala centaurus nakula*	Centaur oakblue	Not Assessed	Not Assessed	No	Yes	No	2
107	Butterfly	Lycaenidae	*Curetis santana malayica*	Malayan sunbeam	Not Assessed	Not Assessed	No	Yes	No	2
108	Butterfly	Lycaenidae	*Hypolycaena thecloides thecloides*	Dark tit	Not Assessed	Not Assessed	No	Yes	No	2
109	Butterfly	Lycaenidae	*Nacaduba pavana singapura*	Singapore fourline blue	Not Assessed	Not Assessed	No	Yes	No	2
110	Butterfly	Lycaenidae	*Rapala suffusa barthema*	Suffused flash	Not Assessed	Not Assessed	No	Yes	No	2
111	Butterfly	Nymphalidae (Brush Foots)	*Cupha erymanthis lotis*	Rustic	Not Assessed	Not Assessed	No	Yes	No	2
112	Butterfly	Nymphalidae (Brush Foots)	*Doleschallia bisaltide bisaltide*	Autumn leaf	Not Assessed	Not assessed	No	Yes	No	2
113	Butterfly	Nymphalidae (Brush Foots)	*Elymnias panthera panthera*	Tawny palmfly	Not Assessed	Not Assessed	No	Yes	No	2
114	Butterfly	Nymphalidae (Brush Foots)	*Euploea phaenareta castelnaui*	King crow	Not Assessed	Not Assessed	No	Yes	No	2
115	Butterfly	Nymphalidae (Brush Foots)	*Euploea radamanthus radamanthus*	Magpie crow	Not Assessed	Not Assessed	No	Yes	No	2
116	Butterfly	Nymphalidae (Brush Foots)	*Euripus nyctelius euploeoides*	Courtesan	Not Assessed	Critically Endangered	Yes	Yes	No	2
117	Butterfly	Nymphalidae (Brush Foots)	*Euthalia aconthea gurda*	Baron	Not Assessed	Not Assessed	No	Yes	Yes	2
118	Butterfly	Nymphalidae (Brush Foots)	*Euthalia adonia pinwilli*	Green baron	Not Assessed	Not Assessed	No	Yes	No	2
119	Butterfly	Nymphalidae (Brush Foots)	*Euthalia monina monina*	Malay baron	Not Assessed	Not Assessed	No	Yes	No	2
120	Butterfly	Nymphalidae (Brush Foots)	*Faunis canens arcesilas*	Common faun	Not Assessed	Not Assessed	No	Yes	No	2
121	Butterfly	Nymphalidae (Brush Foots)	*Hypolimnas bolina bolina*	Great eggfly	Not Assessed	Not Assessed	No	Yes	No	2
122	Butterfly	Nymphalidae (Brush Foots)	*Junonia almana javana*	Peacock pansy	Least Concern	Not Assessed	No	Yes	Yes	2
123	Butterfly	Nymphalidae (Brush Foots)	*Junonia atlites atlites*	Grey pansy	Not Assessed	Not Assessed	No	Yes	No	2
124	Butterfly	Nymphalidae (Brush Foots)	*Junonia hedonia ida*	Chocolate pansy	Not Assessed	Not Assessed	No	Yes	Yes	2
125	Butterfly	Nymphalidae (Brush Foots)	*Junonia orithya wallacei*	Blue pansy	Not Assessed	Not Assessed	No	Yes	No	2
126	Butterfly	Nymphalidae (Brush Foots)	*Lethe europa malaya*	Bamboo tree brown	Not Assessed	Not Assessed	No	Yes	No	2
127	Butterfly	Nymphalidae (Brush Foots)	*Moduza procris milonia*	Commander	Not Assessed	Not Assessed	No	Yes	No	2
128	Butterfly	Nymphalidae (Brush Foots)	*Mycalesis mineus macromalayana*	Dark brand bush brown	Not Assessed	Not Assessed	No	Yes	Yes	2
129	Butterfly	Nymphalidae (Brush Foots)	*Mycalesis perseoides perseoides*	Burmese bush brown	Not Assessed	Data Deficient	No	Yes	Yes	2
130	Butterfly	Nymphalidae (Brush Foots)	*Mycalesis perseus cepheus*	Dingy bush brown	Not Assessed	Not Assessed	No	Yes	No	2
131	Butterfly	Nymphalidae (Brush Foots)	*Mycalesis visala phamis*	Long brand bush brown	Not Assessed	Not Assessed	No	Yes	No	2
132	Butterfly	Nymphalidae (Brush Foots)	*Neptis hylas papaja*	Common sailor	Not Assessed	Not Assessed	No	Yes	No	2
133	Butterfly	Nymphalidae (Brush Foots)	*Orsotriaena medus cinerea*	Dark grass brown	Not Assessed	Not Assessed	No	Yes	No	2
134	Butterfly	Nymphalidae (Brush Foots)	*Pantoporia paraka paraka*	Perak lascar	Not Assessed	Not Assessed	No	Yes	No	2
135	Butterfly	Nymphalidae (Brush Foots)	*Parantica agleoides agleoides*	Dark glassy tiger	Not Assessed	Not Assessed	No	Yes	No	2
136	Butterfly	Nymphalidae (Brush Foots)	*Phaedyma columella singa*	Short banded sailor	Not Assessed	Not Assessed	No	Yes	Yes	2
137	Butterfly	Nymphalidae (Brush Foots)	*Phalanta phalantha phalantha*	Leopard	Not Assessed	Not Assessed	No	Yes	No	2
138	Butterfly	Nymphalidae (Brush Foots)	*Polyura schreiber tisamenus*	Blue nawab	Not Assessed	Not Assessed	No	Yes	No	2
139	Butterfly	Nymphalidae (Brush Foots)	*Tanaecia iapis puseda*	Horsfield's baron	Not Assessed	Not Assessed	No	Yes	No	2
140	Butterfly	Nymphalidae (Brush Foots)	*Tanaecia pelea pelea*	Malay viscount	Not Assessed	Not Assessed	No	Yes	No	2
141	Butterfly	Nymphalidae (Brush Foots)	*Vindula dejone erotella*	Cruiser	Not Assessed	Not Assessed	No	Yes	No	2
142	Butterfly	Nymphalidae (Brush Foots)	*Ypthima baldus newboldi*	Common five-ring	Not Assessed	Not Assessed	No	Yes	No	2
143	Butterfly	Nymphalidae (Brush Foots)	*Ypthima horsfieldii humei*	Malayan five-ring	Not Assessed	Not Assessed	No	Yes	No	2
144	Butterfly	Nymphalidae (Brush Foots)	*Ypthima huebneri*	Common four-ring	Not Assessed	Not Assessed	No	Yes	No	2
145	Butterfly	Nymphalidae (Brush Foots)	*Ypthima pandocus corticaria*	Common three-ring	Not Assessed	Not Assessed	No	Yes	No	2
146	Butterfly	Nymphalidae (Brush Foots)	*Acraea terpsicore*	Tawny coster	Not Assessed	Not assessed	No	Yes	Yes	2
147	Butterfly	Nymphalidae (Brush Foots)	*Amathusia phidippus phidippus*	Palm king	Not Assessed	Not Assessed	No	Yes	Yes	2
148	Butterfly	Nymphalidae (Brush Foots)	*Cethosia cyane*	Leopard lacewing	Not Assessed	Not assessed	No	Yes	No	2
149	Butterfly	Nymphalidae (Brush Foots)	*Danaus chrysippus chrysippus*	Plain tiger	Not Assessed	Not Assessed	No	Yes	Yes	2
150	Butterfly	Nymphalidae (Brush Foots)	*Danaus genutia genutia*	Common tiger	Not Assessed	Not Assessed	No	Yes	Yes	2
151	Butterfly	Nymphalidae (Brush Foots)	*Danaus melanippus hegesippus*	Black veined tiger	Not Assessed	Not Assessed	No	Yes	No	2
152	Butterfly	Nymphalidae (Brush Foots)	*Elymnias hypermnestra agina*	Common palmfly	Not Assessed	Not Assessed	No	Yes	Yes	2
153	Butterfly	Nymphalidae (Brush Foots)	*Euploea mulciber mulciber*	Striped blue crow	Not Assessed	Not Assessed	No	Yes	No	2
154	Butterfly	Nymphalidae (Brush Foots)	*Hypolimnas anomala anomala*	Malayan eggfly	Not Assessed	Not Assessed	No	Yes	No	2
155	Butterfly	Nymphalidae (Brush Foots)	*Hypolimnas bolina jacintha*	Jacintha eggfly	Not Assessed	Not Assessed	No	Yes	No	2

156	Butterfly	Nymphalidae (Brush Foots)	*Ideopsis vulgaris macrina*	Blue glassy tiger	Not Assessed	Not Assessed	No	Yes	No	2
157	Butterfly	Nymphalidae (Brush Foots)	*Lebadea martha parkeri*	Knight	Not Assessed	Not Assessed	No	Yes	No	2
158	Butterfly	Nymphalidae (Brush Foots)	*Melanitis leda leda*	Common evening brown	Not Assessed	Not Assessed	No	Yes	No	2
159	Butterfly	Nymphalidae (Brush Foots)	*Polyura hebe plautus*	Plain nawab	Not Assessed	Not Assessed	No	Yes	Yes	2
160	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Chilasa clytia clytia*	Common mime	Not Assessed	Not Assessed	No	Yes	No	2
161	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Graphium agamemnon agamemnon*	Tailed jay	Not Assessed	Not Assessed	No	Yes	No	2
162	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Graphium antiphates itamputi*	Fivebar swordtail	Not Assessed	Not Assessed	No	Yes	No	2
163	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Graphium sarpedon luctatius*	Common bluebottle	Not Assessed	Not Assessed	No	Yes	No	2
164	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Pachliopta aristolochiae asteris*	Common rose	Not Assessed	Vulnerable	Yes	Yes	No	2
165	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Papilio demoleus malayanus*	Lime butterfly	Not Assessed	Not Assessed	No	Yes	No	2
166	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Troides helena cerberus*	Common birdwing	Not Assessed; CITES protected (Appendix II)	Vulnerable	Yes	Yes	No	2
167	Butterfly	Papilionidae (Swallowtails & Birdwings)	*Papilio polytes romulus*	Common mormon	Not Assessed	Not Assessed	No	Yes	Yes	2
168	Butterfly	Pieridae (Whites & Sulphurs)	*Catopsilia pomona pomona*	Lemon emigrant	Not Assessed	Not Assessed	No	Yes	Yes	2
169	Butterfly	Pieridae (Whites & Sulphurs)	*Catopsilia pyranthe pyranthe*	Mottled emigrant	Not Assessed	Not Assessed	No	Yes	No	2
170	Butterfly	Pieridae (Whites & Sulphurs)	*Catopsilia scylla cornelia*	Orange emigrant	Not Assessed	Not Assessed	No	Yes	Yes	2
171	Butterfly	Pieridae (Whites & Sulphurs)	*Eurema andersonii andersonii*	Anderson's grass yellow	Not Assessed	Not Assessed	No	Yes	No	2
172	Butterfly	Pieridae (Whites & Sulphurs)	*Eurema blanda snelleni*	Three spot grass yellow	Not Assessed	Not Assessed	No	Yes	Yes	2
173	Butterfly	Pieridae (Whites & Sulphurs)	*Eurema simulatrix tecmessa*	Forest grass yellow	Not Assessed	Not Assessed	No	Yes	No	2
174	Butterfly	Pieridae (Whites & Sulphurs)	*Leptosia nina malayana*	Psyche	Not Assessed	Not Assessed	No	Yes	No	2
175	Butterfly	Pieridae (Whites & Sulphurs)	*Appias libythea olferna*	Striped albatross	Not Assessed	Not Assessed	No	Yes	Yes	2
176	Butterfly	Pieridae (Whites & Sulphurs)	*Delias hyparete metarete*	Painted jezebel	Not Assessed	Not Assessed	No	Yes	Yes	2
177	Butterfly	Pieridae (Whites & Sulphurs)	*Eurema hecabe contubernalis*	Common grass yellow	Not Assessed	Not Assessed	No	Yes	Yes	2
178	Butterfly	Riodinidae (Metalmarks)	*Abisara saturata kausambioides*	Malayan plum judy	Not Assessed	Not Assessed	No	Yes	Yes	2
179	Butterfly	Lycaenidae	*Chilades pandava pandava*	Cycad blue	Not Assessed	Not Assessed	No	Yes	Yes	2
180	Odonate	Aeshnidae	*Anax guttatus*	Emperor	Least Concern	Least Concern	No	Yes	No	3
181	Odonate	Aeshnidae	*Gynacantha basiguttata*	Spoon-tailed duskhawker	Least Concern	Vulnerable	Yes	Yes	No	3
182	Odonate	Aeshnidae	*Gynacantha subinterrupta*	Dingy duskhawker	Least Concern	Least Concern	No	Yes	No	3
183	Odonate	Aeshnidae	*Gynacantha dohrni*	Spear-tail duskhawker	Not Assessed	Least Concern	No	Yes	Yes	3
184	Odonate	Coenagrionidae	*Agriocnemis femina*	Variable wisp	Least Concern	Least Concern	No	Yes	Yes	3
185	Odonate	Coenagrionidae	*Agriocnemis rubescens*	Variable sprite	Least Concern	Least Concern	No	Yes	No	3
186	Odonate	Coenagrionidae	*Ceriagrion cerinorubellum*	Ornate coraltail	Least Concern	Least Concern	No	Yes	Yes	3
187	Odonate	Coenagrionidae	*Ischnura senegalensis*	Common bluetail	Least Concern	Least Concern	No	Yes	Yes	3
188	Odonate	Coenagrionidae	*Mortonagrion arthuri*	Arthur's midget	Near Threatened	Vulnerable	Yes	Yes	No	3
189	Odonate	Coenagrionidae	*Pseudagrion australasiae*	Look-alike sprite	Least Concern	Least Concern	No	Yes	No	3
190	Odonate	Coenagrionidae	*Pseudagrion microcephalum*	Blue sprite	Least Concern	Least Concern	No	Yes	Yes	3
191	Odonate	Coenagrionidae	*Agriocnemis pygmaea*	Wandering wisp	Least Concern	Endangered	Yes	Yes	No	3
192	Odonate	Corduliidae	*Epophthalmia vittigera*	Pond cruiser	Least Concern	Least Concern	No	Yes	No	3
193	Odonate	Corduliidae	*Hemicordulia tenera*	Emerald	Least Concern	Endangered	Yes	Yes	No	3
194	Odonate	Gomphidae	*Ictinogomphus decoratus*	Common flangetail	Least Concern	Least Concern	No	Yes	Yes	3
195	Odonate	Libellulidae	*Acisoma panorpoides*	Trumpet tail	Least Concern	Least Concern	No	Yes	No	3
196	Odonate	Libellulidae	*Aethriamanta aethra*	Blue adjudant	Least Concern	Least Concern	No	Yes	No	3
197	Odonate	Libellulidae	*Aethriamanta brevipennis*	Scarlet adjudant	Least Concern	Least Concern	No	Yes	No	3
198	Odonate	Libellulidae	*Aethriamanta gracilis*	Pond adjudant	Least Concern	Least Concern	No	Yes	No	3
199	Odonate	Libellulidae	*Agrionoptera insignis*	Grenadier	Least Concern	Least Concern	No	Yes	Yes	3
200	Odonate	Libellulidae	*Brachydiplax chalybea*	Blue dasher	Least Concern	Least Concern	No	Yes	Yes	3
201	Odonate	Libellulidae	*Brachythemis contaminata*	Common amberwing	Least Concern	Least Concern	No	Yes	No	3
202	Odonate	Libellulidae	*Camacinia gigantea*	Sultan	Least Concern	Least Concern	No	Yes	No	3
203	Odonate	Libellulidae	*Cratilla lineata*	Lined forest skimmer	Least Concern	Near Threatened	No	Yes	No	3
204	Odonate	Libellulidae	*Cratilla metallica*	Dark-tipped forest skimmer	Least Concern	Least Concern	No	Yes	No	3
205	Odonate	Libellulidae	*Crocothemis servilia*	Common scarlet	Least Concern	Least Concern	No	Yes	Yes	3
206	Odonate	Libellulidae	*Diplacodes nebulosa*	Black-tipped percher	Least Concern	Least Concern	No	Yes	No	3
207	Odonate	Libellulidae	*Diplacodes trivialis*	Blue percher	Least Concern	Least Concern	No	Yes	Yes	3
208	Odonate	Libellulidae	*Hydrobasileus croceus*	Water monarch	Least Concern	Least Concern	No	Yes	No	3
209	Odonate	Libellulidae	*Indothemis limbata*	Restless demon	Least Concern	Endangered	Yes	Yes	No	3
210	Odonate	Libellulidae	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Yes	Yes	3
211	Odonate	Libellulidae	*Macrodiplax cora*	Coastal glider	Least Concern	Least Concern	No	Yes	Yes	3
212	Odonate	Libellulidae	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Yes	Yes	3
213	Odonate	Libellulidae	*Orthetrum chrysis*	Spine-tufted skimmer	Least Concern	Least Concern	No	Yes	Yes	3
214	Odonate	Libellulidae	*Orthetrum luzonicum*	Slender blue skimmer	Least Concern	Least Concern	No	Yes	No	3
215	Odonate	Libellulidae	*Orthetrum sabina*	Variegated green skimmer	Least Concern	Least Concern	No	Yes	Yes	3
216	Odonate	Libellulidae	*Orthetrum testaceum*	Scarlet skimmer	Least Concern	Least Concern	No	Yes	Yes	3
217	Odonate	Libellulidae	*Pantala flavescens*	Wandering glider	Least Concern	Least Concern	No	Yes	Yes	3
218	Odonate	Libellulidae	*Pornothemis starrei*	Mangrove marshal	Not Assessed	Near Threatened	No	Yes	No	3
219	Odonate	Libellulidae	*Potamarcha congener*	Common chaser	Least Concern	Least Concern	No	Yes	No	3
220	Odonate	Libellulidae	*Raphismia bispina*	Mangrove dwarf	Least Concern	Near Threatened	No	Yes	No	3
221	Odonate	Libellulidae	*Rhodothemis rufa*	Common redbolt	Least Concern	Least Concern	No	Yes	No	3
222	Odonate	Libellulidae	*Rhyothemis phyllis*	Yellow-barred flutterer	Least Concern	Least Concern	No	Yes	Yes	3
223	Odonate	Libellulidae	*Rhyothemis triangularis*	Sapphire flutterer	Least Concern	Least Concern	No	Yes	No	3
224	Odonate	Libellulidae	*Tholymis tillarga*	White-barred duskhawk	Least Concern	Least Concern	No	Yes	Yes	3
225	Odonate	Libellulidae	*Tramea transmarina*	Saddlebag glider	Least Concern	Least Concern	No	Yes	No	3
226	Odonate	Libellulidae	*Trithemis aurora*	Crimson dropwing	Least Concern	Least Concern	No	Yes	Yes	3
227	Odonate	Libellulidae	*Trithemis pallidinervis*	Dancing dropwing	Least Concern	Least Concern	No	Yes	No	3
228	Odonate	Libellulidae	*Urothemis signata*	Scarlet basker	Not Assessed	Least Concern	No	Yes	No	3
229	Odonate	Libellulidae	*Zyxomma petiolatum*	Slender duskdarter	Least Concern	Least Concern	No	Yes	No	3
230	Odonate	Libellulidae	*Nesoxenia lineata*	Striped grenadier	Least Concern	Least Concern	No	Yes	No	3
231	Odonate	Libellulidae	*Orthetrum glaucum*	Common blue skimmer	Least Concern	Least Concern	No	Yes	No	3
232	Odonate	Libellulidae	*Trithemis festiva*	Indigo dropwing	Least Concern	Least Concern	No	Yes	No	3
233	Bird	Acanthizidae	*Gerygone sulphurea*	Golden-bellied gerygone	Least Concern	Not Listed	No	Yes	Yes	1
234	Bird	Accipitridae	*Accipiter gularis*	Japanese sparrowhawk	Least Concern	Not Listed	No	Yes	Yes	1
235	Bird	Accipitridae	*Accipiter soloensis*	Chinese sparrowhawk	Not Assessed	Least Concern	No	Yes	No	1
236	Bird	Accipitridae	*Accipiter virgatus*	Besra	Least Concern	Not Assessed	No	Yes	No	1
237	Bird	Accipitridae	*Aviceda leuphotes*	Black baza	Least Concern	Not Listed	No	Yes	No	1
238	Bird	Accipitridae	*Butastur indicus*	Grey-faced buzzard	Not Assessed	Least Concern	No	Yes	No	1
239	Bird	Accipitridae	*Buteo buteo*	Common buzzard	Not Assessed	Least Concern	No	Yes	No	1
240	Bird	Accipitridae	*Clanga clanga*	Greater spotted eagle	Not Assessed	Vulnerable	Yes	Yes	No	1
241	Bird	Accipitridae	*Milvus migrans*	Black kite	Not Assessed	Least Concern	No	Yes	No	1
242	Bird	Accipitridae	*Nisaetus alboniger*	Blyth's hawk-eagle	Least Concern	Not Assessed	No	Yes	No	1
243	Bird	Accipitridae	*Pernis ptilorhynchus*	Crested honey-buzzard	Least Concern	Not Listed	No	Yes	Yes	1
244	Bird	Accipitridae	*Accipiter trivirgatus*	Crested goshawk	Critically Endangered	Least Concern	Yes	Yes	Yes	1
245	Bird	Accipitridae	*Elanus caeruleus*	Black-winged kite	Not Assessed	Least Concern	No	Yes	No	1
246	Bird	Accipitridae	*Haliaeetus ichthyaetus*	Grey-headed fish eagle	Critically Endangered	Near Threatened	Yes	Yes	No	1
247	Bird	Accipitridae	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Not Listed	No	Yes	Yes	1
248	Bird	Accipitridae	*Haliastur indus*	Brahminy kite	Least Concern	Not Listed	No	Yes	Yes	1
249	Bird	Accipitridae	*Nisaetus cirrhatus*	Changeable hawk-eagle	Endangered	Least Concern	Yes	Yes	Yes	1
250	Bird	Accipitridae	*Spilornis cheela*	Crested serpent eagle	Critically Endangered	Least Concern	Yes	Yes	No	1
251	Bird	Aegithinidae	*Aegithina tiphia*	Common iora	Least Concern	Not Listed	No	Yes	Yes	1
252	Bird	Alcedinidae	*Alcedo atthis*	Common kingfisher	Least Concern	Not Listed	No	Yes	Yes	1
253	Bird	Alcedinidae	*Ceyx erithaca*	Oriental dwarf kingfisher	Least Concern	Not Assessed	No	Yes	No	1
254	Bird	Alcedinidae	*Halcyon pileata*	Black-capped kingfisher	Least Concern	Not Listed	No	Yes	No	1
255	Bird	Alcedinidae	*Halcyon coromanda*	Ruddy kingfisher	Critically Endangered	Least Concern	Yes	Yes	No	1
256	Bird	Alcedinidae	*Halcyon smyrnensis*	White-throated kingfisher	Least Concern	Not Listed	No	Yes	No	1
257	Bird	Alcedinidae	*Pelargopsis capensis*	Stork-billed kingfisher	Not Assessed	Least Concern	No	Yes	Yes	1
258	Bird	Alcedinidae	*Todiramphus chloris*	Collared kingfisher	Least Concern	Not Listed	No	Yes	Yes	1
259	Bird	Apodidae	*Apus pacificus*	Pacific swift	Not Assessed	Least Concern	No	Yes	No	1
260	Bird	Apodidae	*Hirundapus cochinchinensis*	Silver-backed needletail	Least Concern	Not Assessed	No	Yes	No	1
261	Bird	Apodidae	*Hirundapus giganteus*	Brown-backed needletail	Least Concern	Not Assessed	No	Yes	No	1
262	Bird	Apodidae	*Aerodramus fuciphagus*	Edible-nest swiftlet	Not Assessed	Least Concern	No	Yes	No	1
263	Bird	Apodidae	*Aerodramus maximus*	Black-nest swiftlet	Not Assessed	Least Concern	No	Yes	No	1
264	Bird	Apodidae	*Apus nipalensis*	House swift	Least Concern	Not Listed	No	Yes	No	1
265	Bird	Apodidae	*Cypsiurus balasiensis*	Asian palm swift	Not Assessed	Least Concern	No	Yes	No	1
266	Bird	Ardeidae	*Ardea alba*	Great egret	Least Concern	Not Assessed	No	Yes	No	1
267	Bird	Ardeidae	*Ardea intermedia*	Intermediate egret	Least Concern	Not Assessed	No	Yes	No	1
268	Bird	Ardeidae	*Ardeola bacchus*	Chinese pond heron	Least Concern	Not Listed	No	Yes	Yes	1
269	Bird	Ardeidae	*Ardeola speciosa*	Javan pond heron	Not Assessed	Least Concern	No	Yes	No	1
270	Bird	Ardeidae	*Bubulcus coromandus*	Eastern cattle egret	Not Assessed	Least Concern	No	Yes	No	1
271	Bird	Ardeidae	*Egretta garzetta*	Little egret	Least Concern	Not Listed	No	Yes	Yes	1
272	Bird	Ardeidae	*Gorsachius melanolophus*	Malayan night heron	Not Assessed	Least Concern	No	Yes	No	1
273	Bird	Ardeidae	*Ixobrychus cinnamomeus*	Cinnamon bittern	Least Concern	Not Listed	No	Yes	Yes	1
274	Bird	Ardeidae	*Ixobrychus eurhythmus*	Von Schrenck's bittern	Least Concern	Not Assessed	No	Yes	No	1
275	Bird	Ardeidae	*Ixobrychus flavicollis*	Black bittern	Least Concern	Not Assessed	No	Yes	No	1
276	Bird	Ardeidae	*Nycticorax nycticorax*	Black-crowned night heron	Least Concern	Critically Endangered	Yes	Yes	No	1
277	Bird	Ardeidae	*Ardea cinerea*	Grey heron	Least Concern	Vulnerable	Yes	Yes	Yes	1
278	Bird	Ardeidae	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Yes	Yes	Yes	1
279	Bird	Ardeidae	*Ardea sumatrana*	Great-billed heron	Least Concern	Critically Endangered	Yes	Yes	No	1
280	Bird	Ardeidae	*Butorides striata*	Striated heron	Least Concern	Not Listed	No	Yes	Yes	1
281	Bird	Ardeidae	*Egretta sacra*	Pacific reef heron	Least Concern	Not Assessed	No	Yes	No	1
282	Bird	Ardeidae	*Ixobrychus sinensis*	Yellow bittern	Least Concern	Not Assessed	No	Yes	No	1
283	Bird	Bucerotidae	*Anthracoceros albirostris*	Oriental pied hornbill	Least Concern	Critically Endangered	Yes	Yes	Yes	1
284	Bird	Cacatuidae	*Cacatua galerita*	Sulphur-crested cockatoo	Least Concern	Not Listed	No	Yes	No	1
285	Bird	Cacatuidae	*Cacatua goffiniana*	Tanimbar corella	Near Threatened	Not Listed	No	Yes	Yes	1
286	Bird	Campephagidae	*Pericrocotus divaricatus*	Ashy minivet	Least Concern	Not Listed	No	Yes	Yes	1
287	Bird	Campephagidae	*Lalage nigra*	Pied triller	Least Concern	Not Assessed	No	Yes	No	1
288	Bird	Caprimulgidae	*Caprimulgus jotaka*	Grey nightjar	Not Assessed	Least Concern	No	Yes	No	1
289	Bird	Caprimulgidae	*Caprimulgus affinis*	Savanna nightjar	Not Assessed	Least Concern	No	Yes	No	1
290	Bird	Caprimulgidae	*Caprimulgus macrurus*	Large-tailed nightjar	Not Assessed	Least Concern	No	Yes	Yes	1
291	Bird	Charadriidae	*Charadrius mongolus*	Lesser sand plover	Least Concern	Not Assessed	No	Yes	No	1
292	Bird	Charadriidae	*Pluvialis fulva*	Pacific golden plover	Least Concern	Not Assessed	No	Yes	No	1
293	Bird	Charadriidae	*Vanellus indicus*	Red-wattled lapwing	Endangered	Least Concern	Yes	Yes	Yes	1
294	Bird	Chloropseidae	*Chloropsis cochinchinensis*	Blue-winged leafbird	Least Concern	Not Listed	No	Yes	No	1
295	Bird	Ciconiidae	*Anastomus oscitans*	Asian openbill	Least Concern	Not Assessed	No		No	1
296	Bird	Cisticolidae	*Cisticola juncidis*	Zitting cisticola	Not Assessed	Least Concern	No	Yes	No	1
297	Bird	Cisticolidae	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Not Listed	No	Yes	Yes	1
298	Bird	Cisticolidae	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Not Listed	No	Yes	Yes	1
299	Bird	Cisticolidae	*Orthotomus sericeus*	Rufous-tailed tailorbird	Least Concern	Not Listed	No	Yes	No	1
300	Bird	Cisticolidae	*Orthotomus sutorius*	Common tailorbird	Least Concern	Not Listed	No	Yes	Yes	1
301	Bird	Cisticolidae	*Prinia flaviventris*	Yellow-bellied prinia	Not Assessed	Least Concern	No	Yes	No	1
302	Bird	Columbidae	*Columba livia*	Rock dove	Least Concern	Not Listed	No	Yes	Yes	1
303	Bird	Columbidae	*Ptilinopus jambu*	Jambu fruit dove	Not Assessed	Near Threatened	No	Yes	No	1
304	Bird	Columbidae	*Chalcophaps indica*	Common emerald dove	Least Concern	Not Assessed	No	Yes	Yes	1
305	Bird	Columbidae	*Ducula bicolor*	Pied imperial pigeon	Not Assessed	Least Concern	No	Yes	No	1
306	Bird	Columbidae	*Geopelia striata*	Zebra dove	Least Concern	Not Listed	No	Yes	Yes	1
307	Bird	Columbidae	*Spilopelia chinensis*	Spotted dove	Least Concern	Not Listed	No	Yes	Yes	1
308	Bird	Columbidae	*Treron vernans*	Pink-necked green pigeon	Least Concern	Not Listed	No	Yes	Yes	1
309	Bird	Columbidae	*Streptopelia tranquebarica*	Red turtle dove	Not Assessed	Least Concern	No	Yes	No	1
310	Bird	Coraciidae	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Not Listed	No	Yes	Yes	1
311	Bird	Corvidae	*Corvus splendens*	House crow	Least Concern	Not Listed	No	Yes	Yes	1
312	Bird	Corvidae	*Corvus macrorhynchos*	Large-billed crow	Least Concern	Not Listed	No	Yes	Yes	1
313	Bird	Cuculidae	*Chrysococcyx basalis*	Horsfield's bronze cuckoo	Least Concern	Not Assessed	No	Yes	No	1

314	Bird	Cuculidae	*Clamator coromandus*	Chestnut-winged cuckoo	Least Concern	Not Assessed	No	Yes	No	1
315	Bird	Cuculidae	*Cuculus micropterus*	Indian cuckoo	Least Concern	Not Assessed	No	Yes	No	1
316	Bird	Cuculidae	*Eudynamys scolopaceus*	Asian koel	Least Concern	Not Listed	No	Yes	Yes	1
317	Bird	Cuculidae	*Cacomantis merulinus*	Plaintive cuckoo	Least Concern	Not Assessed	No	Yes	No	1
318	Bird	Cuculidae	*Cacomantis sepulcralis*	Rusty-breasted cuckoo	Least Concern	Vulnerable	Yes	Yes	No	1
319	Bird	Cuculidae	*Cacomantis sonneratii*	Banded bay cuckoo	Least Concern	Not Assessed	No	Yes	No	1
320	Bird	Cuculidae	*Centropus bengalensis*	Lesser coucal	Not Assessed	Least Concern	No	Yes	No	1
321	Bird	Cuculidae	*Centropus sinensis*	Greater coucal	Least Concern	Not Listed	No	Yes	Yes	1
322	Bird	Cuculidae	*Chrysococcyx minutillus*	Little bronze-cuckoo	Least Concern	Not Listed	No	Yes	Yes	1
323	Bird	Cuculidae	*Chrysococcyx xanthorhynchus*	Violet cuckoo	Least Concern	Endangered	Yes	Yes	No	1
324	Bird	Cuculidae	*Surniculus lugubris*	Square-tailed drongo-cuckoo	Least Concern	Critically Endangered	Yes	Yes	No	1
325	Bird	Dicaeidae	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Not Listed	No	Yes	Yes	1
326	Bird	Dicruridae	*Dicrurus annectans*	Crow-billed drongo	Least Concern	Not Assessed	No	Yes	No	1
327	Bird	Dicruridae	*Dicrurus leucophaeus*	Ashy drongo	Not Assessed	Least Concern	No	Yes	No	1
328	Bird	Dicruridae	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Not Listed	No	Yes	No	1
329	Bird	Estrildidae	*Lonchura atricapilla*	Chestnut munia	Not Assessed	Least Concern	No	Yes	No	1
330	Bird	Estrildidae	*Lonchura maja*	White-headed munia	Not Assessed	Least Concern	No	Yes	No	1
331	Bird	Estrildidae	*Lonchura punctulata*	Scaly-breasted munia	Least Concern	Not Listed	No	Yes	Yes	1
332	Bird	Estrildidae	*Lonchura leucogastroides*	Javan munia	Not Assessed	Least Concern	No	Yes	No	1
333	Bird	Falconidae	*Falco peregrinus*	Peregrine falcon	Least Concern	Not Listed	No	Yes	Yes	1
334	Bird	Glareolidae	*Glareola maldivarum*	Oriental pratincole	Not Assessed	Least Concern	No	Yes	No	1
335	Bird	Hemiprocnidae	*Hemiprocne longipennis*	Grey-rumped treeswift	Not Assessed	Least Concern	No	Yes	No	1
336	Bird	Hirundinidae	*Cecropis daurica*	Red-rumped swallow	Not Assessed	Least Concern	No	Yes	No	1
337	Bird	Hirundinidae	*Hirundo rustica*	Barn swallow	Least Concern	Not Listed	No	Yes	No	1
338	Bird	Hirundinidae	*Hirundo tahitica*	Pacific swallow	Least Concern	Not Listed	No	Yes	Yes	1
339	Bird	Laniidae	*Lanius cristatus*	Brown shrike	Not Assessed	Least Concern	No	Yes	Yes	1
340	Bird	Laniidae	*Lanius tigrinus*	Tiger shrike	Least Concern	Not Listed	No	Yes	No	1
341	Bird	Laniidae	*Lanius schach*	Long-tailed shrike	Not Assessed	Least Concern	No	Yes	No	1
342	Bird	Laridae	*Chlidonias hybrida*	Whiskered tern	Least Concern	Not Assessed	No	Yes	No	1
343	Bird	Laridae	*Chlidonias leucopterus*	White-winged tern	Least Concern	Not Assessed	No	Yes	No	1
344	Bird	Laridae	*Chroicocephalus ridibundus*	Black-headed gull	Least Concern	Not Assessed	No	Yes	No	1
345	Bird	Laridae	*Sterna hirundo*	Common tern	Least Concern	Not Assessed	No	Yes	No	1
346	Bird	Laridae	*Thalasseus bengalensis*	Lesser crested tern	Least Concern	Not Assessed	No	Yes	No	1
347	Bird	Laridae	*Thalasseus bergii*	Greater crested tern	Least Concern	Not Assessed	No	Yes	No	1
348	Bird	Laridae	*Sterna sumatrana*	Black-naped tern	Least Concern	Endangered	Yes	Yes	No	1
349	Bird	Laridae	*Sternula albifrons*	Little tern	Least Concern	Endangered	Yes	Yes	No	1
350	Bird	Leiothrichidae	*Garrulax canorus*	Chinese hwamei	Least Concern	Not Assessed	No	Yes	No	1
351	Bird	Leiothrichidae	*Garrulax leucolophus*	White-crested laughingthrush	Least Concern	Not Listed	No	Yes	No	1
352	Bird	Locustellidae	*Locustella certhiola*	Pallas's grasshopper warbler	Not Assessed	Least Concern	No	Yes	No	1
353	Bird	Locustellidae	*Locustella lanceolata*	Lanceolated warbler	Not Assessed	Least Concern	No	Yes	No	1
354	Bird	Megalaimidae	*Psilopogon haemacephalus*	Coppersmith barbet	Least Concern	Not Listed	No	Yes	Yes	1
355	Bird	Megalaimidae	*Psilopogon lineatus*	Lineated barbet	Not Assessed	Least Concern	No	Yes	Yes	1
356	Bird	Meropidae	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Not Listed	No	Yes	Yes	1
357	Bird	Meropidae	*Merops viridis*	Blue-throated bee-eater	Least Concern	Not Listed	No	Yes	Yes	1
358	Bird	Monarchidae	*Terpsiphone incei*	Amur paradise flycatcher	Least Concern	Not Assessed	No	Yes	No	1
359	Bird	Motacillidae	*Dendronanthus indicus*	Forest wagtail	Least Concern	Not Assessed	No	Yes	No	1
360	Bird	Motacillidae	*Anthus rufulus*	Paddyfield pipit	Least Concern	Not Listed	No	Yes	Yes	1
361	Bird	Muscicapidae	*Cyornis brunneatus*	Brown-chested jungle flycatcher	Vulnerable	Not Assessed	Yes	Yes	No	1
362	Bird	Muscicapidae	*Ficedula mugimaki*	Mugimaki flycatcher	Least Concern	Not Assessed	No	Yes	No	1
363	Bird	Muscicapidae	*Ficedula zanthopygia*	Yellow-rumped flycatcher	Least Concern	Not Assessed	No	Yes	No	1
364	Bird	Muscicapidae	*Larvivora cyane*	Siberian blue robin	Not Assessed	Least Concern	No	Yes	Yes	1
365	Bird	Muscicapidae	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Not Listed	No	Yes	Yes	1
366	Bird	Muscicapidae	*Muscicapa sibirica*	Dark-sided flycatcher	Least Concern	Not Assessed	No	Yes	No	1
367	Bird	Muscicapidae	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Endangered	Yes	Yes	Yes	1
368	Bird	Nectariniidae	*Aethopyga siparaja*	Crimson sunbird	Not Assessed	Least Concern	No	Yes	Yes	1
369	Bird	Nectariniidae	*Anthreptes malacensis*	Brown-throated sunbird	Least Concern	Not Listed	No	Yes	Yes	1
370	Bird	Nectariniidae	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Not Listed	No	Yes	Yes	1
371	Bird	Nectariniidae	*Leptocoma calcostetha*	Copper-throated sunbird	Not Assessed	Least Concern	No	Yes	No	1
372	Bird	Oriolidae	*Oriolus chinensis*	Black-naped oriole	Least Concern	Not Listed	No	Yes	Yes	1
373	Bird	Pachycephalidae	*Pachycephala cinerea*	Mangrove whistler	Least Concern	Not Assessed	No	Yes	No	1
374	Bird	Pandionidae	*Pandion haliaetus*	Western osprey	Least Concern	Not Assessed	No	Yes	No	1
375	Bird	Passeridae	*Passer montanus*	Eurasian tree sparrow	Not Assessed	Least Concern	No	Yes	Yes	1
376	Bird	Pellorneidae	*Malacocincla abbotti*	Abbott's babbler	Least Concern	Not Listed	No	Yes	No	1
377	Bird	Phasianidae	*Gallus gallus (domestic)*	Domestic chicken	Not Assessed	Not Assessed	No	Yes	Yes	1
378	Bird	Phasianidae	*Pavo cristatus*	Indian peafowl	Least Concern	Not Assessed	No	Yes	Yes	1
379	Bird	Phasianidae	*Excalfactoria chinensis*	King quail	Not Assessed	Least Concern	No	Yes	No	1
380	Bird	Phasianidae	*Gallus gallus*	Red junglefowl	Least Concern	Endangered	Yes	Yes	Yes	1
381	Bird	Phylloscopidae	*Phylloscopus borealis*	Arctic warbler	Least Concern	Not Listed	No	Yes	Yes	1
382	Bird	Phylloscopidae	*Phylloscopus coronatus*	Eastern crowned warbler	Not Assessed	Least Concern	No	Yes	No	1
383	Bird	Phylloscopidae	*Phylloscopus inornatus*	Yellow-browed warbler	Least Concern	Not Assessed	No	Yes	No	1
384	Bird	Picidae	*Chrysophlegma miniaceum*	Banded woodpecker	Least Concern	Not Assessed	No	Yes	Yes	1
385	Bird	Picidae	*Dinopium javanense*	Common flameback	Least Concern	Not Listed	No	Yes	Yes	1
386	Bird	Picidae	*Micropternus brachyurus*	Rufous woodpecker	Not Assessed	Least Concern	No	Yes	No	1
387	Bird	Picidae	*Picus vittatus*	Laced woodpecker	Least Concern	Not Listed	No	Yes	Yes	1
388	Bird	Picidae	*Yungipicus moluccensis*	Sunda pygmy woodpecker	Least Concern	Not Assessed	No	Yes	No	1
389	Bird	Pittidae	*Pitta sordida*	Hooded pitta	Not Assessed	Least Concern	No	Yes	No	1
390	Bird	Pittidae	*Pitta megarhyncha*	Mangrove pitta	Near Threatened	Critically Endangered	Yes	Yes	No	1
391	Bird	Pittidae	*Pitta moluccensis*	Blue-winged pitta	Not Assessed	Least Concern	No	Yes	Yes	1
392	Bird	Psittaculidae	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	Not Listed	No	Yes	Yes	1
393	Bird	Psittaculidae	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Endangered	Yes	Yes	Yes	1
394	Bird	Psittaculidae	*Psittacula longicauda*	Long-tailed parakeet	Near Threatened	Not Listed	Yes	Yes	No	1
395	Bird	Psittaculidae	*Psittacula krameri*	Rose-ringed parakeet	Not Assessed	Least Concern	No	Yes	Yes	1
396	Bird	Psittaculidae	*Trichoglossus haematodus*	Coconut lorikeet	Not Assessed	Least Concern	No	Yes	Yes	1
397	Bird	Pycnonotidae	*Pycnonotus jocosus*	Red-whiskered bulbul	Least Concern	Not Listed	No	Yes	Yes	1
398	Bird	Pycnonotidae	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Not Listed	No	Yes	Yes	1
399	Bird	Pycnonotidae	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Not Listed	No	Yes	Yes	1
400	Bird	Pycnonotidae	*Pycnonotus zeylanicus*	Straw-headed bulbul	Endangered	Critically Endangered	Yes	Yes	Yes	1
401	Bird	Rallidae	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Not Listed	No	Yes	Yes	1
402	Bird	Rallidae	*Rallina eurizonoides*	Slaty-legged crake	Not Assessed	Least Concern	No	Yes	No	1
403	Bird	Rallidae	*Lewinia striata*	Slaty-breasted rail	Not Assessed	Least Concern	No	Yes	No	1
404	Bird	Rallidae	*Rallina fasciata*	Red-legged crake	Vulnerable	Least Concern	Yes	Yes	Yes	1
405	Bird	Rallidae	*Zapornia fusca*	Ruddy-breasted crake	Not Assessed	Least Concern	No	Yes	No	1
406	Bird	Rhipiduridae	*Rhipidura javanica*	Malaysian pied fantail	Least Concern	Not Listed	No	Yes	Yes	1
407	Bird	Scolopacidae	*Actitis hypoleucos*	Common sandpiper	Least Concern	Not Listed	No	Yes	No	1
408	Bird	Scolopacidae	*Calidris ferruginea*	Curlew sandpiper	Near Threatened	Not Assessed	No	Yes	No	1
409	Bird	Scolopacidae	*Calidris ruficollis*	Red-necked stint	Near Threatened	Not Assessed	No	Yes	No	1
410	Bird	Scolopacidae	*Gallinago gallinago*	Common snipe	Not Assessed	Least Concern	No	Yes	No	1
411	Bird	Scolopacidae	*Gallinago stenura*	Pin-tailed snipe	Not Assessed	Least Concern	No	Yes	No	1
412	Bird	Scolopacidae	*Numenius phaeopus*	Eurasian whimbrel	Least Concern	Not Assessed	No	Yes	No	1
413	Bird	Strigidae	*Otus sunia*	Oriental scops owl	Least Concern	Not Assessed	No	Yes	No	1
414	Bird	Strigidae	*Ketupa ketupu*	Buffy fish owl	Critically Endangered	Least Concern	Yes	Yes	No	1
415	Bird	Strigidae	*Otus lempiji*	Sunda scops owl	Not Assessed	Least Concern	No	Yes	Yes	1
416	Bird	Strigidae	*Strix seloputo*	Spotted wood owl	Critically Endangered	Least Concern	Yes	Yes	Yes	1
417	Bird	Sturnidae	*Acridotheres javanicus*	Javan myna	Least Concern	Not Listed	No	Yes	Yes	1
418	Bird	Sturnidae	*Agropsar sturninus*	Daurian starling	Least Concern	Not Assessed	No	Yes	Yes	1
419	Bird	Sturnidae	*Acridotheres tristis*	Common myna	Least Concern	Not Listed	No	Yes	No	1
420	Bird	Sturnidae	*Aplonis panayensis*	Asian glossy starling	Least Concern	Not Listed	No	Yes	Yes	1
421	Bird	Sturnidae	*Gracula religiosa*	Common hill myna	Least Concern	Not Listed	No	Yes	Yes	1
422	Bird	Timaliidae	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Not Listed	No	Yes	Yes	1
423	Bird	Turdidae	*Geokichla citrina*	Orange-headed thrush	Not Assessed	Least Concern	No	Yes	No	1
424	Bird	Turdidae	*Geokichla sibirica*	Siberian thrush	Not Assessed	Least Concern	No	Yes	No	1
425	Bird	Turdidae	*Turdus obscurus*	Eyebrowed thrush	Not Assessed	Least Concern	No	Yes	No	1
426	Bird	Turnicidae	*Turnix suscitator*	Barred buttonquail	Not Assessed	Least Concern	No	Yes	No	1
427	Bird	Tytonidae	*Tyto javanica*	Eastern barn owl	Not Assessed	Least Concern	No	Yes	No	1
428	Bird	Zosteropidae	*Zosterops simplex*	Swinhoe's white-eye	Not Assessed	Least Concern	No	Yes	Yes	1
429	Bird	Phylloscopidae	*Phylloscopus borealoides*	Sakhalin leaf warbler	Least Concern	Not Assessed	No	No	Yes	1
430	Amphibian	Bufonidae	*Duttaphrynus melanostictus*	Asian toad	Least Concern	Not Assessed	No	Yes	Yes	1
431	Amphibian	Dicroglossidae	*Fejervarya cancrivora*	Crab-eating frog	Least Concern	Not Assessed	No	Yes	Yes	1
432	Amphibian	Dicroglossidae	*Limnonectes blythii*	Malayan giant frog	Near Threatened	Not Assessed	No	Yes	No	1
433	Amphibian	Eleutherodactylidae	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Assessed	No	Yes	Yes	1
434	Amphibian	Microhylidae	*Kaloula pulchra*	Banded bull frog	Least Concern	Not Assessed	No	Yes	Yes	1
435	Amphibian	Microhylidae	*Microhyla butleri*	Painted chorus frog	Least Concern	Not Assessed	No	Yes	No	1
436	Amphibian	Microhylidae	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Not Assessed	No	Yes	Yes	1
437	Amphibian	Microhylidae	*Microhyla mukhlesuri*	East Asian ornate chorus frog	Least Concern	Not Assessed	No	Yes	Yes	1
438	Amphibian	Ranidae	*Hylarana erythraea*	Green paddy frog	Least Concern	Not Assessed	No	Yes	Yes	1
439	Amphibian	Ranidae	*Sylvirana guentheri*	Guenther's frog	Least Concern	Not Assessed	No	Yes	No	1
440	Amphibian	Rhacophoridae	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Not Assessed	No	Yes	Yes	1
441	Amphibian	Gekkonidae	*Hemidactylus brookii*	Brooke's house gecko	Not Assessed	Not Assessed	No	Yes	Yes	1
442	Amphibian	Dicroglossidae	*Fejervarya limnocharis*	Field frog	Least Concern	Not Assessed	No	Yes	Yes	1
443	Reptile	Acrochordidae	*Acrochordus granulatus*	Banded file snake	Least Concern	Not Assessed	No	Yes	No	2
444	Reptile	Agamidae	*Bronchocela cristatella*	Green crested lizard	Not Assessed	Not Assessed	No	Yes	Yes	2
445	Reptile	Agamidae	*Calotes versicolor*	Changeable lizard	Not Assessed	Not Assessed	No	Yes	Yes	2
446	Reptile	Agamidae	*Draco sumatranus*	Sumatran flying dragon	Not Assessed	Not Assessed	No	Yes	No	2
447	Reptile	Colubridae (Ahaetulliinae)	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Not Assessed	No	Yes	Yes	2
448	Reptile	Colubridae (Ahaetulliinae)	*Chrysopelea paradisi*	Paradise gliding snake	Least Concern	Not Assessed	No	Yes	Yes	2
449	Reptile	Colubridae (Ahaetulliinae)	*Dendrelaphis caudolineatus*	Striped bronzeback	Least Concern	Not Assessed	No	Yes	No	2
450	Reptile	Colubridae (Ahaetulliinae)	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Not Assessed	No	Yes	Yes	2
451	Reptile	Colubridae (Colubrinae)	*Coelognathus flavolineatus*	Common Malayan racer	Least Concern	Endangered	Yes	Yes	No	2
452	Reptile	Colubridae (Colubrinae)	*Oligodon octolineatus*	Striped kukri snake	Least Concern	Not Assessed	No	Yes	No	2
453	Reptile	Colubridae (Colubrinae)	*Lycodon capucinus*	House wolf snake	Least Concern	Not Assessed	No	Yes	Yes	2
454	Reptile	Colubridae (Natricinae)	*Xenochrophis vittatus*	Striped keelback	Least Concern	Not Assessed	No	Yes	No	2
455	Reptile	Elapidae	*Aipysurus eydouxii*	Beaded sea-snake	Least Concern	Not Assessed	No	Yes	No	2
456	Reptile	Elapidae	*Calliophis intestinalis*	Banded Malayan coral snake	Least Concern	Not Assessed	No	Yes	No	2
457	Reptile	Elapidae	*Laticauda colubrina*	Yellow-lipped sea krait	Least Concern	Endangered	Yes	Yes	No	2
458	Reptile	Elapidae	*Naja sumatrana*	Equatorial spitting cobra	Least Concern	Not Assessed	No	Yes	No	2
459	Reptile	Emydidae	*Trachemys decussata*	Cuban slider	Not Assessed	Not Assessed	No	Yes	No	2
460	Reptile	Emydidae	*Trachemys scripta*	Red-eared slider	Least Concern	Not Assessed	No	Yes	Yes	2
461	Reptile	Gekkonidae	*Gekko monarchus*	Spotted house gecko	Not Assessed	Not Assessed	No	Yes	Yes	2
462	Reptile	Gekkonidae	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Not Assessed	No	Yes	Yes	2
463	Reptile	Gekkonidae	*Lepidodactylus lugubris*	Mourning gecko	Not Assessed	Not Assessed	No	Yes	Yes	2
464	Reptile	Gekkonidae	*Gehyra mutilata*	Four-clawed gecko	Not Assessed	Not Assessed	No	Yes	Yes	2
465	Reptile	Gekkonidae	*Hemidactylus platyurus*	Flat-tailed gecko	Not Assessed	Not Assessed	No	Yes	Yes	2
466	Reptile	Geomydidae	*Cuora amboinensis*	Malayan box terrapin	Vulnerable; CITES protected (Appendix II)	Not Assessed	Yes	Yes	No	2
467	Reptile	Geomydidae	*Siebenrockiella crassicollis*	Black marsh terrapin	Vulnerable	Not Assessed	No	Yes	No	2
468	Reptile	Homalopsidae	*Cerberus schneiderii*	Sunda dog-faced water snake	Least Concern	Not Assessed	No	Yes	No	2
469	Reptile	Pareidae	*Pareas margaritophorus*	White-spotted slug snake	Least Concern	Not Assessed	No	Yes	No	2
470	Reptile	Pythonidae	*Malayopython reticulatus*	Reticulated python	Least Concern	Not Assessed	No	Yes	Yes	2
471	Reptile	Scincidae	*Lygosoma bowringii*	Garden supple skink	Not Assessed	Not Assessed	No	Yes	No	2

472	Reptile	Typhlopidae	*Indotyphlops braminus*	Brahminy blind snake	Least Concern	Not Assessed	No	Yes	No	2
473	Reptile	Varanidae	*Varanus nebulosus*	Clouded monitor	Not Assessed	Not Assessed	No	Yes	No	2
474	Reptile	Varanidae	*Varanus salvator*	Malayan water monitor	Least Concern	Not Assessed	No	Yes	Yes	2
475	Reptile	Xenopeltidae	*Xenopeltis unicolor*	Iridescent earth snake	Least Concern	Not Assessed	No	Yes	No	2
476	Reptile	Scincidae	*Eutropis multifasciatus*	Many-lined sun skink	Least concern	Not assessed	No	Yes	Yes	2
477	Mammal	Canidae	*Canis lupus familiaris*	Feral dog	Not Assessed	Not Assessed	No	Yes	No	2
478	Mammal	Cercopithecidae	*Macaca fascicularis*	Long-tailed macaque	Vulnerable	Not Assessed	Yes	Yes	Yes	2
479	Mammal	Cercopithecidae	*Presbytis femoralis femoralis*	Raffles' banded langur	Near Threatened	Critically Endangered	Yes	Yes	No	2
480	Mammal	Cercopithecidae	*Trachypithecus obscurus*	Dusky langur	Near Threatened	Not Assessed	No	Yes	No	2
481	Mammal	Cervidae	*Rusa unicolor*	Sambar	Vulnerable	Not Assessed	No	Yes	No	2
482	Mammal	Cynocephalidae	*Galeopterus variegatus*	Malayan colugo	Least Concern	Not Assessed	No	Yes	No	2
483	Mammal	Felidae	*Felis catus*	Feral cat	Not Assessed	Not Assessed	No	Yes	Yes	2
484	Mammal	Felidae	*Prionailurus bengalensis*	Mainland leopard cat	Least Concern	Critically Endangered	Yes	Yes	No	2
485	Mammal	Hystricidae	*Hystrix brachyura*	Malayan porcupine	Least Concern	Critically Endangered	Yes	Yes	No	2
486	Mammal	Loridae	*Nycticebus coucang*	Sunda slow loris	Vulnerable	Critically Endangered	Yes	Yes	No	2
487	Mammal	Manidae	*Manis javanica*	Sunda pangolin	Critically Endangered	Critically Endangered	Yes	Yes	No	2
488	Mammal	Muridae	*Maxomys rajah*	Rajah spiny rat	Vulnerable	Endangered	Yes	Yes	No	2
489	Mammal	Muridae	*Mus castaneus*	House mouse	Least Concern	Not Assessed	No	Yes	No	2
490	Mammal	Muridae	*Rattus exulans*	Polynesian rat	Least Concern	Not Assessed	No	Yes	No	2
491	Mammal	Muridae	*Rattus norvegicus*	Brown rat	Least Concern	Not Assessed	No	Yes	No	2
492	Mammal	Muridae	*Rattus tanezumi*	Oriental house rat	Least Concern	Not Assessed	No	Yes	Yes	2
493	Mammal	Muridae	*Rattus tiomanicus*	Malaysian wood rat	Least Concern	Not Assessed	No	Yes	No	2
494	Mammal	Mustelidae	*Aonyx cinerea*	Oriental small-clawed otter	Vulnerable	Critically Endangered	Yes	Yes	No	2
495	Mammal	Mustelidae	*Lutrogale perspicillata*	Smooth-coated otter	Vulnerable	Critically Endangered	Yes	Yes	Yes	2
496	Mammal	Sciuridae	*Callosciurus notatus*	Plantain squirrel	Least Concern	Not Assessed	No	Yes	Yes	2
497	Mammal	Sciuridae	*Hylopetes spadiceus*	Red-cheeked flying squirrel	Least Concern	Critically Endangered	Yes	Yes	No	2
498	Mammal	Sciuridae	*Iomys horsfieldii*	Horsfield's flying squirrel	Least Concern	Critically Endangered	Yes	Yes	No	2
499	Mammal	Sciuridae	*Rhinosciurus laticaudatus*	Shrew-faced ground squirrel	Near Threatened	Critically Endangered	Yes	Yes	No	2
500	Mammal	Sciuridae	*Sundasciurus tenuis*	Slender squirrel	Least Concern	Not Assessed	No	Yes	Yes	2
501	Mammal	Soricidae	*Suncus murinus*	House shrew	Least Concern	Not Assessed	No	Yes	Yes	2
502	Mammal	Suidae	*Sus scrofa*	Wild pig	Least Concern	Not Assessed	No	Yes	Yes	2
503	Mammal	Tapiridae	*Tapirus indicus indicus*	Malayan tapir	Not Assessed	Not Assessed	No	Yes	No	2
504	Mammal	Tragulidae	*Tragulus kanchil*	Lesser mousedeer	Least Concern	Critically Endangered	Yes	Yes	No	2
505	Mammal	Tragulidae	*Tragulus napu*	Greater mousedeer	Least Concern	Not Assessed	No	Yes	No	2
506	Mammal	Tupaiidae	*Tupaia glis*	Common treeshrew	Least Concern	Not Assessed	No	Yes	Yes	2
507	Mammal	Viverridae	*Arctogalidia trivirgata*	Three-striped palm civet	Least Concern	Critically Endangered	Yes	Yes	No	2
508	Mammal	Viverridae	*Paradoxurus musangus*	Common palm civet	Least Concern	Not Assessed	No	Yes	Yes	2
509	Mammal (Bat)	Emballonuridae	*Emballonura monticola*	Lesser sheath-tailed bat	Least Concern	Critically Endangered	Yes	Yes	No	1
510	Mammal (Bat)	Emballonuridae	*Saccolaimus saccolaimus*	Pouch-bearing bat	Least Concern	Not Assessed	No	Yes	Yes	1
511	Mammal (Bat)	Emballonuridae	*Taphozous longimanus*	Long-winged tomb bat	Least Concern	Not Assessed	No	Yes	No	1
512	Mammal (Bat)	Emballonuridae	*Taphozous melanopogon*	Black-bearded tomb bat	Least Concern	Endangered	Yes	Yes	No	1
513	Mammal (Bat)	Megadermatidae	*Megaderma spasma*	Malayan false vampire	Least Concern	Critically Endangered	Yes	Yes	No	1
514	Mammal (Bat)	Pteropodidae	*Cynopterus brachyotis*	Lesser dog-faced fruit bat	Least Concern	Not Assessed	No	Yes	Yes	1
515	Mammal (Bat)	Pteropodidae	*Eonycteris spelaea*	Cave nectar bat	Least Concern	Not Assessed	No	Yes	No	1
516	Mammal (Bat)	Pteropodidae	*Macroglossus minimus*	Common long-tongued nectar bat	Least Concern	Vulnerable	Yes	Yes	No	1
517	Mammal (Bat)	Pteropodidae	*Penthetor lucasi*	Dusky fruit bat	Least Concern	Endangered	Yes	Yes	No	1
518	Mammal (Bat)	Pteropodidae	*Pteropus vampyrus*	Large flying fox	Near Threatened	Not Assessed	No	Yes	No	1
519	Mammal (Bat)	Rhinolophidae	*Rhinolophus lepidus*	Glossy horseshoe bat	Least Concern	Not Assessed	No	Yes	No	1
520	Mammal (Bat)	Rhinolophidae	*Rhinolophus trifoliatus*	Trefoil horseshoe bat	Least Concern	Critically Endangered	Yes	Yes	No	1
521	Mammal (Bat)	Vespertilionidae	*Hypsugo macrotis*	Big-eared pipistrelle	Data Deficient	Not Assessed	No	Yes	No	1
522	Mammal (Bat)	Vespertilionidae	*Kerivoula hardwickii*	Hardwicke's woolly bat	Least Concern	Critically Endangered	Yes	Yes	No	1
523	Mammal (Bat)	Vespertilionidae	*Myotis horsfieldii*	Horsfield's large-footed myotis	Least Concern	Not Assessed	No	Yes	Yes	1
524	Mammal (Bat)	Vespertilionidae	*Myotis muricola*	Whiskered myotis	Least Concern	Not Assessed	No	Yes	Yes	1
525	Mammal (Bat)	Vespertilionidae	*Pipistrellus javanicus*	Javan pipistrelle	Least Concern	Not Assessed	No	Yes	No	1
526	Mammal (Bat)	Vespertilionidae	*Scotophilus kuhlii*	Asiatic lesser yellow house bat	Least Concern	Not Assessed	No	Yes	Yes	1
527	Mammal (Bat)	Vespertilionidae	*Tylonycteris fulvida*	Lesser bamboo bat	Least Concern	Critically Endangered	Yes	Yes	No	1
528	Mammal (Bat)	Vespertilionidae	*Tylonycteris malayana*	Greater bamboo bat	Least Concern	Not Assessed	No	Yes	No	1
529	Fish	Adrianichthyidae	*Oryzias javanicus*	Javanese ricefish	Not Assessed	Not Listed	No	Yes	Yes	3
530	Fish	Ambassidae	*Ambassis kopsii*	Kops' glass perchlet	Not Assessed	Not Listed	No	Yes	Yes	3
531	Fish	Ambassidae	*Ambassis vachellii*	Vachell's glassfish	Least Concern	Not Listed	No	Yes	No	3
532	Fish	Anabantidae	*Anabas testudineus*	Oriental climbing perch	Least Concern	Not Listed	No	Yes	No	3
533	Fish	Aplocheilidae	*Aplocheilus armatus*	Whitespot	Least Concern	Not Listed	No	Yes	No	3
534	Fish	Apogonidae	*Cheilodipterus quinquelineatus*	Five-lined cardinalfish	Not Assessed	Not Listed	No	Yes	No	3
535	Fish	Apogonidae	*Ostorhinchus endekataenia*	Candystripe cardinalfish	Not Assessed	Not Listed	No	Yes	Yes	3
536	Fish	Apogonidae	*Ostorhinchus fasciatus*	Four-striped cardinalfish	Not Assessed	Not Listed	No	Yes	No	3
537	Fish	Apogonidae	*Ostorhinchus margaritophorus*	Chequered cardinalfish	Not Assessed	Not Listed	No	Yes	Yes	3
538	Fish	Apogonidae	*Sphaeramia orbicularis*	NA	Not Assessed	Not Listed	No	Yes	No	3
539	Fish	Apogonidae	*Yarica hyalosoma*	NA	Not Assessed	Not Listed	No	Yes	No	3
540	Fish	Atherinidae	*Atherinomorus duodecimalis*	Tropical silverside	Least Concern	Not Listed	No	Yes	Yes	3
541	Fish	Bagridae	*Mystus gulio*	Estuarine catfish	Least Concern	Not Listed	No	Yes	No	3
542	Fish	Belonidae	*Strongylura leiura*	NA	Not Assessed	Not Listed	No	Yes	No	3
543	Fish	Belonidae	*Strongylura strongylura*	NA	Not Assessed	Not Listed	No	Yes	No	3
544	Fish	Blennidae	*Omobranchus ferox*	Whitebar oyster blenny	Least Concern	Not Listed	No	Yes	No	3
545	Fish	Blennidae	*Petroscirtes variabilis*	Variable fang blenny	Least Concern	Not Listed	No	Yes	No	3
546	Fish	Carangidae	*Megalaspis cordyla*	Torpedo scad / chencharu	Least Concern	Not Listed	No	Yes	Yes	3
547	Fish	Carangidae	*Scomberoides commersonianus*	Talang queenfish	Not Assessed	Not Listed	No	Yes	No	3
548	Fish	Chaetodontidae	*Chelmon rostratus*	Copperband butterflyfish	Least Concern	Not Listed	No	Yes	Yes	3
549	Fish	Channidae	*Channa striata*	Common snakehead/aruan	Least Concern	Not Listed	No	Yes	Yes	3
550	Fish	Cichlidae	*Etroplus suratensis*	Green chromide	Least Concern	Not Listed	No	Yes	No	3
551	Fish	Cichlidae	*Amphilophus citrinellus*	Midas cichlid	Not Assessed	Not Listed	No	Yes	Yes	3
552	Fish	Cichlidae	*Oreochromis mossambicus × O. niloticus hybrid*	NA	Vulnerable	Not Listed	No	Yes	Yes	3
553	Fish	Clupeidae	*Anodontostoma chacunda*	Shortnose gizzard shad / chacunda gizzard shad	Least Concern	Not Listed	No	Yes	No	3
554	Fish	Cynoglossidae	*Cynoglossus puncticeps*	Speckled tongue-sole	Not Assessed	Not Listed	No	Yes	No	3
555	Fish	Cynoglossidae	*Paraplagusia bilineata*	Doublelined tongue-sole	Not Assessed	Not Listed	No	Yes	No	3
556	Fish	Dasyatidae	*Brevitrygon walga*	Mangrove whipray	Near Threatened	Not Listed	No	Yes	No	3
557	Fish	Dasyatidae	*Himantura uarnak*	Honeycomb whipray	Vulnerable	Not Listed	Yes	Yes	No	3
558	Fish	Dasyatidae	*Neotrygon kuhlii*	Blue-spotted stingray	Not Assessed	Not Listed	No	Yes	No	3
559	Fish	Dasyatidae	*Taeniura lymma*	NA	Near Threatened	Not Listed	No	Yes	No	3
560	Fish	Drepaneidae	*Drepane punctata*	Spotted sicklefish	Not Assessed	Not Listed	No	Yes	No	3
561	Fish	Eleotridae	*Butis butis*	Crimson-tipped gudgeon	Least Concern	Not Listed	No	Yes	No	3
562	Fish	Eleotridae	*Ophiocara porocephala*	Snakehead gudgeon	Least Concern	Not Listed	No	Yes	No	3
563	Fish	Eleotrididae	*Oxyeleotris marmorata*	Marbled gudgeon	Least Concern	Not Listed	No	Yes	No	3
564	Fish	Gerreidae	*Gerres erythrourus*	Deepbody mojarra / silverbiddy	Least Concern	Not Listed	No	Yes	Yes	3
565	Fish	Gerreidae	*Gerres filamentosus*	Whipfin mojarra	Least Concern	Not Listed	No	Yes	Yes	3
566	Fish	Gerridae	*Gerres oyena*	Common mojarra	Least Concern	Not Listed	No	Yes	No	3
567	Fish	Gobiidae	*Acentrogobius caninus*	Green-shouldered goby	Least Concern	Not Listed	No	Yes	No	3
568	Fish	Gobiidae	*Acentrogobius gracilis*	Slender amoya	Not Assessed	Not Listed	No	Yes	No	3
569	Fish	Gobiidae	*Acentrogobius janthinopterus*	Robust mangrove goby / green-spotted goby	Not Assessed	Not Listed	No	Yes	No	3
570	Fish	Gobiidae	*Acentrogobius nebulosus*	Shadow goby	Least Concern	Not Listed	No	Yes	Yes	3
571	Fish	Gobiidae	*Acentrogobius viridipunctatus*	Papillose goby	Not Assessed	Not Listed	No	Yes	No	3
572	Fish	Gobiidae	*Amblygobius stethophthalmus*	Head-stripe goby	Not Assessed	Not Listed	No	Yes	No	3
573	Fish	Gobiidae	*Bathygobius fuscus*	Common frillfin goby	Least Concern	Not Listed	No	Yes	Yes	3
574	Fish	Gobiidae	*Brachygobius kabiliensis*	Bumblebee goby	Not Assessed	Not Listed	No	Yes	No	3
575	Fish	Gobiidae	*Calamiana illota*	Dirty-face brackish goby	Least Concern	Not Listed	No	Yes	No	3
576	Fish	Gobiidae	*Calamiana variegata*	Stripe-face brackish goby	Least Concern	Not Listed	No	Yes	No	3
577	Fish	Gobiidae	*Cryptocentrus leptocephalus*	Pink-speckled shrimp-goby	Not Assessed	Not Listed	No	Yes	No	3
578	Fish	Gobiidae	*Cryptocentrus maudae*	Saddled shrimp-goby	Least Concern	Not Listed	No	Yes	No	3
579	Fish	Gobiidae	*Drombus triangularis*	Brown shore goby	Not Assessed	Not Listed	No	Yes	Yes	3
580	Fish	Gobiidae	*Istigobius goldmanni*	Black-spotted lagoon-goby	Not Assessed	Not Listed	No	Yes	Yes	3
581	Fish	Gobiidae	*Mugilogobius fasciatus*	Broad-barred mangrove goby	Data Deficient	Not Listed	No	Yes	No	3
582	Fish	Gobiidae	*Mugilogobius tigrinus*	Narrow-barred mangrove goby	Not Assessed	Not Listed	No	Yes	No	3
583	Fish	Gobiidae	*Periophthalmodon schlosseri*	Giant mudskipper	Not Assessed	Not Listed	No	Yes	No	3
584	Fish	Gobiidae	*Periophthalmus argentilineatus*	Silver-lined mudskipper	Not Assessed	Not Listed	No	Yes	No	3
585	Fish	Gobiidae	*Periophthalmus gracilis*	Slender mudskipper	Not Assessed	Not Listed	No	Yes	Yes	3
586	Fish	Gobiidae	*Periophthalmus novemradiatus*	Dusky-gilled mudskipper	Not Assessed	Not Listed	No	Yes	No	3
587	Fish	Gobiidae	*Periophthalmus walailakae*	Yellow-spotted mudskipper	Not Assessed	Not Listed	No	Yes	Yes	3
588	Fish	Gobiidae	*Psammogobius biocellatus*	NA	Least Concern	Not Listed	No	Yes	No	3
589	Fish	Gobiidae	*Pseudogobius avicennia*	Avicennia fat-nose goby	Not Assessed	Not Listed	No	Yes	No	3
590	Fish	Gobiidae	*Pseudogobius javanicus*	Java fat-nose goby	Not Assessed	Not Listed	No	Yes	Yes	3
591	Fish	Gobiidae	*Pseudogobius melanostictus*	Black-spotted fat-nose goby	Not Assessed	Not Listed	No	Yes	No	3
592	Fish	Gobiidae	*Rhinogobius giurinus*	Barcheek goby	Least Concern	Not Listed	No	Yes	No	3
593	Fish	Gobiidae	*Stigmatogobius sadanundio*	Grey knight-goby	Not Assessed	Not Listed	No	Yes	No	3
594	Fish	Haemulidae	*Plectorhinchus gibbosus*	Brown sweetlips / harry hotlips	Least Concern	Not Listed	No	Yes	No	3
595	Fish	Hemiraphidae	*Hyporhamphus quoyi*	Quoy's halfbeak	Not Assessed	Not Listed	No	Yes	Yes	3
596	Fish	Heriramphidae	*Hemiramphidae sp.*	Broad-nose halfbeak / broad-beak halfbeak	Not Assessed	Not Listed	No	Yes	Yes	3
597	Fish	Heriramphidae	*Hemiramphus far*	Black-barred halfbeak	Not Assessed	Not Listed	No	Yes	No	3
598	Fish	Heriramphidae	*Hyporhamphus limbatus*	Congaturi halfbeak	Least Concern	Not Listed	No	Yes	No	3
599	Fish	Labridae	*Choerodon oligacanthus*	Singapore's tuskfish	Least Concern	Not Listed	No	Yes	Yes	3
600	Fish	Labridae	*Halichoeres purpurescens*	Silty wrasse	Least Concern	Not Listed	No	Yes	No	3
601	Fish	Labridae	*Halichoeres bicolor*	Brown-stripe wrasse	Least Concern	Not Listed	No	Yes	No	3
602	Fish	Latidae	*Lates calcarifer*	Seabass	Not Assessed	Not Listed	No	Yes	No	3
603	Fish	Leliognathidae	*Gazza minuta*	Toothpony	Least Concern	Not Listed	No	Yes	No	3
604	Fish	Leliognathidae	*Leiognathus equulus*	Common ponyfish	Least Concern	Not Listed	No	Yes	No	3
605	Fish	Leliognathidae	*Secutor hanedai*	Haneda's pugnose ponyfish	Least Concern	Not Listed	No	Yes	No	3
606	Fish	Loricariidae	*Pterygoplichthys disjunctivus*	Vermiculated sailfin sucker catfish	Not Assessed	Not Listed	No	Yes	Yes	3
607	Fish	Megalopidae	*Megalops cyprinoides*	Indo-pacific tarpon	Data Deficient	Not Listed	No	No	Yes	3
608	Fish	Monacanthidae	*Acreichthys tomentosus*	Seagrass filefish	Least Concern	Not Listed	No	Yes	Yes	3
609	Fish	Monacanthidae	*Monacanthus chinensis*	Fan-bellied filefish	Least Concern	Not Listed	No	Yes	No	3
610	Fish	Monacanthidae	*Pseudomonacanthus macrurus*	NA	Not Assessed	Not Listed	No	Yes	No	3
611	Fish	Mugilidae	*Ellochelon vaigiensis*	Squaretail mullet	Least Concern	Not Listed	No	Yes	Yes	3
612	Fish	Mullidae	*Upeneus sulphureus*	Sulphur goatfish	Least Concern	Not Listed	No	Yes	No	3
613	Fish	Mullidae	*Upeneus tragula*	NA	Least Concern	Not Listed	No	Yes	No	3
614	Fish	Muraenidae	*Gymnothorax tile*	Estuarine moray	Not Assessed	Not Listed	No	Yes	No	3
615	Fish	Ophichthidae	*Pisodonophis cancrivorus*	Burrowing snake-eel	Not Assessed	Not Listed	No	Yes	No	3
616	Fish	Ophichthidae	*Muraenichthys sp.*	Worm eel	Not Assessed	Not Listed	No	Yes	No	3
617	Fish	Ostraciidae	*Lactoria cornuta*	Longhorn cowfish	Not Assessed	Not Listed	No	Yes	Yes	3
618	Fish	Paralichthyidae	*Pseudorhombus arsius*	NA	Not Assessed	Not Listed	No	Yes	No	3
619	Fish	Paralichthyidae	*Pseudorhombus javanicus*	NA	Not Assessed	Not Listed	No	Yes	No	3
620	Fish	Paralichthyidae	*Pseudorhombus malayanus*	NA	Not Assessed	Not Listed	No	Yes	No	3
621	Fish	Paralichthyidae	*Pseudorhombus neglectus*	NA	Not Assessed	Not Listed	No	Yes	No	3
622	Fish	Paralichthyidae	*Pseudorhombus oligodon*	NA	Not Assessed	Not Listed	No	Yes	No	3
623	Fish	Paralichthyidae	*Pseudorhombus polyspilos*	NA	Not Assessed	Not Listed	No	Yes	No	3
624	Fish	Pinguipedidae	*Parapercis xanthozona*	Yellow-barred sandperch	Least Concern	Not Listed	No	Yes	No	3
625	Fish	Platycephalidae	*Platycephalus indicus*	NA	Data Deficient	Not Listed	No	Yes	No	3
626	Fish	Plotosidae	*Paraplotosus albilabris*	White-lipped eeltail catfish	Not Assessed	Not Listed	No	Yes	No	3
627	Fish	Plotosidae	*Plotosus canius*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
628	Fish	Plotosidae	*Plotosus lineatus*	Striped eeltail catfish	Not Assessed	Not Listed	No	Yes	Yes	3
629	Fish	Poeciliidae	*Poecilia reticulata*	Guppy	Not Assessed	Not Listed	No	Yes	Yes	3

630	Fish	Pomacentridae	*Abudefduf bengalensis*	Bengal sergeant	Least Concern	Not Listed	No	Yes	No	3
631	Fish	Pomacentridae	*Abudefduf sexfasciatus*	Scissors-tail sergeant	Least Concern	Not Listed	No	Yes	No	3
632	Fish	Pomacentridae	*Amphiprion frenatus*	Tomato anemonefish	Least Concern	Vulnerable	Yes	Yes	No	3
633	Fish	Pomacentridae	*Amphiprion clarkii*	NA	Not Assessed	Vulnerable	Yes	Yes	No	3
634	Fish	Pomacentridae	*Amphiprion ocellaris*	False clown anemonefish	Not Assessed	Vulnerable	Yes	Yes	No	3
635	Fish	Pomacentridae	*Dischistodus fasciatus*	Yellow-banded damsel	Not Assessed	Not Listed	No	Yes	No	3
636	Fish	Pomacentridae	*Dischistodus prosopotaenia*	Honey-head damsel	Not Assessed	Not Listed	No	Yes	Yes	3
637	Fish	Pristigastridae	*Ilisha elongata*	Elongate Ilisha shad	Least Concern	Not Listed	No	Yes	No	3
638	Fish	Psettodidae	*Psettodes erumei*	Indian halibut	Not Assessed	Not Listed	No	Yes	No	3
639	Fish	Siganidae	*Siganus canaliculatus*	White-spotted rabbitfish	Least Concern	Not Listed	No	Yes	Yes	3
640	Fish	Siganidae	*Siganus javus*	Streaked rabbitfish	NA	NA	NA	Yes	Yes	3
641	Fish	Sillaginidae	*Sillaginidae sp.*	NA	Least Concern	Not Listed	No	Yes	Yes	3
642	Fish	Soleidae	*Brachirus orientalis*	Oriental sole	Not Assessed	Not Listed	No	Yes	No	3
643	Fish	Soleidae	*Solea ovata*	Ovate sole	Least Concern	Not Listed	No	Yes	No	3
644	Fish	Soleidae	*Zebrias zebra*	Zebra sole	Not Assessed	Not Listed	No	Yes	No	3
645	Fish	Soleidae	*Pardachirus pavoninus*	Peacock sole	Least Concern	Not Listed	No	Yes	No	3
646	Fish	Synbranchidae	*Monopterus albus*	Sunda swamp-eel	Least Concern	Not Listed	No	Yes	Yes	3
647	Fish	Synbranchidae	*Ophisternon bengalense*	Mangrove swamp eel	Least Concern	Not Listed	No	Yes	No	3
648	Fish	Syngnathidae	*Hippichthys cyanospilos*	Blue-speckled pipefish	Least Concern	Not Listed	No	Yes	No	3
649	Fish	Syngnathidae	*Ichthyocampus carce*	Freshwater pipefish / mangrove pipefish	Least Concern	Not Listed	No	Yes	No	3
650	Fish	Syngnathidae	*Syngnathoides biaculeatus*	NA	Least Concern	Not Listed	No	Yes	No	3
651	Fish	Syngnathidae	*Hippocampus kuda*	Estuarine seahorse	Vulnerable	Vulnerable	Yes	Yes	Yes	3
652	Fish	Terapontidae	*Pelates quadrilineatus*	Tumpeter perch	Not Assessed	Not Listed	No	Yes	Yes	3
653	Fish	Terapontidae	*Terapon jarbua*	NA	Least Concern	Not Listed	No	Yes	Yes	3
654	Fish	Terapontidae	*Terapon theraps*	NA	Least Concern	Not Listed	No	Yes	No	3
655	Fish	Tetraodonitdae	*Tetraodon nigroviridis*	Spotted green puffer	Not Assessed	Not Listed	No	Yes	No	3
656	Fish	Tetrarogidae	*Paracentropogon longispinis*	Long-spined waspfish / longspine scorpionfish	Not Assessed	Not Listed	No	Yes	Yes	3
657	Fish	Toxotidae	*Toxotes chatareus*	Spotted archerfish	Not Assessed	Not Listed	No	Yes	No	3
658	Fish	Toxotidae	*Toxotes jaculatrix*	Banded archerfish	Least Concern	Not Listed	No	Yes	No	3
659	Fish	Zenarchopteridae	*Zenarchopterus buffonis*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
660	Bivalve	Arcidae	*Acar plicata*	NA	Not Assessed	Not Listed	No	Yes	No	3
661	Bivalve	Arcidae	*Anadara antiquata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
662	Bivalve	Arcidae	*Anadara sp.*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
663	Bivalve	Arcidae	*Barbatia amygdalumtostum*	NA	Not Assessed	Not Listed	No	Yes	No	3
664	Bivalve	Arcidae	*Barbatia sp.*	NA	NA	NA	No	Yes	Yes	3
665	Bivalve	Arcidae	*Tegillarca granosa*	Blood cockle	Not Assessed	Not Listed	No	Yes	No	3
666	Bivalve	Cardiidae	*Cardiidae sp.*	NA	NA	NA	No	Yes	Yes	3
667	Bivalve	Cardiidae	*Fragum unedo*	Strawberry cockle	Not Assessed	Not Listed	No	Yes	Yes	3
668	Bivalve	Cardiidae	*Vasticardium flavum*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
669	Bivalve	Cardiidae	*Vasticardium pectiniforme*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
670	Bivalve	Corbulidae	*Corbula ovalina*	NA	Not Assessed	Not Listed	No	Yes	No	3
671	Bivalve	Cyrenidae	*Geloina coaxans*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
672	Bivalve	Cyrenidae	*Geloina expansa*	Giant mud clam, lokan	Not Assessed	Not Listed	No	Yes	Yes	3
673	Bivalve	Cyrenidae	*Geloina sp.*	NA	NA	NA	No	Yes	Yes	3
674	Bivalve	Isognomonidae	*Isognomon ephippium*	Mangrove saddle oyster	Not Assessed	Not Listed	No	Yes	No	3
675	Bivalve	Isognomonidae	*Isognomon isognomum*	NA	Not Assessed	Not Listed	No	Yes	No	3
676	Bivalve	Isognomonidae	*Isognomon legumen*	NA	Not Assessed	Not Listed	No	Yes	No	3
677	Bivalve	Isognomonidae	*Isognomon sp.*	NA	NA	NA	No	Yes	Yes	3
678	Bivalve	Lucinidae	*Anodontia edentula*	NA	Not Assessed	Not Listed	No	Yes	No	3
679	Bivalve	Lucinidae	*Austriella corrugata*	Corrugated lucine	Not Assessed	Not Listed	No	Yes	No	3
680	Bivalve	Lucinidae	*Caecella horsfieldi*	NA	Not Assessed	Not Listed	No	Yes	No	3
681	Bivalve	Lucinidae	*Pegophysema philippiana*	NA	Not Assessed	Not Listed	No	Yes	No	3
682	Bivalve	Mactridae	*Lutraria rhynchaena*	NA	Not Assessed	Not Listed	No	Yes	No	3
683	Bivalve	Mactridae	*Mactra grandis*	Plain mactra	Not Assessed	Not Listed	No	Yes	No	3
684	Bivalve	Mactridae	*Mactridae sp.*	NA	NA	NA	No	Yes	Yes	3
685	Bivalve	Malleidae	*Vulsella vulsella*	Sponge finger	Not Assessed	Not Listed	No	Yes	No	3
686	Bivalve	Mytilidae	*Leiosolenus malaccanus*	NA	Not Assessed	Not Listed	No	Yes	No	3
687	Bivalve	Mytilidae	*Modiolus sp.*	NA	NA	NA	No	Yes	Yes	3
688	Bivalve	Ostreidae	*Ostreidae sp.*	NA	NA	NA	No	Yes	Yes	3
689	Bivalve	Pectinidae	*Decatopecten radula*	Scallop	Not Assessed	Not Listed	No	Yes	No	3
690	Bivalve	Pinnidae	*Atrina pectinata*	Fan shell	Not Assessed	Not Listed	No	Yes	Yes	3
691	Bivalve	Pinnidae	*Pinna bicolor*	Two-colloured fan shell	Not Assessed	Vulnerable	Yes	Yes	No	3
692	Bivalve	Placunidae	*Placuna ephippium*	Saddle oyster	Not Assessed	Not Listed	No	Yes	No	3
693	Bivalve	Placunidae	*Placuna placenta*	Windowpane oyster	Not Assessed	Not Listed	No	Yes	No	3
694	Bivalve	Plicatulidae	*Plicatula australis*	Southern kitten paw	Not Assessed	Not Listed	No	Yes	No	3
695	Bivalve	Psamobiidae	*Psamobiidae sp.*	NA	NA	NA	No	Yes	Yes	3
696	Bivalve	Semelidae	*Semele carnicolor*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
697	Bivalve	Solenidae	*Solen sp.*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
698	Bivalve	Tellinidae	*Macalia bruguieri*	NA	Not Assessed	Not Listed	No	Yes	No	3
699	Bivalve	Tellinidae	*Scutarcopagia linguafelis*	Cat's tongue tellin	Not Assessed	Not Listed	No	Yes	No	3
700	Bivalve	Tellinidae	*Tellinella cruciata*	NA	Not Assessed	Not Listed	No	Yes	No	3
701	Bivalve	Tellinidae	*Tellinidae sp.*	NA	NA	NA	No	Yes	Yes	3
702	Bivalve	Veneridae	*Anomalodiscus squamosus*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
703	Bivalve	Veneridae	*cf. Meretrix sp.*	NA	NA	NA	No	Yes	Yes	3
704	Bivalve	Veneridae	*Circe scripta*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
705	Bivalve	Veneridae	*Circe tumefacta*	NA	Not Assessed	Not Listed	No	Yes	No	3
706	Bivalve	Veneridae	*Circe undatina*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
707	Bivalve	Veneridae	*Gafrarium dispar*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
708	Bivalve	Veneridae	*Gafrarium divaricatum*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
709	Bivalve	Veneridae	*Gafrarium pectinatum*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
710	Bivalve	Veneridae	*Gafrarium pectinatum & tumidum synomised*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
711	Bivalve	Veneridae	*Gafrarium sp.*	NA	NA	NA	No	Yes	Yes	3
712	Bivalve	Veneridae	*Globivenus toreuma*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
713	Bivalve	Veneridae	*Marcia hiantina*	NA	Not Assessed	Not Listed	No	Yes	No	3
714	Bivalve	Veneridae	*Marcia japonica*	NA	Not Assessed	Not Listed	No	Yes	No	3
715	Bivalve	Veneridae	*Tapes literatus*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
716	Bivalve	Veneridae	*Veneridae sp.*	NA	NA	NA	No	Yes	Yes	3
717	Bivalve	Veneridae	*Venerupis aspera*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
718	Cephalopod	Idiosepiidae	*Idiosepius sp.*	Pygmy squid	Not Assessed	Not Listed	No	Yes	No	3
719	Cephalopod	Loliginidae	*Sepioteuthis lessoniana*	Bigfin reef squid, oval squid	Not Assessed	Not Listed	No	Yes	Yes	3
720	Cephalopod	Octopodidae	*Octopodidae sp.*	Octopus	Not Assessed	Not Listed	No	Yes	No	3
721	Gastropoda	Achatinidae	*Subulinidae sp.*	NA	NA	NA	No	No	Yes	3
722	Gastropoda	Aplysiidae	*Phyllaplysia sp.*	Seagrass sea hare	Not Assessed	Not Listed	No	Yes	No	3
723	Gastropoda	Assimineidae	*Sphaerassiminea miniata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
724	Gastropoda	Batillariidae	*Batillaria zonalis*	Zoned horned shell	Not Assessed	Not Listed	No	Yes	No	3
725	Gastropoda	Bornellidae	*Bornella stellifer*	Starry bornella nudibranch	Not Assessed	Not Listed	No	Yes	Yes	3
726	Gastropoda	Buccinidae	*Engina armillata*	NA	Not Assessed	Not Listed	No	Yes	No	3
727	Gastropoda	Buccinidae	*Pollia fumosa*	Smoky goblet	Not Assessed	Not Listed	No	Yes	No	3
728	Gastropoda	Cerithiidae	*Cerithium coralium*	NA	Least Concern	Not Listed	No	Yes	Yes	3
729	Gastropoda	Cerithiidae	*Cerithium sp.*	NA	NA	NA	No	Yes	Yes	3
730	Gastropoda	Cerithiidae	*Cerithium torresi*	NA	Not Assessed	Not Listed	No	Yes	No	3
731	Gastropoda	Cerithiidae	*Cerithium traillii*	Traill's cerith	Not Assessed	Endangered	Yes	Yes	No	3
732	Gastropoda	Cerithiidae	*Cerithium zonatum*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
733	Gastropoda	Cerithiidae	*Clypeomorus batillariaeformis*	NA	Not Assessed	Not Listed	No	Yes	No	3
734	Gastropoda	Cerithiidae	*Clypeomorus bifasciata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
735	Gastropoda	Cerithiidae	*Clypeomorus cf. bifasciata*	NA	NA	NA	No	Yes	Yes	3
736	Gastropoda	Cerithiidae	*Clypeomorus pellucida*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
737	Gastropoda	Cerithiidae	*Clypeomorus sp.*	NA	NA	NA	No	Yes	Yes	3
738	Gastropoda	Cerithiidae	*Rhinoclavis aspera*	NA	Not Assessed	Not Listed	No	Yes	No	3
739	Gastropoda	Cerithiidae	*Rhinoclavis sinensis*	NA	Not Assessed	Not Listed	No	Yes	No	3
740	Gastropoda	Cerithiidae	*Rhinoclavis vertagus*	NA	Not Assessed	Not Listed	No	Yes	No	3
741	Gastropoda	Chilodontaidae	*Euchelus asper*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
742	Gastropoda	Columbellidae	*Corbulidae sp.*	NA	NA	NA	No	Yes	Yes	3
743	Gastropoda	Columbellidae	*Euplica scripta*	Lettered dove shell	Not Assessed	Not Listed	No	Yes	Yes	3
744	Gastropoda	Columbellidae	*Parametaria epamella*	Cone-shaped dove shell	Not Assessed	Not Listed	No	Yes	No	3
745	Gastropoda	Columbellidae	*Pardalinops testudinaria*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
746	Gastropoda	Columbellidae	*Pictocolumbella ocellata*	Lightning dove shell	Not Assessed	Not Listed	No	Yes	Yes	3
747	Gastropoda	Columbellidae	*Pseudanachis basedowi*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
748	Gastropoda	Costellariidae	*Vexillum gruneri*	NA	Not Assessed	Not Listed	#N/A	Yes	No	3
749	Gastropoda	Costellariidae	*Vexillum sp.*	NA	NA	NA	No	Yes	Yes	3
750	Gastropoda	Cypraeidae	*Cypraea errones*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
751	Gastropoda	Cypraeidae	*Eclogavena quadrimaculata*	NA	Not Assessed	Not Listed	No	Yes	No	3
752	Gastropoda	Cypraeidae	*Erronea cylindrica*	NA	Not Assessed	Not Listed	No	Yes	No	3
753	Gastropoda	Cypraeidae	*Erronea errones*	Wandering cowrie	Not Assessed	Not Listed	No	Yes	No	3
754	Gastropoda	Cypraeidae	*Erronea onyx*	Onyx cowrie	Not Assessed	Not Listed	No	Yes	Yes	3
755	Gastropoda	Cypraeidae	*Erronea ovum*	Egg cowrie	Not Assessed	Not Listed	No	Yes	Yes	3
756	Gastropoda	Cypraeidae	*Mauritia arabica*	NA	Not Assessed	Vulnerable	Yes	Yes	Yes	3
757	Gastropoda	Discodorididae	*Tayuva lilacina*	NA	NA	NA	NA	Yes	Yes	3
758	Gastropoda	Ellobiidae	*Cassidula aurisfelis*	NA	Least Concern	Not Listed	No	Yes	Yes	3
759	Gastropoda	Ellobiidae	*Cassidula nucleus*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
760	Gastropoda	Ellobiidae	*Cassidula nucleus*	Banded mangrove ear snail	Not Assessed	Not Listed	#N/A	Yes	No	3
761	Gastropoda	Ellobiidae	*Cassidula sowerbyana*	NA	Not Assessed	Not Listed	No	Yes	No	3
762	Gastropoda	Ellobiidae	*Ellobium aurisjudae*	NA	Least Concern	Not Listed	No	Yes	No	3
763	Gastropoda	Ellobiidae	*Ellobium cf. aurisjudae*	NA	NA	NA	NA	Yes	Yes	3
764	Gastropoda	Ellobiidae	*Laemodonta punctatostriata*	NA	Not Assessed	Not Listed	No	Yes	No	3
765	Gastropoda	Ellobiidae	*Laemodonta siamensis*	NA	Not Assessed	Not Listed	No	Yes	No	3
766	Gastropoda	Ellobiidae	*Melampus pulchellus*	NA	Not Assessed	Not Listed	No	Yes	No	3
767	Gastropoda	Elysiidae	*Elysia ornata*	Ornate elysia / Ornate leaf slug	Not Assessed	Not Listed	No	Yes	Yes	3
768	Gastropoda	Epitoniidae	*Epitonium sp.*	NA	NA	NA	No	Yes	Yes	3
769	Gastropoda	Limapontiidae	*Costasiella paweli*	NA	Not Assessed	Not Listed	No	Yes	No	3
770	Gastropoda	Littorinidae	*Echinolittorina malaccana*	NA	Not Assessed	Not Listed	No	Yes	No	3
771	Gastropoda	Littorinidae	*Echinolittorina melanacme*	NA	Not Assessed	Not Listed	No	Yes	No	3
772	Gastropoda	Littorinidae	*Littoraria ardouiniana*	NA	Not Assessed	Not Listed	No	Yes	No	3
773	Gastropoda	Littorinidae	*Littoraria articulata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
774	Gastropoda	Littorinidae	*Littoraria carinifera*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
775	Gastropoda	Littorinidae	*Littoraria conica*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
776	Gastropoda	Littorinidae	*Littoraria intermedia*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
777	Gastropoda	Littorinidae	*Littoraria lutea*	Littoral	Not Assessed	Not Listed	No	Yes	Yes	3
778	Gastropoda	Littorinidae	*Littoraria melanostoma*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
779	Gastropoda	Littorinidae	*Littoraria pallescens*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
780	Gastropoda	Littorinidae	*Littoraria sp.*	NA	NA	NA	No	Yes	Yes	3
781	Gastropoda	Littorinidae	*Littoraria strigata*	NA	Not Assessed	Not Listed	No	Yes	No	3
782	Gastropoda	Littorinidae	*Littoraria vespacea*	NA	Not Assessed	Not Listed	No	Yes	No	3
783	Gastropoda	Melongenidae	*Volegalea cochlidium*	Spiral melongena	Not Assessed	Not Listed	No	Yes	Yes	3
784	Gastropoda	Mitridae	*Mitra proscissa*	NA	Not Assessed	Not Listed	No	Yes	No	3
785	Gastropoda	Mitridae	*Pseudonebularia proscissa*	NA	Not Assessed	Not Listed	No	Yes	No	3
786	Gastropoda	Mitridae	*Pterygia dactylus*	NA	Not Assessed	Not Listed	No	Yes	No	3
787	Gastropoda	Muricidae	*cf. Drupella margariticola*	NA	NA	NA	NA	Yes	Yes	3

788	Gastropoda	Muricidae	*Chicoreus capucinus*	Mangrove murex	Not Assessed	Not Listed	No	Yes	Yes	3
789	Gastropoda	Muricidae	*Drupella margariticola*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
790	Gastropoda	Muricidae	*Drupella rugosa*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
791	Gastropoda	Muricidae	*Ergalatax contracta*	NA	Not Assessed	Not Listed	No	Yes	No	3
792	Gastropoda	Muricidae	*Indothais cf. javanica*	NA	NA	NA	No	Yes	Yes	3
793	Gastropoda	Muricidae	*Indothais gradata*	NA	Not Assessed	Not Listed	No	Yes	No	3
794	Gastropoda	Muricidae	*Mancinella echinata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
795	Gastropoda	Muricidae	*Morula fusca*	NA	Not Assessed	Not Listed	No	Yes	No	3
796	Gastropoda	Muricidae	*Morula musiva*	NA	Not Assessed	Not Listed	No	Yes	No	3
797	Gastropoda	Muricidae	*Murex trapa*	NA	Not Assessed	Vulnerable	Yes	Yes	Yes	3
798	Gastropoda	Muricidae	*Muricidae sp.*	NA	NA	NA	No	Yes	Yes	3
799	Gastropoda	Muricidae	*Orania bimucronata*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
800	Gastropoda	Muricidae	*Orania cf. bimucronata*	NA	NA	NA	No	Yes	Yes	3
801	Gastropoda	Muricidae	*Orania sp.*	NA	NA	NA	No	Yes	Yes	3
802	Gastropoda	Muricidae	*Reishia bituberculatis*	Bituberculate rock shell	Not Assessed	Not Listed	No	Yes	Yes	3
803	Gastropoda	Muricidae	*Reishia clavigera*	NA	Least Concern	Not Listed	No	Yes	No	3
804	Gastropoda	Muricidae	*Reishia jubilaea*	NA	Least Concern	Not Listed	No	Yes	No	3
805	Gastropoda	Muricidae	*Semiricinula fusca*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
806	Gastropoda	Muricidae	*Semiricinula muricoides*	NA	Not Assessed	Not Listed	No	Yes	No	3
807	Gastropoda	Nassariidae	*Nassarius crenoliratus*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
808	Gastropoda	Nassariidae	*Nassarius echinatus*	Prickly whelk	Not Assessed	Not Listed	No	Yes	Yes	3
809	Gastropoda	Nassariidae	*Nassarius jacksonianus*	Mud whelk	Not Assessed	Not Listed	No	Yes	No	3
810	Gastropoda	Nassariidae	*Nassarius limnaeiformis*	NA	Not Assessed	Not Listed	No	Yes	No	3
811	Gastropoda	Nassariidae	*Nassarius livescens*	Common whelk	Not Assessed	Not Listed	No	Yes	Yes	3
812	Gastropoda	Nassariidae	*Nassarius nodifer*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
813	Gastropoda	Nassariidae	*Nassarius olivaceus*	Olive whelk	Not Assessed	Not Listed	No	Yes	No	3
814	Gastropoda	Nassariidae	*Nassarius pullus*	Dog whelk	Not Assessed	Not Listed	No	Yes	No	3
815	Gastropoda	Nassariidae	*Nassarius sp.*	NA	NA	NA	No	Yes	Yes	3
816	Gastropoda	Nassariidae	*Reticunassa paupera*	NA	Not Assessed	Not Listed	No	Yes	No	3
817	Gastropoda	Naticidae	*Natica gualtieriana*	NA	Not Assessed	Not Listed	No	Yes	No	3
818	Gastropoda	Naticidae	*Naticarius zonalis*	Pink moon snail	Not Assessed	Not Listed	No	Yes	No	3
819	Gastropoda	Naticidae	*Naticidae sp.*	NA	NA	NA	No	Yes	Yes	3
820	Gastropoda	Naticidae	*Notocochlis tigrina*	Tiger moon snail	Not Assessed	Not Listed	No	Yes	No	3
821	Gastropoda	Naticidae	*Polinices mammilla*	Oval moon snail	Not Assessed	Not Listed	No	Yes	No	3
822	Gastropoda	Naticidae	*Polinices peselephanti*	NA	Not Assessed	Not Listed	No	Yes	No	3
823	Gastropoda	Naticidae	*Polinices sp.*	NA	NA	NA	No	Yes	Yes	3
824	Gastropoda	Naticidae	*Tanea lineata*	Lined moon snail	Not Assessed	Not Listed	No	Yes	No	3
825	Gastropoda	Neritidae	*Clithon faba*	NA	Least Concern	Not Listed	No	Yes	No	3
826	Gastropoda	Neritidae	*Clithon oualaniensis*	NA	Least Concern	Vulnerable	Yes	Yes	Yes	3
827	Gastropoda	Neritidae	*Nerita albicilla*	Blotched nerite	Not Assessed	Not Listed	No	Yes	No	3
828	Gastropoda	Neritidae	*Nerita balteata*	Lined nerite	Least Concern	Not Listed	No	Yes	Yes	3
829	Gastropoda	Neritidae	*Nerita chamaeleon*	Chameleon nerite	Not Assessed	Not Listed	No	Yes	Yes	3
830	Gastropoda	Neritidae	*Nerita histrio*	Scaled nerite	Not Assessed	Not Listed	No	Yes	Yes	3
831	Gastropoda	Neritidae	*Nerita lineata*	Common nerite	Not Assessed	Not Listed	No	Yes	No	3
832	Gastropoda	Neritidae	*Nerita planospira*	Flat-spire nerite	Not Assessed	Vulnerable	Yes	Yes	Yes	3
833	Gastropoda	Neritidae	*Nerita polita*	Polished nerite	Not Assessed	Not Listed	No	Yes	No	3
834	Gastropoda	Neritidae	*Nerita undata*	Waved nerite	Not Assessed	Not Listed	No	Yes	Yes	3
835	Gastropoda	Neritidae	*Neritina cornucopia*	Black-mouth nerite	Not Assessed	Not Listed	No	Yes	Yes	3
836	Gastropoda	Onchidium	*Onchidium sp.*	NA	NA	NA	No	Yes	Yes	3
837	Gastropoda	Ovulidae	*Diminovula alabaster*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
838	Gastropoda	Ovulidae	*Ovulidae sp.*	NA	NA	NA	No	Yes	Yes	3
839	Gastropoda	Planaxidae	*Planaxis sulcatus*	Planaxis snail	Not Assessed	Not Listed	No	Yes	No	3
840	Gastropoda	Potamididae	*Cerithidea djadjarensis*	NA	Not Assessed	Not Listed	No	Yes	No	3
841	Gastropoda	Potamididae	*Cerithidea obtusa*	Chut-chut	Not Assessed	Not Listed	No	Yes	Yes	3
842	Gastropoda	Potamididae	*Cerithidea quoyii*	Quadrate horn shell	Not Assessed	Not Listed	No	Yes	No	3
843	Gastropoda	Potamididae	*Pirenella alata*	NA	Not Assessed	Not Listed	No	Yes	No	3
844	Gastropoda	Potamididae	*Pirenella cingulata*	Girdled horn snail	Not Assessed	Not Listed	No	Yes	No	3
845	Gastropoda	Potamididae	*Pirenella microptera*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
846	Gastropoda	Potamididae	*Pirenella sp.*	NA	NA	NA	No	Yes	Yes	3
847	Gastropoda	Potamididae	*Potamididae sp.*	NA	NA	NA	No	Yes	Yes	3
848	Gastropoda	Potamididae	*Telescopium telescopium*	Telescope snail	Least Concern	Not Listed	No	Yes	No	3
849	Gastropoda	Potamididae	*Terebralia sulcata*	Mud creeper	Not Assessed	Not Listed	No	Yes	Yes	3
850	Gastropoda	Pyramidellidae	*Otopleura auriscati*	Cat's ear otopleura	Not Assessed	Not Listed	No	Yes	No	3
851	Gastropoda	Ranellidae	*Gyrineum natator*	Tuberculate gyre-triton	Not Assessed	Not Listed	No	Yes	Yes	3
852	Gastropoda	Strombidae	*Canarium urceus*	Black-lipped conch	Not Assessed	Vulnerable	Yes	Yes	Yes	3
853	Gastropoda	Strombidae	*Strombidae sp.*	NA	NA	NA	No	Yes	Yes	3
854	Gastropoda	Strombidae	*Strombus turturella*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
855	Gastropoda	Trochidae	*Chrysostoma paradoxum*	NA	Not Assessed	Not Listed	No	Yes	No	3
856	Gastropoda	Trochidae	*Euchelus asper*	NA	Not Assessed	Not Listed	No	Yes	No	3
857	Gastropoda	Trochidae	*Euchelus atratus*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
858	Gastropoda	Trochidae	*Monodonta labio*	Maculated top shell	Not Assessed	Not Listed	No	Yes	Yes	3
859	Gastropoda	Trochidae	*Trochidae sp.*	NA	NA	NA	No	Yes	Yes	3
860	Gastropoda	Trochidae	*Trochus maculatus*	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	3
861	Gastropoda	Trochidae	*Trochus niloticus*	NA	Not Assessed	Vulnerable	Yes	Yes	No	3
862	Gastropoda	Trochidae	*Umbonium vestiarium*	Button snail	Not Assessed	Vulnerable	Yes	Yes	Yes	3
863	Gastropoda	Turbinidae	*Astralium calcar*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
864	Gastropoda	Turbinidae	*Turbo bruneus*	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	3
865	Gastropoda	Turbinidae	*Turbo intercostalis*	Turban snail	Not Assessed	Not Listed	No	Yes	Yes	3
866	Gastropoda	Volutidae	*Cymbiola nobilis*	Noble volute	Not Assessed	Vulnerable	Yes	Yes	No	3
867	Polyplacophora	Chitonidae	*Acanthopleura gemmata*	Jewelled chiton	Not Assessed	Endangered	Yes	Yes	Yes	3
868	Anomura (Hermit crabs & others)	Coenobitidae	*Coenobita violascens*	Land hermit crab	Not Assessed	Vulnerable	Yes	Yes	Yes	3
869	Anomura (Hermit crabs & others)	Diogenidae	*Clibanarius longitarsus*	Blue striped hermit crab	Not Assessed	Not Listed	No	Yes	No	3
870	Anomura (Hermit crabs & others)	Diogenidae	*Clibanarius infraspinatus*	Orange striped hermit crab	Not Assessed	Not Listed	No	Yes	Yes	3
871	Anomura (Hermit crabs & others)	Diogenidae	*Diogenes sp.*	Tidal hermit crab	Not Assessed	Not Listed	No	Yes	Yes	3
872	Anomura (Hermit crabs & others)	Porcellanidae	*Petrolisthes kranjiensis*	NA	Not Assessed	Not Listed	No	Yes	No	3
873	Anomura (Hermit crabs & others)	Porcellanidae	*Petrolisthes sp.*	NA	NA	NA	No	Yes	Yes	3
874	Brachyura (True crabs)	Camptandriidae	*Baruna minuta*	Mouthface crab	Not Assessed	Not Listed	No	Yes	No	3
875	Brachyura (True crabs)	Camptandriidae	*Baruna trigranulum*	NA	Not Assessed	Not Listed	No	Yes	No	3
876	Brachyura (True crabs)	Camptandriidae	*Camptandriidae sp.*	NA	NA	NA	No	Yes	Yes	3
877	Brachyura (True crabs)	Dorippidae	*Neodorippe callida*	Leaf-porter crab	Not Assessed	Not Listed	No	Yes	No	3
878	Brachyura (True crabs)	Dotillidae	*Scopimera sp.*	Sand bubbler crab	Not Assessed	Not Listed	No	Yes	Yes	3
879	Brachyura (True crabs)	Dotillidae	*Ilyoplax longicarpus*	NA	Not Assessed	Not Listed	No	Yes	No	3
880	Brachyura (True crabs)	Dotillidae	*Dotilla sp.*	NA	Not Assessed	Not Listed	No	Yes	No	3
881	Brachyura (True crabs)	Dromiidae	*Cryptodromia pileifera*	Sponge crab	Not Assessed	Not Listed	No	Yes	No	3
882	Brachyura (True crabs)	Dromiidae	*Dromiidae sp.*	NA	NA	NA	No	Yes	Yes	3
883	Brachyura (True crabs)	Eriphiidae	*Eriphia ferox*	Ferocious reef crab	Not Assessed	Vulnerable	Yes	Yes	Yes	3
884	Brachyura (True crabs)	Grapsidae	*Metopograpsus latifrons*	NA	Not Assessed	Not Listed	No	Yes	No	3
885	Brachyura (True crabs)	Grapsidae	*Metopograpsus quadridentatus*	NA	Not Assessed	Not Listed	No	Yes	No	3
886	Brachyura (True crabs)	Grapsidae	*Metopograpsus messor*	NA	Not Assessed	Not Listed	No	Yes	No	3
887	Brachyura (True crabs)	Grapsidae	*Metopograpsus oceanicus*	NA	Not Assessed	Not Listed	No	Yes	No	3
888	Brachyura (True crabs)	Grapsidae	*Metopograpsus sp.*	Purple climbing crab	NA	NA	No	Yes	Yes	3
889	Brachyura (True crabs)	Matutidae	*Ashtoret lunaris*	Yellow moon crab	Not Assessed	Not Listed	No	Yes	Yes	3
890	Brachyura (True crabs)	Menippidae	*Myomenippe hardwickii*	Thunder crab	Not Assessed	Not Listed	No	Yes	Yes	3
891	Brachyura (True crabs)	Ocypodidae	*Ocypode ceratophthalmus*	Horn-eyed ghost crab	Not Assessed	Not Listed	No	Yes	Yes	3
892	Brachyura (True crabs)	Ocypodidae	*Gelasimus tetragonon*	Tetragonal fiddler crab	Not Assessed	Not Listed	No	Yes	Yes	3
893	Brachyura (True crabs)	Ocypodidae	*Gelasimus vocans*	Orange fiddler crab	Not Assessed	Not Listed	No	Yes	Yes	3
894	Brachyura (True crabs)	Ocypodidae	*Ocypodidae sp.*	Fiddler crab sp.	NA	NA	No	Yes	Yes	3
895	Brachyura (True crabs)	Oziidae	*Ozius guttatus*	Spotted-belly forceps crab	Not Assessed	Not Listed	No	Yes	Yes	3
896	Brachyura (True crabs)	Pilumnidae	*Pilumnus vespertilio*	Common hairy crab	Not Assessed	Not Listed	No	Yes	Yes	3
897	Brachyura (True crabs)	Pilumnidae	*Benthopanope eucratoides*	NA	Not Assessed	Not Listed	No	Yes	No	3
898	Brachyura (True crabs)	Pilumnidae	*Heteropanope sp.*	NA	NA	NA	No	Yes	Yes	3
899	Brachyura (True crabs)	Portunidae	*Thalamita danae*	Blue swimming crab	Not Assessed	Not Listed	No	Yes	Yes	3
900	Brachyura (True crabs)	Portunidae	*Thalamita prymna*	Blue-spined swimming crab	Not Assessed	Not Listed	No	Yes	No	3
901	Brachyura (True crabs)	Portunidae	*Portunus pelagicus*	Flower crab	Not Assessed	Not Listed	No	Yes	Yes	3
902	Brachyura (True crabs)	Portunidae	*Thalamita sima*	Four-lobed swimming crab	Not Assessed	Not Listed	No	Yes	No	3
903	Brachyura (True crabs)	Portunidae	*Scylla paramamosain*	Green mud crab	Not Assessed	Not Listed	No	Yes	No	3
904	Brachyura (True crabs)	Portunidae	*Scylla olivacea*	Orange mud crab	Not Assessed	Not Listed	No	Yes	Yes	3
905	Brachyura (True crabs)	Portunidae	*Thalamita crenata*	Powder blue-clawed swimming crab	Not Assessed	Not Listed	No	Yes	Yes	3
906	Brachyura (True crabs)	Portunidae	*Scylla tranquebarica*	Purple mud crab	Not Assessed	Not Listed	No	Yes	Yes	3
907	Brachyura (True crabs)	Portunidae	*Thalamita spinimana*	Red swimming crab	Not Assessed	Not Listed	No	Yes	No	3
908	Brachyura (True crabs)	Portunidae	*Portunus sp.*	NA	NA	NA	No	Yes	Yes	3
909	Brachyura (True crabs)	Portunidae	*Scylla sp.*	NA	NA	NA	No	Yes	Yes	3
910	Brachyura (True crabs)	Portunidae	*Thalamita sp.*	NA	NA	NA	No	Yes	Yes	3
911	Brachyura (True crabs)	Portunidae	*Portunus cf. pelagicus*	Flower crab	NA	NA	No	Yes	Yes	3
912	Brachyura (True crabs)	Sesarmidae	*Selatium brockii*	Mangrove tree-dwelling crab	Not Assessed	Not Listed	No	Yes	No	3
913	Brachyura (True crabs)	Sesarmidae	*Episesarma singaporense*	Singapore tree climbing crab	Not Assessed	Not Listed	No	Yes	No	3
914	Brachyura (True crabs)	Sesarmidae	*Episesarma versicolor*	Violet tree climbing crab	Not Assessed	Not Listed	No	Yes	No	3
915	Brachyura (True crabs)	Sesarmidae	*Nanosesarma sp.*	NA	NA	NA	No	Yes	Yes	3
916	Brachyura (True crabs)	Sesarmidae	*Clistocoeloma sp.*	NA	NA	NA	No	Yes	Yes	3
917	Brachyura (True crabs)	Sesarmidae	*Neosesarma sp.*	NA	NA	NA	No	Yes	Yes	3
918	Brachyura (True crabs)	Sesarmidae	*Parasesarma rutilimanum*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
919	Brachyura (True crabs)	Sesarmidae	*Parasesarma sp.*	NA	NA	NA	No	Yes	Yes	3
920	Brachyura (True crabs)	Sesarmidae	*Perisesarma sp.*	NA	NA	NA	No	Yes	Yes	3
921	Brachyura (True crabs)	Sesarmidae	*Sesarmidae sp.*	NA	NA	NA	No	Yes	Yes	3
922	Brachyura (True crabs)	Varunidae	*Metaplax elegans*	NA	Not Assessed	Not Listed	No	Yes	Yes	3
923	Brachyura (True crabs)	Varunidae	*Varunidae sp.*	NA	NA	NA	No	Yes	Yes	3
924	Brachyura (True crabs)	Varunidae	*Metaplax sp.*	NA	NA	NA	No	Yes	Yes	3
925	Brachyura (True crabs)	Xanthidae	*Xanthidae sp.*	NA	NA	NA	No	Yes	Yes	3
926	Brachyura (True crabs)	Xanthidae	*Lophozozymus pictor*	Mosaic crab	Not Assessed	Endangered	Yes	Yes	No	3
927	Brachyura (True crabs)	Xanthidae	*Atergatis floridus*	NA	Not Assessed	Vulnerable	Yes	Yes	No	3
928	Caridea (Caridean shrimp)	Alpheidae	*Alpheus euphrosyne*	NA	Not Assessed	Not Listed	No	Yes	No	3
929	Caridea (Caridean shrimp)	Alpheidae	*Alpheus microrhynchus*	NA	Not Assessed	Not Listed	No	Yes	No	3
930	Caridea (Caridean shrimp)	Alpheidae	*Alpheus rapax*	NA	Not Assessed	Not Listed	No	Yes	No	3
931	Caridea (Caridean shrimp)	Alpheidae	*Alpheidae sp.*	Many-banded snapping shrimp	NA	NA	No	Yes	Yes	3
932	Caridea (Caridean shrimp)	Alpheidae	*Athanas japonicus*	NA	Not Assessed	Vulnerable	Yes	Yes	No	3
933	Caridea (Caridean shrimp)	Alpheidae	*Athanas polymorphus*	NA	Not Assessed	Vulnerable	Yes	Yes	No	3
934	Caridea (Caridean shrimp)	Palaemonidae	*Palaemon sp.*	Glass shrimp	NA	NA	No	Yes	Yes	3
935	Caridea (Caridean shrimp)	Palaemonidae	*Ancylocaris brevicarpalis*	Peacock-tail anemone shrimp	Not Assessed	Not Listed	No	Yes	No	3
936	Caridea (Caridean shrimp)	Palaemonidae	*Periclimenes sp.*	Little red-nosed shrimp	NA	NA	No	Yes	No	3
937	Caridea (Caridean shrimp)	Penaeidae	*Penaeidae sp.*	Blue-tailed penaeid prawn	NA	NA	No	Yes	Yes	3
938	Caridea (Caridean shrimp)	Processidae	*Nikoides sibogae*	NA	Not Assessed	Not Listed	No	Yes	No	3
939	Gebiidea (Mud lobsters & mud shrimp)	Thalassinidae	*Thalassina sp.*	Mud lobster	NA	Vulnerable	Yes	Yes	No	3
940	Horseshoe Crab	Limulidae	*Tachypleus gigas*	Coastal horseshoe crab	Data deficient	Endangered	Yes	Yes	No	3
941	Horseshoe Crab	Limulidae	*Carcinoscorpius rotundicauda*	Mangrove horseshoe crab	Data deficient	Vulnerable	Yes	Yes	Yes	3
942	Cnidarian	-	*Actiniaria sp.*	NA	NA	NA	No	Yes	Yes	3
943	Cnidarian	Oulastreidae	*Oulastrea crispata*	Zebra coral	Least Concern	Not Listed	No	Yes	Yes	3
944	Cnidarian	Phymantidae	*Phymanthus sp.*	Frilly anemone	Not Assessed	Not Listed	No	Yes	Yes	3
945	Cnidarian	Stichodactylidae	*Stichodactyla haddoni*	Haddon's carpet anemone	Not Assessed	Not Listed	No	Yes	Yes	3

946	Echinoderm	-	*Clypeasteroida sp.*	Sand dollar sp.	NA	NA	No	Yes	Yes	3
947	Echinoderm	Archasteridae	*Cryptasterina sp.*	Cryptic sea star	NA	NA	No	Yes	Yes	3
948	Echinoderm	Asterinidae	*Aquilonastra coronata*	Crown sea star / rock star	Not Assessed	Not Listed	No	Yes	Yes	3
949	Echinoderm	Goniasteridae	*Stellaster childreni*	Galloping sea star	NA	NA	No	Yes	Yes	3
950	Echinoderm	Laganidae	*Jacksonaster depressum*	Thick-edged sand dollar	Not Assessed	Vulnerable	Yes	Yes	Yes	3
951	Echinoderm	Ophiotrichidae	*Ophiotrichidae sp.*	Brittle star sp.	NA	NA	No	Yes	Yes	3
952	Echinoderm	Sclerodactylidae	*Afrocucumis africana*	Little African sea cucumber	Not Assessed	Not Listed	No	Yes	Yes	3
953	Nemertea	-	*Nemertea sp.*	Ribbon worm sp.	NA	NA	No	Yes	Yes	3
954	Platyhelminthes	-	*Acotylea sp.*	NA	NA	NA	No	Yes	Yes	3
955	Platyhelminthes	-	*Platyhelminthes sp.*	NA	NA	NA	No	Yes	Yes	3
956	Platyhelminthes	Pseudocerotidae	*Pseudoceros concinnus*	Elegant lined flatworm	Not Assessed	Not Listed	No	Yes	Yes	3
957	Platyhelminthes	Pseudocerotidae	*Pseudoceros indicus*	Blue-dotted flatworm	Not Assessed	Not Listed	No	Yes	Yes	3
958	Platyhelminthes	Pseudocerotidae	*Pseudoceros prudhoei*	Silver-lining flatworm	Not Assessed	Not Listed	No	Yes	Yes	3
959	Polychaete	-	*Polychaete sp.*	NA	NA	NA	No	Yes	Yes	3
960	Polychaete	Amphinomidae	*Eurythoe complanata*	Reef bristleworm	Not Assessed	Not Listed	No	Yes	Yes	3
961	Polychaete	Polynoidae	*Polynoidae sp.*	NA	NA	NA	No	Yes	Yes	3
962	Polychaete	Sabellidae	*Sabellidae sp.*	NA	NA	NA	No	Yes	Yes	3
963	Sipuncula	-	*Sipunculus sp.*	Peanut worm sp.	NA	NA	No	Yes	Yes	3

Appendix Z
Tree Protection and Conservation Guidelines

Delivering a better world

TREE PROTECTION AND CONSERVATION GUIDELINES

By

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Lead Arborist

Camphora Pte Ltd

ISA certified

SG-0117A

CONTENT REQUIREMENTS

This document outlines specific measures to protect trees during construction or other site disturbance. The content and scope of the document will vary based on the site, type of construction, tree species, tree location and other factors.

TREE PROTECTION AND CONSERVATION GUIDELINES

This section outlines the general provisions for tree protection before, during and after construction. Additional measures may be added by the attending arborist on a case-by-case basis.

PRE-DEMOLITION/PILING/CONSTRUCTION

1. Pre-Construction Meeting

   The attending arborist shall attend a pre-construction meeting with the project contractor or construction supervisor to explain the tree protection and monitoring requirements as outlined in this document.

   In addition, the project contractor or construction supervisor shall complete the 'VERIFICATION OF TREE PROTECTION CHECKLIST' as attached in Annex A before the onset of the construction.

1.1 Tree Protection Zone

Prior to any site clearing (demolition works), piling works, grading, trenching or other soil disturbance, a tree protection zone (TPZ) must be installed as follows:

i. Type

The barriers should be temporary, made of a hard material, 1.8-m tall and firmly installed into the ground.

ii. Ground protection

Mulching material (can be compost or woodchips) at 100-mm thick to be laid within the TPZ. If woodchips are used, termicide treatment is necessary to prevent the introduction of harmful termites.

Apply complete fertilizer (N:P:K 15:15:15) upon or together with the application of mulch.

iii. Signage

A readily-visible and waterproof sign shall be installed on all sides of the fencing around each individual protected tree. The size of each sign must be a minimum of 300mm wide and must contain the wording below:

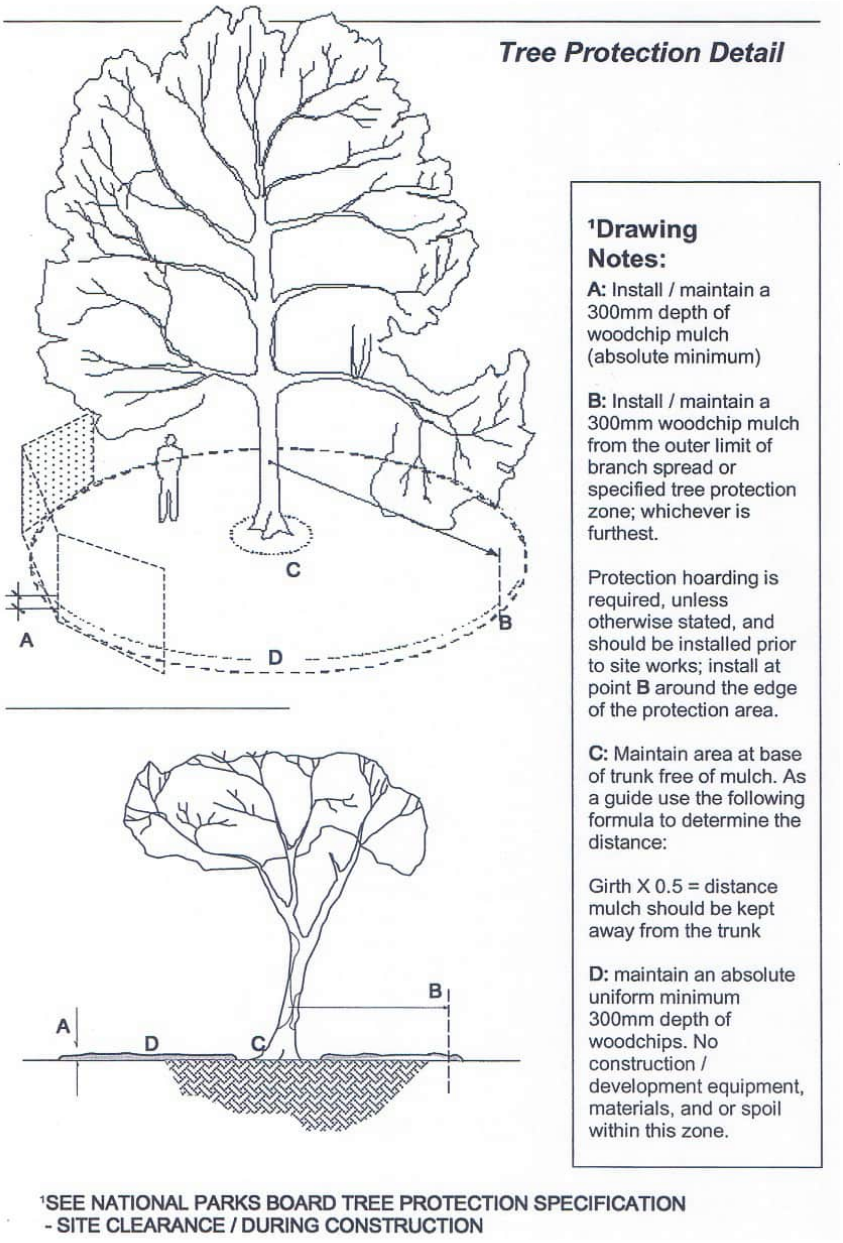
KEEP OUT!
TREE PROTECTION ZONE

Entry prohibited. This fence shall remain in place throughout the entire construction period.

iv. Fencing installation

Installation must be approved by the attending arborists and/or the approved authority prior to construction.

A diagrammatic representation of a proper Tree protection zone is presented below.



1.2 Tree pruning and removal

Various trees may need to be pruned away from structures or proposed construction activity. ***Construction or contractor personnel shall not attempt pruning or removal.*** Consultation and written approval with attending arborist must be obtained prior to pruning.

Removal of trees adjacent to trees that are to be retained requires planning and skilled arboriculture workers. Trees should not be removed by pushing with excavators/heavy

machinery or with lumberjack (one cut) methods. Directional felling methods (notch and back-cut) should be deployed during removal of trees.

Removal of trees that extend into branches or roots of protected trees shall not be attempted by the demolition or construction crew, or by grading or other heavy equipment. Before removing tree stumps, the project manager shall seek the advice from the attending arborist determine if roots are entangled with trees that are to remain. If so, these stumps shall have their roots severed before extracting them.

1.3 Site Clearance

To avoid lumber jack felling of trees that may severely damage the canopy of conserved trees, it is recommended that qualified (see Point 4.3 Tree Conservation Guidelines) Arboriculture contractors be engage to fell trees adjacent to protected trees to ensure that the trees (when cut) fall away from the protected trees and their associated TPZs.

Contractors carry out tree felling works near assigned TPZs of conserved trees should

i. Employ directional felling through the use of notch and back cuts

ii. Deploy cranes to tension trunks in the direction of the drop

iii. Carry out pruning of canopy branches to remove entangling branches

iv. If trees to be removed are taller than neighbouring trees to be retained, removal of branches should be carried out in a controlled manner using ropes and cranes to avoid damaging canopy of the lower trees.

v. To avoid pruning of conserved trees at the proximity unless consultation and approval from attending arborist has been obtained.

vi. No tree should be removed by pushing with an excavator or heavy machinery.

DURING DEMOLITION/PILING/CONSTRUCTION

2. Tree Protection Zone Restrictions

- No ground disturbance, grading, trenching or other construction activities shall occur within the TPZ except as specified and/or approved by the attending arborist or authority.
- No construction material, debris, machinery (e.g. generators) or other construction waste shall be stored within the TPZ. Weight and presence of these materials increases

soil compaction and reduces the area exposed for water infiltration and gaseous exchange.



Figure 1: Construction material and heavy machinery are prohibited within the TPZ

- Excavation works within the TPZ are strictly prohibited. Unless otherwise specified by the attending arborist, all work done within the TPZ shall be completed with manual trenching with hand tools or other hand held power tools that will not cause any root/tree damage.

  If roots need to be cut, it shall be done using proper equipment (e.g. pruning saw, chain saw) under the supervision of the attending arborist.



Figure 2: Trial trench by skilled workers using hand tools exposing root architecture

- Nailing, tying or pasting of materials on trees is prohibited. The tree shall not be used

as an anchor for supporting structures during the construction.



Figure 3: Using tree as anchor may damage its bark.



Figure 4: No nails shall be driven into the tree as it promotes infiltration of pests/diseases

- Phytotoxic materials such as fuels, oils, cement, chemicals, and paint shall be kept away and stored/mixed at least 2.5m from the tree protection zone. Such chemicals can significantly change the cation exchange capacity and pH of the soil, rendering nutrient uptake inefficient and creating an environment too toxic for the roots to grow.

  Construction slug especially from piling works should not be deposited within the TPZ. Such sludge is usually high in clay content and when layered over and within the TPZ could significantly alter the water infiltration and gaseous exchange rates of the root absorption area of the tree.

Canvass sheets/Eco-mat must be laid on the existing soil near the tree in view of soil protection during the demolition, drilling or other construction activities pertaining to concrete structures.



Figure 5: Construction cement deposited at tree base.



Figure 6: Tree showing signs of decline overtime.

- Lowering the grade around trees can have an immediate and long-term effect on trees. Typically, most roots are within the top 1m of soil, and most of the fine roots active in water and nutrient absorption are in the top 300mm.

  A) Grade changes within the TPZ are not permitted.

  B) Grade changes outside the TPZ shall not significantly alter drainage.

  C) Grade changes under specifically approved circumstances shall not allow more than

200mm of fill soil or allow more than 150mm of existing soil to be removed from natural grade, unless mitigated.

D) Grade fills over 200mm or impervious overlay shall incorporate an approved permanent aeration system, permeable material, or other approved mitigation.

E) Grade cuts exceeding 150mm shall incorporate retaining walls or an appropriate transition equivalent.

No removal of the TPZ will be permitted under any circumstances.



Figure 7: Inappropriate installation/maintenance of TPZ during construction.

2.2 Proximity of Heavy machinery/vehicles

Heavy vehicles and machinery (e.g. excavators, piling cranes, 10 wheelers) movement should be limited near TPZs. Temporary access/passageways should be planned to avoid conserved trees.



Figure 8: Tree branches were severed due to the negligence of the crane operator.

2.3 Drainage Considerations

In the event that water ponding conditions develop in the course of construction due to change in grade/platform levels, construction events or any other unforeseeable factors, the contractor is required to improve drainage around or within the TPZ in consultation with the attending arborist.

2.4 Trenching, Excavation and Equipment use

Trenching, excavation or boring within the TPZ shall be limited to activities approved by the architect and/or attending Arborist. Explore alternatives for trenching outside the root zone. Avoid exposing roots during hot, dry weather. Backfill trenches as soon as possible with soil and soak with water the same day. Small roots can die in 10 to 15 minutes and large roots may not survive an hour of exposure. If the trench must be left open all roots must be kept moist by wrapping them in peat moss and burlap.

i. Root Severance

No roots greater than 0.2m in diameter shall be cut without approval of the attending Arborist. Tunneling under roots is the approved alternative. Prior to excavation for foundation/footing/walls, or grading or trenching within the TPZ, roots shall be severed cleanly outside the TPZ to the depth of the planned excavation. When roots must be cut, they shall be cut cleanly with a sharp saw to sound wood and flush with the trench site.

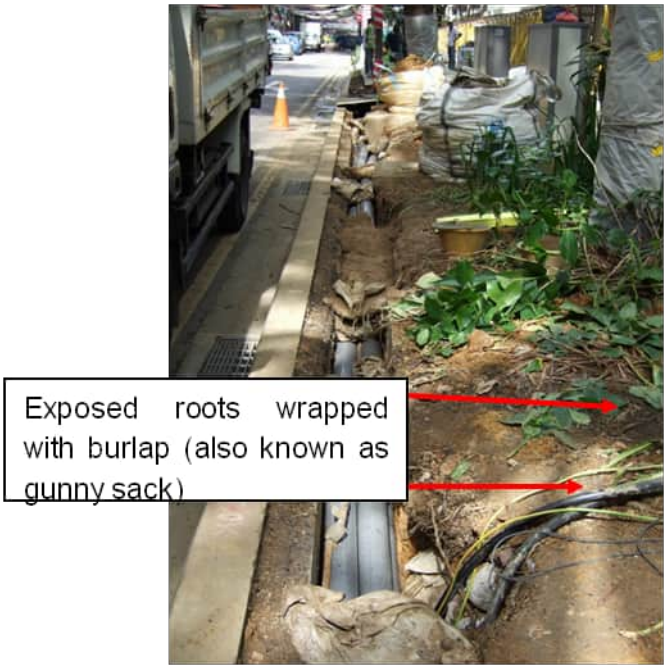


Figure 9: Tunneling under roots.

ii. Excavation

Any approved excavation, demolition, or extraction of material shall be performed with equipment that is placed outside the TPZ. Hand digging, hydraulic, or pneumatic excavation (e.g. air spading) are permitted methods for excavation within the TPZ.



Figure 10: Root exploratory works using an air spade. Air spading avoids damage of structural and even feeder roots of the tree.

iii. Heavy Equipment

Use of backhoes, Ditch-Witches, steal tread tractors or other heavy vehicles within the TPZ is prohibited unless approved by the attending Arborist. If allowed, a protective root buffer is required.

2.5 Tree Care

In the course of construction, the following measures may be necessary to reduce the effects of construction stress on protected trees. Quantum, duration and extent to be advised by attending arborist.

(A) Fertilization

A1 Vertical trenches and Nutrient Sinks

Create vertical trenching and nutrient sinks. These nutrient sinks should go down to at least 300mm deep and should be filled with high grade compost and 12% Humic acid (dilution 1:100). These sinks will act to reduce construction stress by conditioning the soil, increasing soil microbiological activity and increasing organic matter At least 24 numbers of vertical trenches / nutrient sinks are required for trees greater than 2m in girth. Vertical trenches for trees under 2m in girth will be

determined empirically by the attending arborist and will take into account site conditions, tree species and its pre construction vigor. Top up nutrient sinks every 3 months.

A2 Soil Injection of Biostimulants
Mandatory if TPZ has been infringed into, soil compaction has occurred, tree condition has observed to have declined (indicators: reduction in Live crown ratios, twig die back at canopy and change in leaf colour/size/density)

- **Purpose :** To de-compact soil using a hydraulic pressurized delivery of biostimulants that both hydrates and aerates at the same time. Aim to reduce compaction to less than 400psi in the first 500mm of the soil.
- Mixed bio stimulants – serves 2 functions
  Decompaction
- Humic acid – as soil conditioner and chelating agent (Nutrients are mobilized in forms that the plants can accept), facilitate release of nutrients and reduces leaching. Also improves water holding capacities of soil.
- Liquid gypsum / Dolomite – soil conditioner, improve soil structure and facilitate release of nutrients in clay soils typical of local conditions.

  To feed and increase soil microbiology to increase tree vigor post damage. Soil microbiology helps nutrient uptake and encourages healthy root growth critical to prevent construction stress.

- Mollases – High CE for immediate uptake,
- Fish Kelp – Protein source. Organic fertilisers
- Slow release fertilizers (Osmocote)

(B) Watering
- Water supplement during periods of drought.
- Watering duration and extent depends on site conditions and species.
- Watering is carried out until first signs of inundation are observed (i.e. water infiltration observe to slow down significantly).

(C) Myconate treatment
- To trigger and stimulate growth of existing mycorrhizae.

(D) Pesticide treatment
- To control pest (e.g. termites, borers, caterpillars etc) when it occurs.
- Fungicide or bacteriocide as required or as determined by attending arborist to control microbe pathogens.

(E) Additonal pruning

To be carried out in consultation with the attending Arborist. Trees are living things and may require some form of pruning during the course of the development.

- Crown cleansing- Prune to remove dead branches that may have developed through time.
- Crown lifting- Prune to lift crown to avoid new amenities.
- Crown thinning- Prune to reduce canopy branches and loading.

Structural pruning (including crown reduction) to remove branches that may obstruct new amenities and/or movement of critically necessary equipment may require the planning and standing supervision of the attending arborist.

2.6 Engaging Arboriculture Contractors

All arboriculture works should be carried out by skilled and trained arboriculture teams. As such, it is preferred that only Arboriculture contractors which have at least 8 years working experience and must show previous work experience in developments of similar size or complexity. Arboriculture contractors should meet NParks safety requirements for work at height, LTA's requirements for temporary works along roadsides (where necessary) and have a certified arborist to supervise the pruning/felling/planting works.

All arboriculture workers engaged in tree climbing and chainsaw work shall possess a valid basic tree climbing certification base upon demonstrated competence in the WSQ module conducted by CUGE or an equivalent WSQ approved training organization.

Each Arboriculture crew shall possess the following VALID competences,
Operation of chainsaw for ground work (LS-MT-103E-1)
Chainsaw safety and maintenance (LS-MT-102E-1)
Perform formative pruning of young trees (LS-MT-114E-1)
Provide Arboriculture support on site (LS-MT-116E-1)
Workplace safety and health – operators (ES-WSH-101G-1)
Respond to Emergency (LS-HM-208E-1)
Perform advance rigging and climbing techniques (LS-HM-308S-1)
Perform aerial tree access and aerial rescue skills (Ls-HM-204S-1)
Implement and apply appropriate risk and safety management to sector practices (LS-BP-301S-1)
Prepare risk assessment report (LS-HM-406S-1)
Operate and work from an elevated work platform (CUGE-ARB-3501)

POST-CONSTRUCTION

3. Soft Landscaping

Ground works, site preparation and implementation of all landscaping near protected trees must be undertaken carefully.

TPZ barriers can only be removed at this juncture for the purpose. However, when working near trees, cultivation of soils in these areas must be cautiously handled using hand tools. Planting of shrubs shall be at a distance of at least 300mm away from existing root collar.

Avoid changes to ground levels or unnecessary compaction of soils within proximity to existing trees during the course.



Figure 10: New plantings at a minimum distance of 300mm (all round) from root collar

ANNEX A

VERIFICATION OF TREE PROTECTION CHECKLIST

Note: The project contractor or construction supervisor shall verify in writing that all **preconstruction** tree preservation conditions have been met as follows:

Submitted by: _____

Company/Project: _____

Date/Time: _____

S/N	Action	Checked (✔)	Remarks
1	Installation of tree fencing around identified trees within/near site (hard material at 1.8m tall)		
2	Tree protection zone (TPZ) dimensions meets specifications (from NParks and/or attending arborist)		
3	Warning signs prominently displayed on all sides of the fencing, including designated tree number		
4	Removal of construction material (ie machinery, debris, tools etc) within TPZ		
5	Mulching of high grade compost of 100mm thick around identified trees		
6	Completion of tree pruning (if necessary) under the supervision/written approval with the attending arborist		
7	Establishment of a tree maintenance schedule according to arborist recommendations (to be submitted to attending arborist)		

Verified by (attending arborist): _____

Date/Time: _____

Appendix AA
Fauna
Inspection Form

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Fauna Inspections

Inspection Round:
Date of Inspection:
Start and End Time:
Project Title:

Contractor:
Conducted by:
Weather:

Fauna inspections across site include: (a) inspection of hoarding integrity and possibility of wildlife entry into site, (b) inspection of erosion control blankets for wildlife entrapment, and (c)inspection within and around TPZs on site for wildlife presence. Ad-hoc fauna inspections will be conducted when the need arises, e.g. when vegetation needs to be removed on site.

S/N	Activity	Zone inspected	Findings	Coordinates (Lat, Long)	Remarks, photos	Actions to be taken

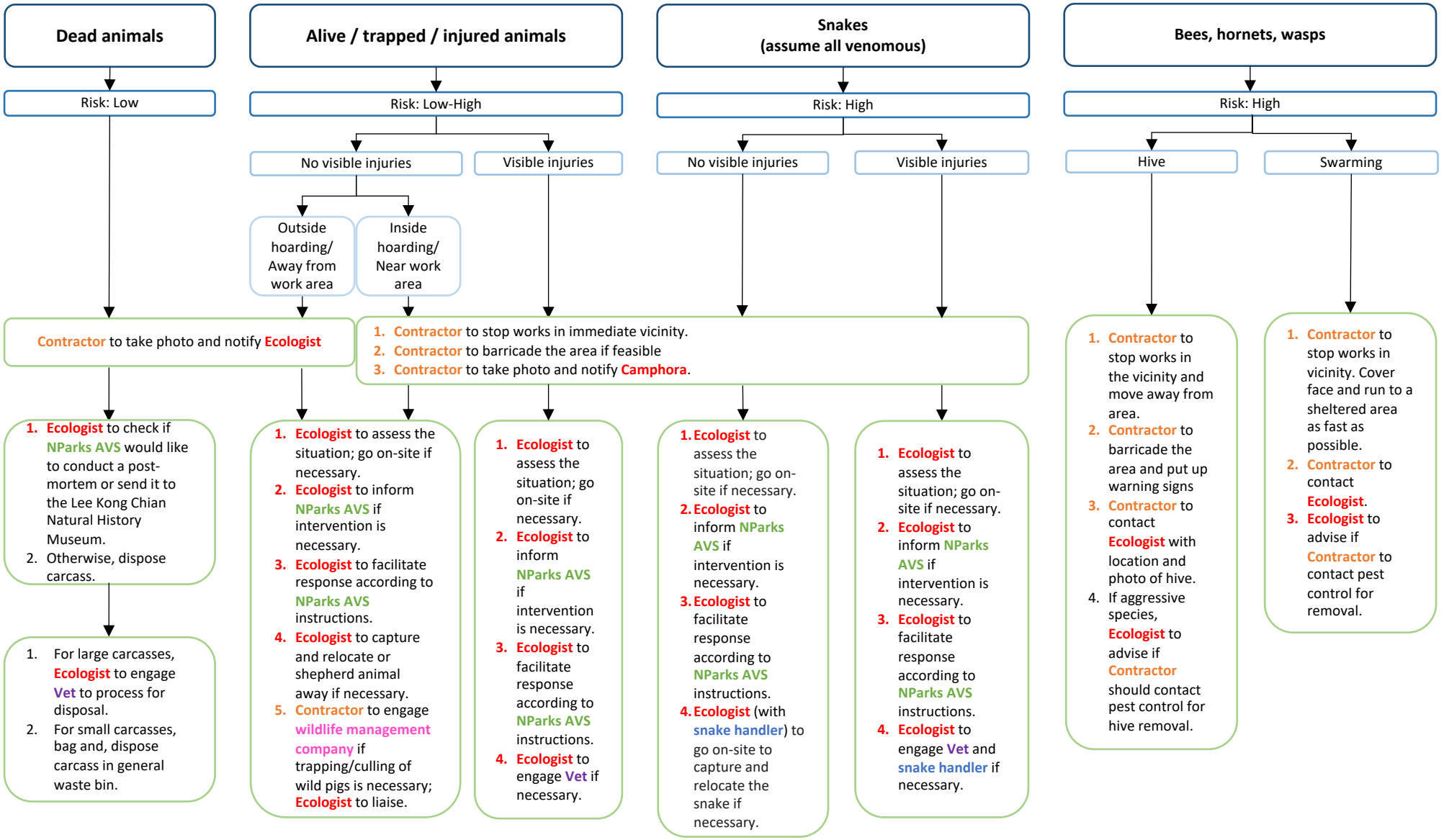
Appendix BB
Pre-felling
Inspection Form

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Pre-felling Tree Inspection Form							Personnel:				**Assessment criteria** **Fell**: Ready to fell, no findings of old nests **S-EM**: Fell with supervision by Environmental Manager. Possibly active nest, presence of bird's nest fern, thick vegetation, tree cavities, ground burrows, logs and debris piles. **S-ECO**: Fell with supervision by Ecologist. During bird breeding season. Possibly active nest, presence of bird's nest fern, thick vegetation, tree cavities, ground burrows, logs and debris piles. **Do not fell**: Sedentary fauna, active nest or burrow seen; bee or wasp nest.			
Inspection Date			Valid until				Weather:							
Site:			Bird breeding season (Mar – Jul)?: Y / N				Time In:		Time out:					
Tree No.	Fauna		Nests		Thick vegetation		Tree cavities		Ground burrows		Log and debris piles		Assessment	Remarks
	Details (species, behaviour, height)	Photo no.	Details (nest type, epiphytic fern, species, eggs or young present)	Photo no.	Details (climbers, oil palm, nibong palm, etc)	Photo no.	Details (species, eggs/ young present, height)	Photo no.	Details (species, eggs/ young present, height)	Photo no.	Details	Photo no.		

Appendix CC
Fauna Response and Rescue Plan

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Dead animals
Risk: Low
Contractor to take photo and notify Ecologist
1. Ecologist to check if NParks AVS would like to conduct a post-mortem or send it to the Lee Kong Chian Natural History Museum.
2. Otherwise, dispose carcass.
1. For large carcasses, Ecologist to engage Vet to process for disposal.
2. For small carcasses, bag and, dispose carcass in general waste bin.
Alive / trapped / injured animals
Risk: Low-High
No visible injuries
Visible injuries
Outside hoarding/ Away from work area
Inside hoarding/ Near work area
1. Contractor to stop works in immediate vicinity.
2. Contractor to barricade the area if feasible
3. Contractor to take photo and notify Camphora.
1. Ecologist to assess the situation; go on-site if necessary.
2. Ecologist to inform NParks AVS if intervention is necessary.
3. Ecologist to facilitate response according to NParks AVS instructions.
4. Ecologist to capture and relocate or shepherd animal away if necessary.
5. Contractor to engage wildlife management company if trapping/culling of wild pigs is necessary; Ecologist to liaise.
1. Ecologist to assess the situation; go on-site if necessary.
2. Ecologist to inform NParks AVS if intervention is necessary.
3. Ecologist to facilitate response according to NParks AVS instructions.
4. Ecologist to engage Vet if necessary.
Snakes (assume all venomous)
Risk: High
No visible injuries
Visible injuries
1. Ecologist to assess the situation; go on-site if necessary.
2. Ecologist to inform NParks AVS if intervention is necessary.
3. Ecologist to facilitate response according to NParks AVS instructions.
4. Ecologist (with snake handler) to go on-site to capture and relocate the snake if necessary.
1. Ecologist to assess the situation; go on-site if necessary.
2. Ecologist to inform NParks AVS if intervention is necessary.
3. Ecologist to facilitate response according to NParks AVS instructions.
4. Ecologist to engage Vet and snake handler if necessary.
Bees, hornets, wasps
Risk: High
Hive
Swarming
1. Contractor to stop works in the vicinity and move away from area.
2. Contractor to barricade the area and put up warning signs
3. Contractor to contact Ecologist with location and photo of hive.
4. If aggressive species, Ecologist to advise if Contractor should contact pest control for hive removal.
1. Contractor to stop works in vicinity. Cover face and run to a sheltered area as fast as possible.
2. Contractor to contact Ecologist.
3. Ecologist to advise if Contractor to contact pest control for removal.

Role	**Company**	**Contact person**	**Contact number**
Ecologist	Camphora	<name of project IC>	<mobile number of project IC>
Vet	WAVES	Dr. Serena	9743 3777
Snake handler	-	Alex Figueroa	9181 3586
Wildlife management company	<name of wildlife management company>	<name of contact person>	<mobile number of contact person>
NParks Animal and Veterinary Services (AVS)			1800 476 1600

Appendix DD
Wildlife Incident Form

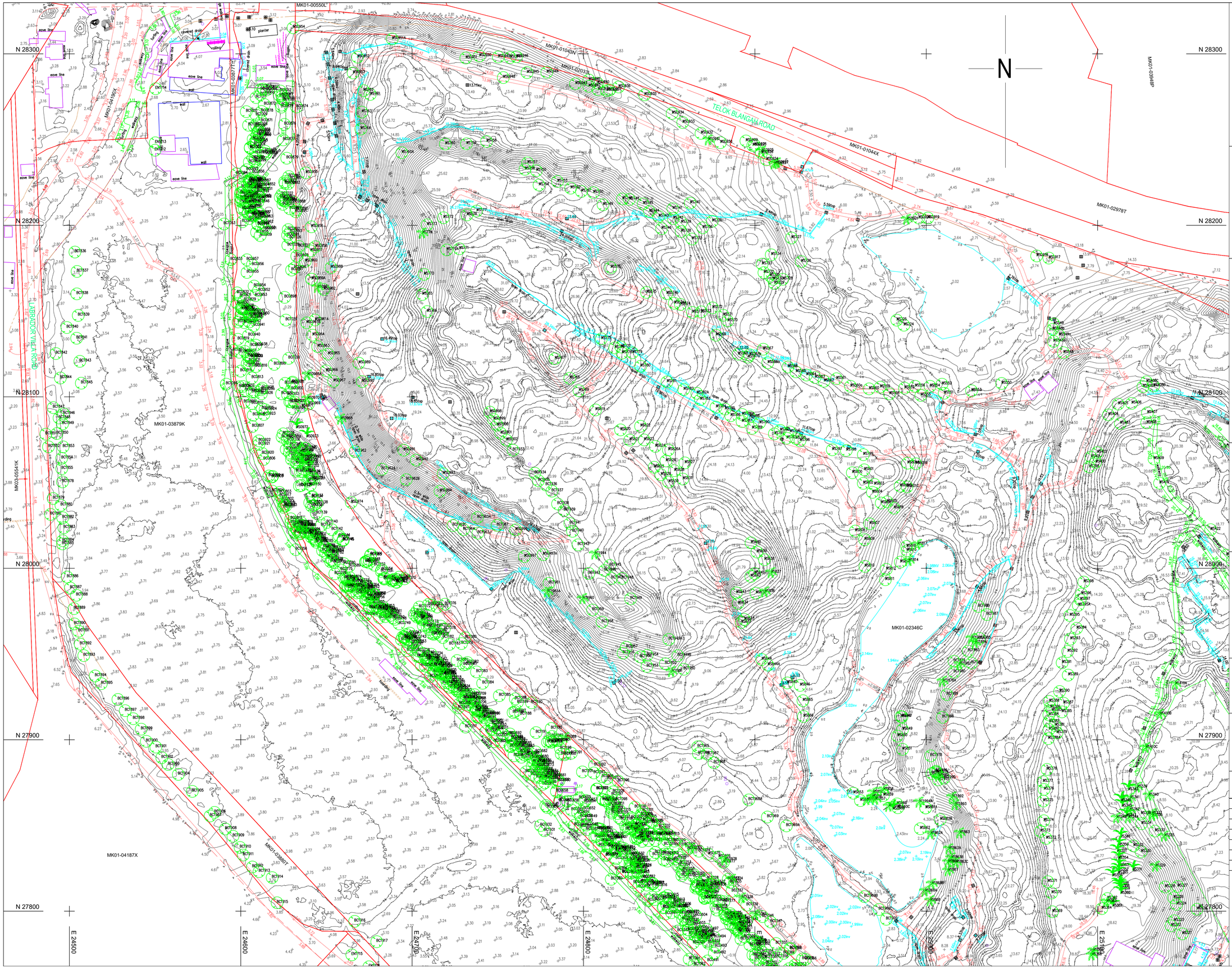
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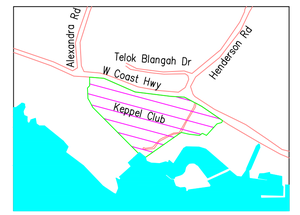
Wildlife Incident Form

Date (YYYY/MM/DD):	Time:
Description of Location:	GPS Coordinates:
Wildlife Observed:	Animal Condition (circle): Alive / Killed / Dead / Injured Animal activity (circle): Moving / Resting / Trapped
Photographs Taken:	MFLG and NParks notified: Yes / No Name of staff notified:
Describe Incident (e.g., activities being carried out; what animal was doing; personnel involved):	
Actions Taken:	
Reported by:	Reported to:
Contact no.:	Contact no:
Remarks:	

Appendix EE
Topography and Hydrography Survey Report

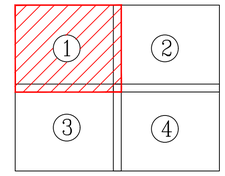
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LOCATION PLAN
NOT TO SCALE

SHEET INDEX:



LEGEND :

- LAMP POST
- IRON GRATING
- DROP INLET CHAMBER
- INSPECTION CHAMBER
- CAMERA
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- BOUNDARY
- HOARDING
- RAILING
- GUARDRAIL
- FENCE
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- DEPTH BELOW CHART DATUM (CD).

NOTES: (LAND)

1. INFORMATION SHOWN IS CORRECT AT TIME OF SURVEY.
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3. ALL TOPOGRAPHY POINTS ARE IN SINGAPORE HEIGHT DATUM (SHD).
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6. THIS IS NOT AN ENCROACHMENT SURVEY PLAN.
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NOTES: (HYDROGRAPHIC)

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SINGAPORE 349473
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Email: office@yjpsurveyors.com

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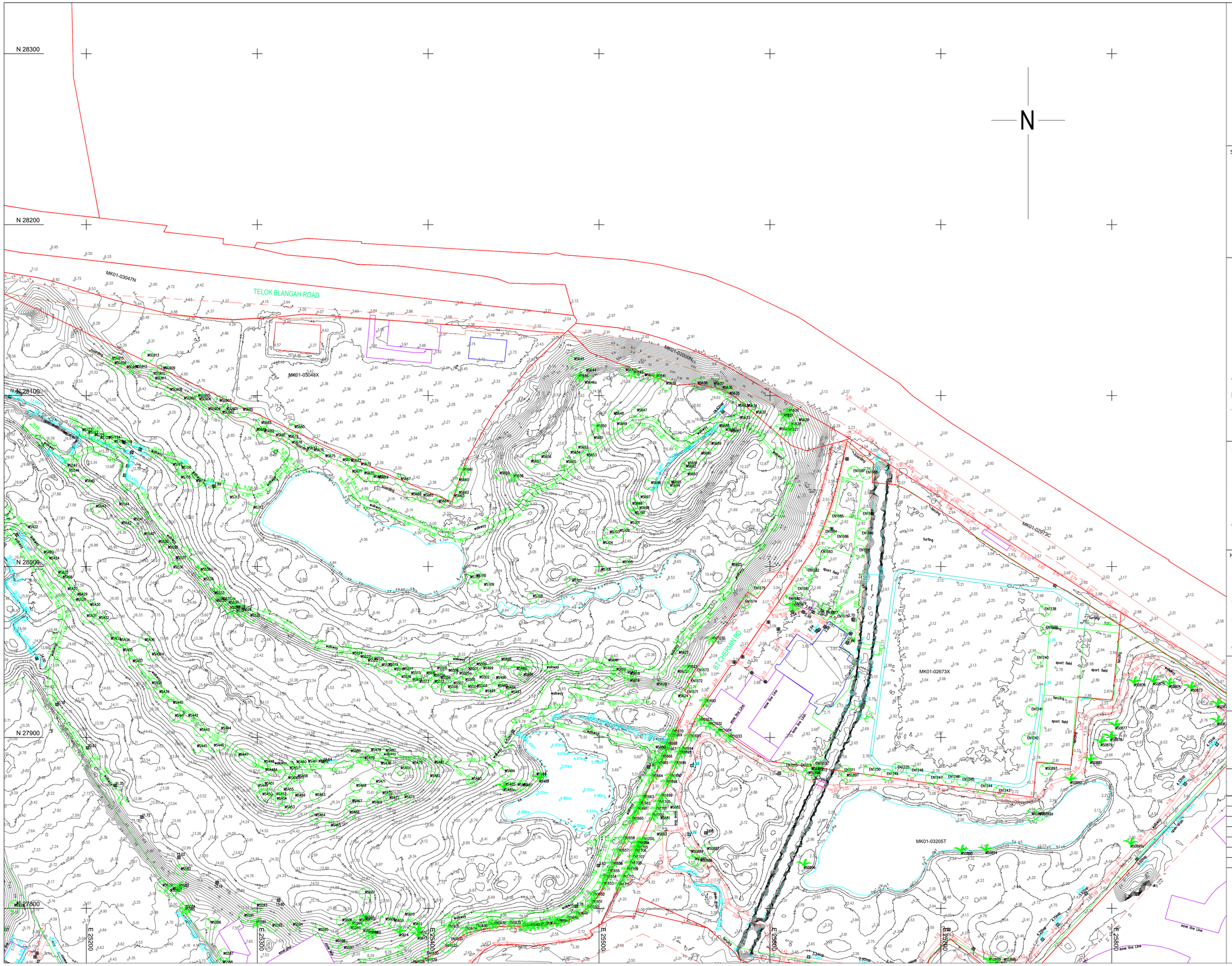
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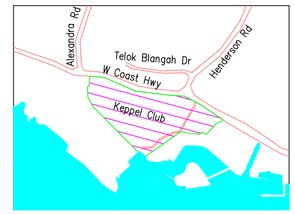
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CHECKED BY :	DEREK CHAN WEI HOONG
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DATE OF SURVEY :	1 TO 5 & 20 JUNE 2021
REVISION: 2	DATE: 1 NOVEMBER 2021

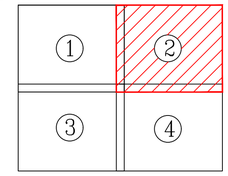
Derek Chan Wei Hoong
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M.S.I.S.V
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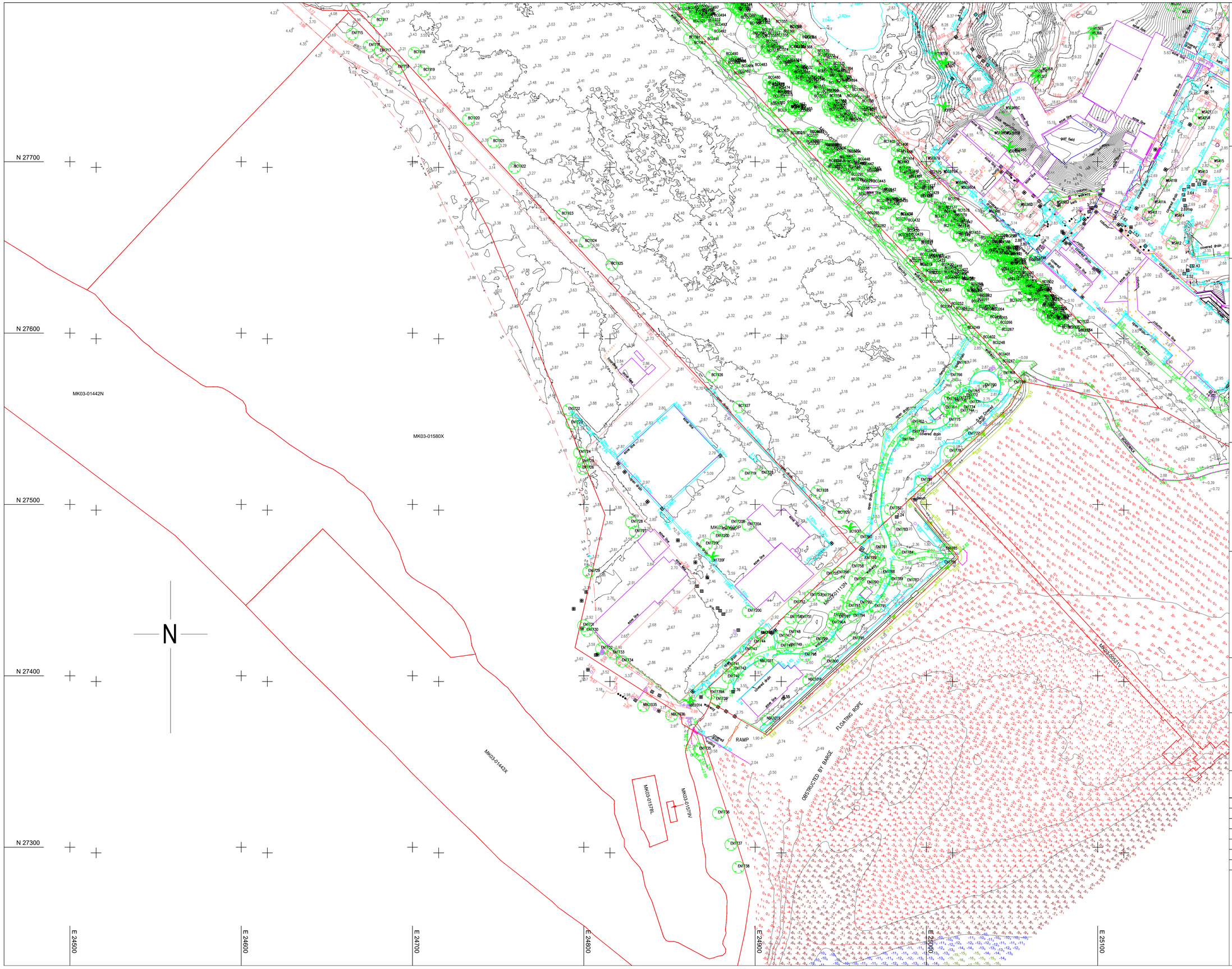
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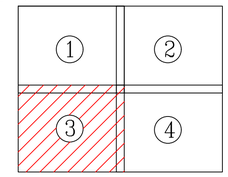
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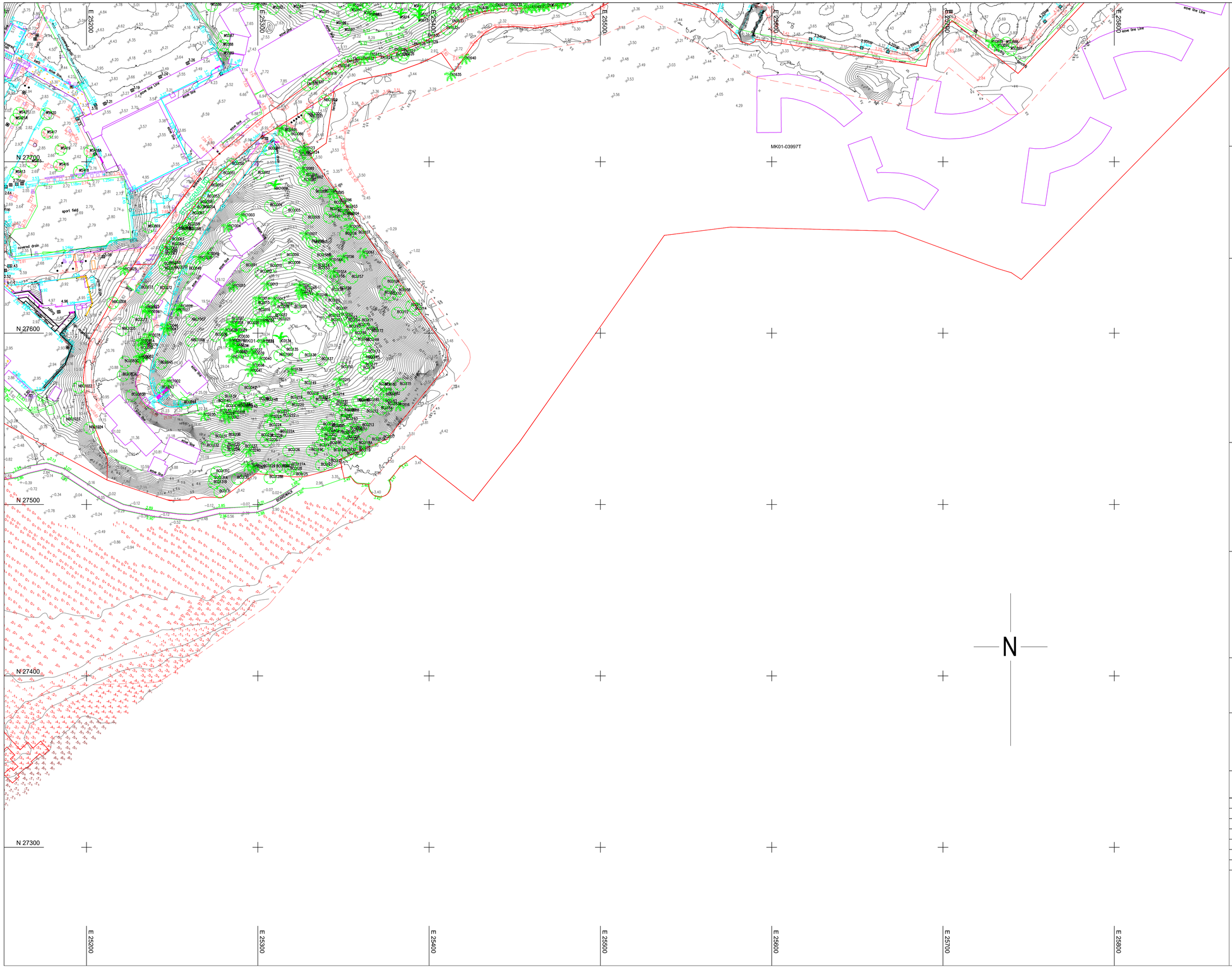
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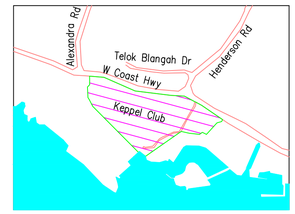
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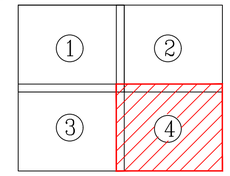
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TABULATION OF TREES

Tag ID	Girth/ spread (m)	Height (m)	Species
BK 00001	4.00	16.00	*Ficus microcarpa*
BK 00003	1.10	16.00	*Adenanthera pavonina*
BK 00004	1.00	16.00	*Adenanthera pavonina*
BK 00004	1.50	16.00	*Ficus benjamina*
BK 00005	2.00	15.00	*Pinus kesiya* var. *langbianensis*
BK 00006	1.10	20.00	*Falcataria moluccana*
BK 00007	1.70	10.00	*Areca triandra*
BK 00008	1.50	15.00	*Ficus benjamina*
BK 00009	1.00	16.00	*Falcataria moluccana*
BK 00010	1.40	16.00	*Pinus kesiya* var. *langbianensis*
BK 00011	1.60	18.00	*Adenanthera pavonina*
BK 00012	1.50	15.00	*Ficus benjamina*
BK 00013	1.50	15.00	*Areca triandra*
BK 00014	1.00	14.00	*Areca triandra*
BK 00015	1.10	16.00	*Adenanthera pavonina*
BK 00016	1.70	20.00	*Adenanthera pavonina*
BK 00017	1.50	15.00	*Cassia fistula*
BK 00018	1.80	15.00	*Terminalia catappa*
BK 00019	1.50	15.00	*Terminalia catappa*
BK 00020	1.80	15.00	*Spathodea campanulata*
BK 00021	1.10	11.00	*Ficus benjamina*
BK 00022	1.80	15.00	*Ficus benjamina*
BK 00023	1.10	12.00	*Areca triandra*
BK 00024	1.10	12.00	*Areca triandra*
BK 00025	2.00	6.00	*Elaeis guineensis*
BK 00026	1.50	15.00	*Falcataria moluccana*
BK 00027	1.00	11.00	*Ficus benjamina*
BK 00028	1.50	15.00	*Ficus benjamina*
BK 00029	2.00	14.00	*Ficus microcarpa*
BK 00030	1.70	17.00	*Cocos nucifera*
BK 00031	1.50	15.00	*Cocos nucifera*
BK 00032	1.70	15.00	*Cocos nucifera*
BK 00033	1.70	15.00	*Cocos nucifera*
BK 00034	1.80	10.00	*Elaeis guineensis*
BK 00035	1.80	10.00	*Elaeis guineensis*
BK 00036	1.80	10.00	*Elaeis guineensis*
BK 00037	1.00	10.00	*Elaeis guineensis*
BK 00038	2.00	10.00	*Elaeis guineensis*
BK 00039	2.00	10.00	*Elaeis guineensis*
BK 00040	1.00	4.00	*Elaeis guineensis*
BK 00041	1.00	11.00	*Corypha utan*
BK 00042	1.00	11.00	*Syzygium fruticosum*
BK 00043	1.50	10.00	*Bauhinia arborescens*
BK 00044	1.50	10.00	*Ficus benjamina*
BK 00045	1.00	17.00	*Syzygium fruticosum*
BK 00046	1.00	17.00	*Syzygium fruticosum*
BK 00047	1.70	10.00	*Elaeis guineensis*
BK 00048	1.50	18.00	*Ficus microcarpa*
BK 00049	1.50	15.00	*Adenanthera pavonina*
BK 00050	1.50	15.00	*Adenanthera pavonina*
BK 00051	1.50	15.00	*Adenanthera pavonina*
BK 00052	1.80	20.00	*Bauhinia arborescens*
BK 00053	1.80	20.00	*Bauhinia blakeana*
BK 00054	2.00	18.00	*Syzygium fruticosum*
BK 00055	1.00	18.00	*Syzygium fruticosum*
BK 00056	1.70	14.00	*Unknown*
BK 00057	1.80	14.00	*Bauhinia arborescens*
BK 00058	1.70	14.00	*Bauhinia arborescens*
BK 00059	1.50	18.00	*Syzygium grande*
BK 00060	1.80	14.00	*Syzygium fruticosum*
BK 00061	1.60	14.00	*Syzygium fruticosum*
BK 00062	1.80	16.00	*Adenanthera pavonina*
BK 00063	1.60	14.00	*Syzygium fruticosum*
BK 00064	1.70	18.00	*Syzygium fruticosum*
BK 00065	1.70	14.00	*Syzygium cumingii*
BK 00066	1.80	14.00	*Syzygium fruticosum*
BK 00067	1.10	17.00	*Nephelium lappaceum*
BK 00068	1.10	17.00	*Mangifera foetidissima*
BK 00069	1.00	18.00	*Syzygium grande*
BK 00070	1.00	18.00	*Adenanthera pavonina*
BK 00071	1.00	10.00	*Ficus microcarpa*
BK 00072	1.80	20.00	*Mangifera foetidissima*
BK 00073	1.80	20.00	*Syzygium fruticosum*
BK 00074	1.70	16.00	*Pterocymbium tinctorium*
BK 00075	1.00	15.00	*Syzygium grande*
BK 00076	1.70	14.00	*Syzygium fruticosum*
BK 00077	1.00	13.00	*Ficus microcarpa*
BK 00078	1.00	15.00	*Syzygium grande*
BK 00079	1.00	15.00	*Syzygium fruticosum*
BK 00080	1.00	14.00	*Ficus microcarpa*
BK 00081	1.80	16.00	*Pterocymbium tinctorium*
BK 00082	1.00	13.00	*Syzygium fruticosum*
BK 00083	1.80	16.00	*Pterocymbium tinctorium*
BK 00084	1.70	16.00	*Syzygium fruticosum*
BK 00085	1.70	15.00	*Syzygium fruticosum*
BK 00086	1.70	15.00	*Syzygium fruticosum*
BK 00087	1.00	14.00	*Syzygium fruticosum*
BK 00088	1.70	16.00	*Syzygium fruticosum*
BK 00089	1.70	16.00	*Syzygium fruticosum*
BK 00090	1.70	16.00	*Syzygium fruticosum*
BK

TABULATION OF TREES

Tag ID	Girth/ spread (m)	Height (m)	Species
BC/1B/06	1.40	5.00	*Syzygium grande*
BC/1D/3	3.70	7.00	*Mangifera indica*
BC/1D/4	3.50	7.00	*Mangifera indica*
BC/1D/05	1.75	8.00	*Roystonea regia*
BC/1E/01	1.60	5.00	*Cocos nucifera*
BC/1E/2	1.50	8.00	*Cocos nucifera*
BC/1E/3	1.10	5.00	*Vitex pinnata*
BC/1E/4	1.20	5.00	*Vitex pinnata*
BC/1E/5	1.50	6.00	*Cyrtophyllum fragrans*
BC/1E/6	1.70	5.00	*Vitex pinnata*
BC/1E/7	1.15	6.00	*Vitex pinnata*
BC/1E/8	1.30	7.00	*Adenanthera pavonina*
BC/1E/9	1.50	8.00	*Adenanthera pavonina*
BC/1E/9A	1.40	10.00	*Cyrtophyllum fragrans*
BC/1E/10	1.40	10.00	*Adenanthera pavonina*
BC/1E/11	1.50	10.00	*Adenanthera pavonina*
BC/1E/12	1.70	10.00	*Adenanthera pavonina*
BC/1E/13	1.40	10.00	*Avicennia alba*
BC/1E/14	2.00	14.00	*Terminalia catappa*
BC/1E/15	1.60	14.00	*Vitex pinnata*
BC/1E/16	2.00	14.00	*Terminalia catappa*
BC/1E/17	1.50	9.00	*Terminalia catappa*
BC/1E/18	1.70	12.00	*Terminalia catappa*
BC/1E/19	1.60	10.00	*Pongamia pinnata*
BC/1E/20	1.50	9.00	*Terminalia catappa*
BC/1E/21	1.70	9.00	*Terminalia catappa*
BC/1E/22	1.50	10.00	*Terminalia catappa*
BC/1E/23	1.70	9.00	*Terminalia catappa*
BC/1E/24	1.60	10.00	*Pongamia pinnata*
BC/1E/25	1.50	10.00	*Terminalia catappa*
BC/1E/26	1.60	10.00	*Terminalia catappa*
BC/1E/27	1.50	10.00	*Terminalia catappa*
BC/1E/28	1.40	10.00	*Terminalia catappa*
BC/1E/29	1.60	9.00	*Terminalia catappa*
BC/1E/30	1.50	9.00	*Terminalia catappa*
BC/1E/31	1.60	10.00	*Terminalia catappa*
BC/1E/32	1.50	9.00	*Terminalia catappa*
BC/1E/33	1.60	9.00	*Terminalia catappa*
BC/1E/34	1.60	9.00	*Pongamia pinnata*
BC/1E/35	1.70	10.00	*Terminalia catappa*
BC/1E/36	1.60	11.00	*Terminalia catappa*
BC/1E/37	1.70	9.00	*Terminalia catappa*
BC/1E/38	1.70	9.00	*Terminalia catappa*
BC/1E/39	1.60	9.00	*Pongamia pinnata*
BC/1E/40	1.70	11.00	*Terminalia catappa*
BC/1E/41	1.60	9.00	*Ficus benjamina*
BC/1E/42	1.70	9.00	*Casuarina equisetifolia*
BC/1E/43	1.60	10.00	*Alstonia scholaris*
BC/1E/44	1.50	10.00	*Alstonia scholaris*
BC/1E/45	1.60	8.00	*Alstonia scholaris*
BC/1E/46	1.60	8.00	*Callistemon inophiltum*
BC/1E/47	1.60	9.00	*Hibiscus tiliaceus*
BC/1E/48	1.60	9.00	*Ficus benjamina*
BC/1E/49	1.50	9.00	*Alstonia scholaris*
BC/1E/50	1.60	9.00	*Alstonia scholaris*
BC/1E/51	1.10	10.00	*Ficus benjamina*
BC/1E/52	1.10	11.00	*Hibiscus tiliaceus*
BC/1E/53	1.00	10.00	*Hibiscus tiliaceus*
BC/1E/54	1.00	8.00	*Hibiscus tiliaceus*
BC/1E/55	1.90	13.00	*Alstonia scholaris*
BC/1E/56	1.10	8.00	*Hibiscus tiliaceus*
BC/1E/57	1.10	10.00	*Ficus benjamina*
BC/1E/58	1.50	13.00	*Hibiscus tiliaceus*
BC/1E/59	1.50	13.00	*Hibiscus tiliaceus*
BC/1E/60	1.50	13.00	*Samanea saman*
BC/1E/61	1.90	13.00	*Alstonia scholaris*
BC/1E/62	1.60	10.00	*Casuarina equisetifolia*
BC/1E/63	2.00	16.00	*Elaeocarpus grandiflorus*
BC/1E/64	3.00	12.00	*Elaeocarpus hygrocarpus*
BC/1E/65	1.60	9.00	*Elaeocarpus grandiflorus*
BC/1E/66	1.10	9.00	*Elaeocarpus grandiflorus*
BC/1E/67	1.10	9.00	*Elaeocarpus grandiflorus*
BC/1E/68	1.60	10.00	*Hibiscus tiliaceus*
BC/1E/69	1.10	8.00	*Hibiscus tiliaceus*
BC/1E/70	1.50	11.00	*Hibiscus tiliaceus*
BC/1E/71	1.50	10.00	*Oncosperma tigillarium*
BC/1E/72	1.50	10.00	*Oncosperma tigillarium*
BC/1E/73	1.50	10.00	*Oncosperma tigillarium*
BC/1E/74	1.50	10.00	*Oncosperma tigillarium*
BC/1E/74A	1.50	10.00	*Alstonia scholaris*
BC/1E/75	1.50	10.00	*Oncosperma tigillarium*
BC/1E/76	1.50	10.00	*Oncosperma tigillarium*
BC/1E/77	1.40	9.00	*Pongamia pinnata*
BC/1E/78	2.90	9.00	*Samanea saman*
BC/1E/79	1.50	10.00	*Caryodendron orinocense*
BC/1E/80	1.50	10.00	*Barringtonia asiatica*
BC/1E/81	1.50	10.00	*Barringtonia asiatica*
BC/1E/82	1.50	9.00	*Barringtonia asiatica*
BC/1E/83	1.40	16.00	*Terminalia calamansanai*
BC/1E/84	1.40	16.00	*Terminalia calamansanai*
BC/1E/85	1.50	10.00	*Barringtonia asiatica*
BC/1E/86	1.50	9.00	*Barringtonia asiatica*
BC/1E/87	1.50	10.00	*Pimenta racemosa*
BC/1E/88	1.40	16.00	*Terminalia calamansanai*
BC/1E/89	1.40	16.00	*Terminalia calamansanai*
BC/1E/90	1.50	9.00	*Barringtonia asiatica*
BC/1E/91	1.50	10.00	*Barringtonia asiatica*
BC/1E/92	1.50	10.00	*Syzygium grande*
BC/1E/93	1.50	10.00	*Eugenia uniflora*
BC/1E/94	1.50	10.00	*Cocos nucifera*
BC/1E/95	1.50	10.00	*Cocos nucifera*
BC/1E/96	1.50	10.00	*Cocos nucifera*
BC/1E/97	1.50	10.00	*Cocos nucifera*

Appendix FF
Light, Temperature and Humidity Data

Delivering a better world

Time period	Sampling Point	Survey period	Light/lux			Temperature/°C			Humidity/rH		
			Average daily	Average Maximum	Average Minimum	Average daily	Average Maximum	Average Minimum	Average daily	Average Maximum	Average Minimum
AM	LTH_01	12/10/2021 to 18/10/2021	1165.96	16213.58	4.08	29.60	32.36	26.07	81.91	96.11	68.16
AM	LTH_02	12/10/2021 to 18/10/2021	841.50	9146.88	2.38	29.66	32.53	26.04	81.46	96.94	67.36
AM	LTH_03	12/10/2021 to 18/10/2021	5122.61	55233.10	7.98	30.72	35.16	26.39	77.79	94.43	64.30
AM	LTH_04	5/10/2021 to 11/10/2021	1907.21	16734.08	19.44	29.29	31.74	25.76	75.74	92.94	61.59
AM	LTH_05	5/10/2021 to 11/10/2021	19455.19	71780.21	66.41	31.53	37.64	25.26	70.62	96.61	51.19
AM	LTH_06	5/10/2021 to 11/10/2021	5442.42	17445.30	44.60	32.21	38.04	25.79	69.72	92.27	52.30
PM	LTH_01	12/10/2021 to 18/10/2021	0.59	50.41	0.00	26.84	27.93	26.19	92.98	96.00	86.77
PM	LTH_02	12/10/2021 to 18/10/2021	0.37	33.28	0.00	26.77	27.86	26.01	93.97	97.37	87.61
PM	LTH_03	12/10/2021 to 18/10/2021	1.99	174.71	0.00	27.21	28.47	26.17	91.17	95.69	84.16
PM	LTH_04	5/10/2021 to 11/10/2021	10.42	120.56	8.33	27.33	28.69	26.39	87.65	93.36	78.04
PM	LTH_05	5/10/2021 to 11/10/2021	11.58	431.18	5.82	26.54	27.70	25.51	92.05	96.81	83.60
PM	LTH_06	5/10/2021 to 11/10/2021	7.30	319.34	2.93	27.19	28.60	26.10	87.77	93.87	77.96

Appendix FF - Light Temperature Humidity Data

Sensor	Date	AM (0700-1900)									PM (1900-0700)								
		Light Ave	Light Max	Light Min	Humidity Ave	Humidity Max	Humidity Min	Temperature Ave	Temperature Max	Temperature Min	Light Ave	Light Max	Light Min	Humidity Ave	Humidity Max	Humidity Min	Temperature Ave	Temperature Max	Temperature Min
LTH_04	5-Oct-21	1127.30	2318.72	21.63	91.6	100	78.4	26.4	28.1	22.2	12.65	56.76	11.80	91.9	94	88.2	26.8	27.5	26.3
LTH_04	6-Oct-21	2352.43	33873.92	28.99	72.9	92	57.4	29.8	32.1	26.5	12.90	109.16	11.80	81.4	85.3	74.5	27.3	28.9	26.1
LTH_04	7-Oct-21	2653.68	15262.72	19.18	69.7	84.7	58.1	29.9	33.4	26.3	10.73	49.58	8.21	87.3	94.6	75	27.6	29.4	26.5
LTH_04	8-Oct-21	2134.46	23685.12	20.77	70.6	93.8	57	30.4	32.2	26.6	9.42	96.84	7.80	86.5	91.7	75.4	27.8	29.2	26.8
LTH_04	9-Oct-21	2200.46	25139.20	20.29	68.5	90.4	52.6	30.4	32.6	27.4	9.38	86.84	8.02	87.3	94.2	77.6	27.8	28.9	26.8
LTH_04	10-Oct-21	892.56	4663.04	6.47	87.9	98.2	68.3	27.9	31.3	25.5	8.69	68.08	7.99	91.7	98.2	78.4	26.4	27.9	25.6
LTH_04	11-Oct-21	1989.57	12195.84	18.74	69.0	91.5	59.3	30.1	32.5	25.8	9.14	376.64	2.66	87.4	95.5	77.2	27.6	29	26.6
LTH_05	5-Oct-21	7259.21	15938.56	53.24	92.0	100	79.5	26.8	29	22.4	9.32	259.68	5.70	96.2	98.3	90.8	26.0	26.8	25.4
LTH_05	6-Oct-21	21922.81	80691.20	82.08	66.3	96.4	44.4	31.8	39.2	25.9	11.66	485.76	5.70	84.5	88.3	76.8	26.6	28.1	25.2
LTH_05	7-Oct-21	13364.15	68259.84	41.00	64.9	87.5	48.8	31.2	35.1	25.6	11.29	363.68	5.70	91.8	98.5	80	26.8	28.2	25.7
LTH_05	8-Oct-21	28596.12	89948.16	97.36	61.2	98.5	42.2	34.2	41.3	25.9	13.10	540.80	5.91	90.2	95.5	80.5	27.1	28.2	25.9
LTH_05	9-Oct-21	28144.14	89292.80	92.20	59.7	94.8	42.1	34.0	41.5	26.8	13.37	560.96	6.30	90.9	97.8	81.9	27.2	28.2	26.2
LTH_05	10-Oct-21	8341.65	69160.96	11.82	87.5	100	59.1	28.8	35.3	25.3	11.57	476.48	5.70	99.4	100	94.7	25.3	26.1	24.2
LTH_05	11-Oct-21	28558.28	89169.92	87.16	62.7	99.1	42.2	33.8	42.1	24.9	10.76	330.88	5.70	91.3	99.3	80.5	26.8	28.3	26
LTH_06	5-Oct-21	4663.56	10204.16	34.13	89.1	98.7	71.3	27.2	31.1	22.3	5.33	192.96	2.96	90.9	94.3	82.9	26.7	28	25.9
LTH_06	6-Oct-21	5629.95	18856.96	54.60	67.0	88.9	50.1	32.8	39.9	27	7.09	377.44	2.96	78.9	84.4	71	27.5	29.3	26.1
LTH_06	7-Oct-21	7214.13	17295.36	23.16	62.0	82.2	46.5	33.5	40.5	26.3	6.75	255.04	2.96	89.5	96.6	75.8	27.2	28.9	25.9
LTH_06	8-Oct-21	4861.30	18759.68	74.58	62.4	94.5	48.5	34.4	39.4	26.9	9.13	418.72	2.96	84.9	90.1	74.7	27.8	29.2	26.9
LTH_06	9-Oct-21	5126.26	22558.72	63.12	60.9	88.8	45.6	34.2	38.9	27.4	8.90	436.96	2.96	86.0	94.2	74.5	27.9	29.2	26.7
LTH_06	10-Oct-21	4736.34	16430.08	8.90	84.0	99.7	54.6	30.0	38	25.1	7.07	336.48	2.75	97.4	100	91	25.7	26.5	24.9
LTH_06	11-Oct-21	5865.39	18012.16	53.74	62.6	93.1	49.5	33.5	38.5	25.5	6.80	217.76	2.96	86.8	97.5	75.8	27.5	29.1	26.3
LTH_01	12-Oct-21	1580.01	10588.16	0.00	75.4	97.5	63	31.6	35.6	26.8	0.73	63.24	0.00	91.5	95.6	83.4	27.6	28.9	26.6
LTH_01	13-Oct-21	1188.09	15262.72	4.69	78.8	95.3	68.9	30.2	32.2	26.7	0.59	55.22	0.00	88.6	92.5	82.9	27.8	28.6	27.3
LTH_01	14-Oct-21	1299.70	9830.40	5.96	78.6	90.6	67.5	30.5	32.2	27.8	0.68	67.10	0.00	89.8	94.1	81.4	27.6	29.2	26.8
LTH_01	15-Oct-21	1391.41	36341.76	10.68	76.6	94.8	67.9	29.8	32.5	25.1	0.49	27.35	0.00	90.8	95.1	79.7	27.6	28.9	27.1
LTH_01	16-Oct-21	1169.95	14510.08	4.24	80.0	95.1	68.4	30.1	32.1	27.1	0.36	25.60	0.00	90.5	95	80.5	27.3	28.8	26.4
LTH_01	17-Oct-21	805.68	14643.20	0.63	88.5	99.5	67.5	27.9	31.8	25.1	0.59	53.74	0.00	99.6	99.7	99.5	24.6	25.4	24
LTH_01	18-Oct-21	726.88	12318.72	2.33	95.6	100	73.9	27.1	30.1	23.9	0.67	60.64	0.00	100.0	100	100	25.4	25.7	25.1
LTH_02	12-Oct-21	1797.69	18565.12	0.00	78.0	98.7	65.8	31.0	34.4	26.8	0.52	45.78	0.00	93.3	97.2	86	27.4	29	26.4
LTH_02	13-Oct-21	810.04	3898.88	2.52	79.7	97.1	70.5	30.2	32.2	26.4	0.43	42.88	0.00	89.9	93.8	82.5	27.8	28.8	27.3
LTH_02	14-Oct-21	817.45	4464.64	3.39	77.4	91.6	65.6	30.8	33	27.9	0.43	42.04	0.00	90.3	96.5	79.6	27.8	29.5	26.5
LTH_02	15-Oct-21	861.32	18447.36	6.33	76.1	95.2	67.2	30.2	33.2	25	0.29	18.84	0.00	92.1	96.7	82.5	27.5	28.3	27.1
LTH_02	16-Oct-21	709.29	4851.20	2.52	79.4	96	66.6	30.3	32.4	27.3	0.19	14.82	0.00	92.2	97.4	82.7	27.1	28.5	26.2
LTH_02	17-Oct-21	403.16	2634.24	0.21	88.2	100	66.7	27.9	32.1	24.8	0.37	35.53	0.00	100.0	100	100	24.4	25.3	23.7
LTH_02	18-Oct-21	491.54	11166.72	1.68	91.4	100	69.1	27.3	30.4	24.1	0.37	33.06	0.00	100.0	100	100	25.2	25.6	24.9
LTH_03	12-Oct-21	2261.46	35215.36	0.00	74.7	94.7	62.6	31.4	34.3	27.2	2.10	189.92	0.00	89.8	95.4	77.7	28.0	29.8	26.9
LTH_03	13-Oct-21	5171.68	46305.28	7.16	72.5	93.5	59.5	31.6	36.2	26.8	2.13	215.04	0.00	85.2	89.3	80.1	28.5	29.3	28.1
LTH_03	14-Oct-21	5275.92	62853.12	10.96	71.1	87.5	60.5	32.4	35.4	28.4	1.94	200.56	0.00	85.9	94.5	76.9	28.5	30	26.5
LTH_03	15-Oct-21	5275.45	72151.04	19.02	70.2	94.4	55.7	31.0	34.3	25.2	1.92	130.60	0.00	87.1	92.9	77.3	28.5	29.5	27.5
LTH_03	16-Oct-21	7038.26	57856.00	8.71	71.1	90.9	56.6	31.8	35.8	28.3	1.34	93.08	0.00	90.1	97.7	77.1	27.3	29.9	25.7
LTH_03	17-Oct-21	5211.63	53657.60	3.77	85.5	100	58.2	28.6	35	25	2.31	209.44	0.00	100.0	100	100	24.4	25.2	23.6
LTH_03	18-Oct-21	5623.87	58593.28	6.24	99.5	100	97	28.2	35.1	23.8	2.16	184.32	0.00	100.0	100	100	25.3	25.6	24.9

Appendix GG
Slug Test Data

Delivering a better world

WELL ID: MW1 - Rising Head Test

Local ID: MW1
Date: 31/5/2020
Time: 14:57

INPUT

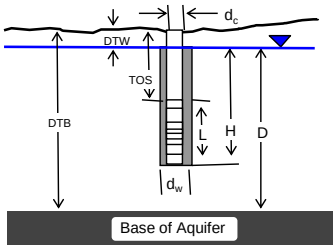
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	2.5	Meter
Depths to:		
water level (DTW)	2.19	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

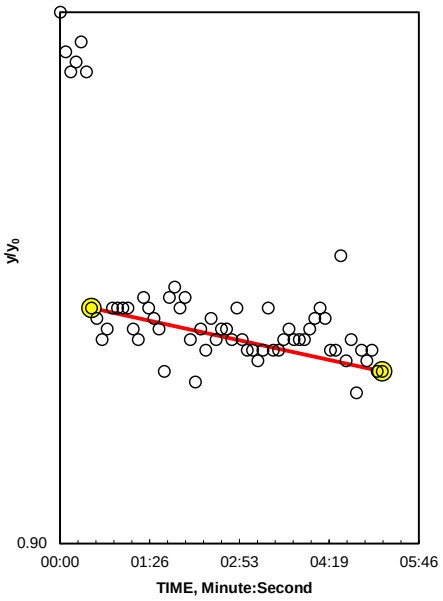
L_{wetted}	0.81	Meter
D =	7.81	Meter
H =	0.81	Meter
L/r_w =	16.20	
$y_{0\text{-DISPLACEMENT}}$ =	2.19	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.097	
B =	0.320	
ln(Re/rw) =	1.608	
Re =	0.82	Meter
Slope =	1.95103E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	51255	sec

Input is consistent.

K =	0.000000028	Meter/Second
	0.0000028	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.70
2	0:00:05.0	2.70
3	0:00:10.0	2.69
4	0:00:15.0	2.69
5	0:00:20.0	2.70
6	0:00:25.0	2.69
7	0:00:30.0	2.67
8	0:00:35.0	2.67
9	0:00:40.0	2.67
10	0:00:45.0	2.67
11	0:00:50.0	2.67
12	0:00:55.0	2.67
13	0:01:00.0	2.67
14	0:01:05.0	2.67
15	0:01:10.0	2.67
16	0:01:15.0	2.67
17	0:01:20.0	2.67
18	0:01:25.0	2.67
19	0:01:30.0	2.67
20	0:01:35.0	2.67
21	0:01:40.0	2.66
22	0:01:45.0	2.67
23	0:01:50.0	2.67
24	0:01:55.0	2.67
25	0:02:00.0	2.67
26	0:02:05.0	2.67
27	0:02:10.0	2.66
28	0:02:15.0	2.67
29	0:02:20.0	2.67
30	0:02:25.0	2.67
31	0:02:30.0	2.67
32	0:02:35.0	2.67
33	0:02:40.0	2.67
34	0:02:45.0	2.67
35	0:02:50.0	2.67
36	0:02:55.0	2.67
37	0:03:00.0	2.67
38	0:03:05.0	2.67
39	0:03:10.0	2.67
40	0:03:15.0	2.67
41	0:03:20.0	2.67
42	0:03:25.0	2.67
43	0:03:30.0	2.67
44	0:03:35.0	2.67
45	0:03:40.0	2.67
46	0:03:45.0	2.67
47	0:03:50.0	2.67
48	0:03:55.0	2.67
49	0:04:00.0	2.67
50	0:04:05.0	2.67

WELL ID: MW2 - Rising Head Test

Local ID: MW2
Date: 31/5/2020
Time: 16:15

INPUT

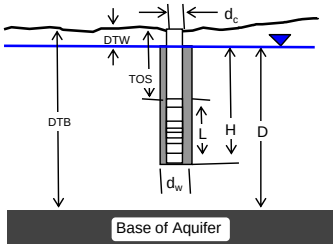
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3	Meter
Depths to:		
water level (DTW)	2.48	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

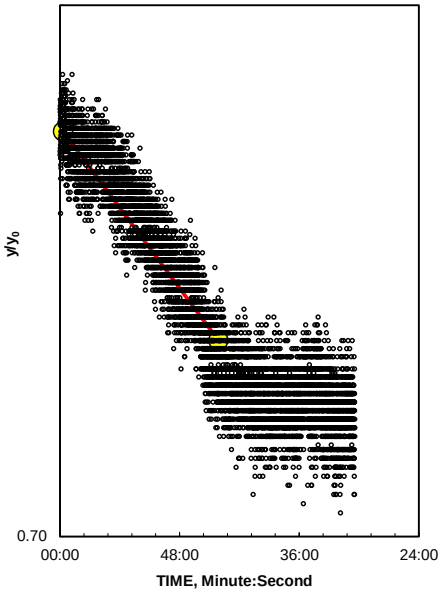
L_{wetted}	1.02	Meter
D =	7.52	Meter
H =	1.02	Meter
L/r_w =	20.40	
$y_{0\text{-DISPLACEMENT}}$ =	2.48	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.216	
B =	0.349	
ln(Re/rw) =	1.797	
Re =	0.99	Meter
Slope =	3.77624E-06	$\log_{10}$/sec
$t_{90\%}$ recovery =	264814	sec

Input is consistent.

K =	4.8E-09	Meter/Second
	0.00000048	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.80
2	0:07:05.0	2.80
3	0:14:10.0	2.80
4	0:21:15.0	2.81
5	0:28:20.0	2.80
6	0:35:25.0	2.80
7	0:42:30.0	2.80
8	0:49:35.0	2.80
9	#N/A	#N/A
10	#N/A	#N/A
11	#N/A	#N/A
12	#N/A	#N/A
13	#N/A	#N/A
14	#N/A	#N/A
15	#N/A	#N/A
16	#N/A	#N/A
17	#N/A	#N/A
18	#N/A	#N/A
19	#N/A	#N/A
20	#N/A	#N/A
21	#N/A	#N/A
22	#N/A	#N/A
23	#N/A	#N/A
24	#N/A	#N/A
25	#N/A	#N/A
26	#N/A	#N/A
27	#N/A	#N/A
28	#N/A	#N/A
29	#N/A	#N/A
30	#N/A	#N/A
31	#N/A	#N/A
32	#N/A	#N/A
33	#N/A	#N/A
34	#N/A	#N/A
35	#N/A	#N/A
36	#N/A	#N/A
37	#N/A	#N/A
38	#N/A	#N/A
39	#N/A	#N/A
40	#N/A	#N/A
41	#N/A	#N/A
42	#N/A	#N/A
43	#N/A	#N/A
44	#N/A	#N/A
45	#N/A	#N/A
46	#N/A	#N/A
47	#N/A	#N/A
48	#N/A	#N/A

WELL ID: MW2 - Rising Head Test

Local ID: MW2
Date: 31/5/2020
Time: 16:15

INPUT

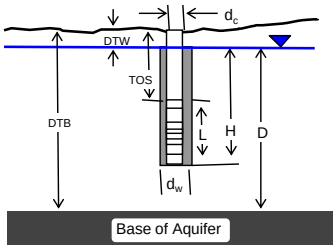
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3	Meter
Depths to:		
water level (DTW)	2.48	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Clay	

COMPUTED

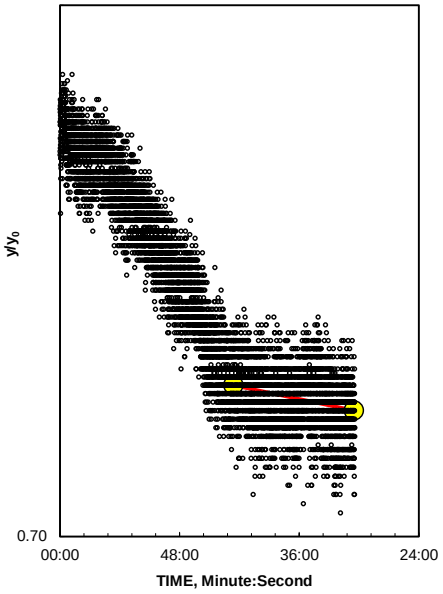
L_{wetted}	1.02	Meter
D =	7.52	Meter
H =	1.02	Meter
L/r_w =	20.40	
$y_{0\text{-DISPLACEMENT}}$ =	2.48	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.216	
B =	0.349	
ln(Re/rw) =	1.797	
Re =	0.99	Meter
Slope =	5.87308E-07	$\log_{10}$/sec
$t_{90\%}$ recovery =	1702683	sec

Input is consistent.

K =	7.4E-10	Meter/Second
	0.000000074	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.80
2	0:07:05.0	2.80
3	0:14:10.0	2.80
4	0:21:15.0	2.81
5	0:28:20.0	2.80
6	0:35:25.0	2.80
7	0:42:30.0	2.80
8	0:49:35.0	2.80
9	#N/A	#N/A
10	#N/A	#N/A
11	#N/A	#N/A
12	#N/A	#N/A
13	#N/A	#N/A
14	#N/A	#N/A
15	#N/A	#N/A
16	#N/A	#N/A
17	#N/A	#N/A
18	#N/A	#N/A
19	#N/A	#N/A
20	#N/A	#N/A
21	#N/A	#N/A
22	#N/A	#N/A
23	#N/A	#N/A
24	#N/A	#N/A
25	#N/A	#N/A
26	#N/A	#N/A
27	#N/A	#N/A
28	#N/A	#N/A
29	#N/A	#N/A
30	#N/A	#N/A
31	#N/A	#N/A
32	#N/A	#N/A
33	#N/A	#N/A
34	#N/A	#N/A
35	#N/A	#N/A
36	#N/A	#N/A
37	#N/A	#N/A
38	#N/A	#N/A
39	#N/A	#N/A
40	#N/A	#N/A
41	#N/A	#N/A
42	#N/A	#N/A
43	#N/A	#N/A
44	#N/A	#N/A
45	#N/A	#N/A
46	#N/A	#N/A
47	#N/A	#N/A
48	#N/A	#N/A

WELL ID: MW3 - Rising Head Test

Local ID: MW3
Date: 31/5/2020
Time: 11:12

INPUT

Construction:

Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3.5	Meter

Depths to:

water level (DTW)	1.436	Meter
top of screen (TOS)	2	Meter
Base of Aquifer (DTB)	10	Meter

Annular Fill:

across screen -- Medium Sand
above screen -- Bentonite

Aquifer Material -- Silt, Loess

COMPUTED

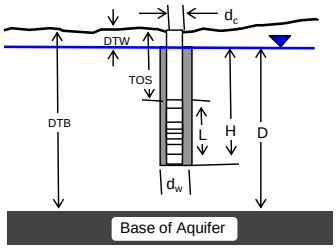
L_{wetted}	3.5	Meter
D =	8.564	Meter
H =	4.064	Meter
L/r_w =	70.00	
$y_{0\text{-DISPLACEMENT}}$ =	1.44	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter

From look-up table using L/r_w

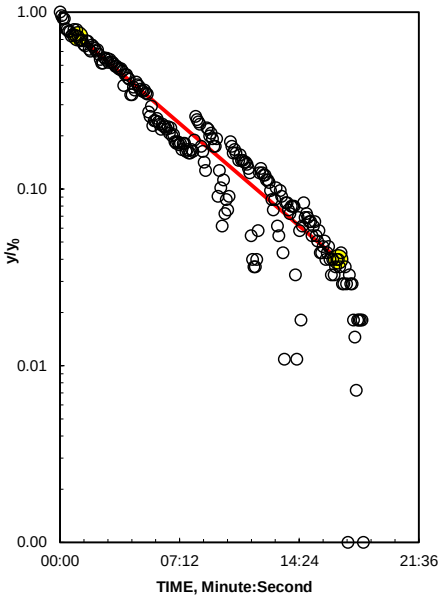
Partial penetrate A =	3.692	
B =	0.602	
ln(Re/rw) =	2.928	
Re =	3.07	Meter
Slope =	0.001342344	log_{10}/sec
$t_{90\%}$ recovery =	745	sec

Input is consistent.

K =	0.00000081	Meter/Second
	0.000081	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	1.71
2	0:00:10.0	1.69
3	0:00:20.0	1.66
4	0:00:30.0	1.65
5	0:00:40.0	1.64
6	0:00:50.0	1.65
7	0:01:00.0	1.65
8	0:01:10.0	1.63
9	0:01:20.0	1.62
10	0:01:30.0	1.61
11	0:01:40.0	1.62
12	0:01:50.0	1.60
13	0:02:00.0	1.61
14	0:02:10.0	1.60
15	0:02:20.0	1.59
16	0:02:30.0	1.58
17	0:02:40.0	1.59
18	0:02:50.0	1.59
19	0:03:00.0	1.58
20	0:03:10.0	1.58
21	0:03:20.0	1.57
22	0:03:30.0	1.57
23	0:03:40.0	1.57
24	0:03:50.0	1.54
25	0:04:00.0	1.56
26	0:04:10.0	1.55
27	0:04:20.0	1.53
28	0:04:30.0	1.53
29	0:04:40.0	1.54
30	0:04:50.0	1.54
31	0:05:00.0	1.53
32	0:05:10.0	1.53
33	0:05:20.0	1.51
34	0:05:30.0	1.52
35	0:05:40.0	1.50
36	0:05:50.0	1.50
37	0:06:00.0	1.50
38	0:06:10.0	1.50
39	0:06:20.0	1.50
40	0:06:30.0	1.50
41	0:06:40.0	1.50
42	0:06:50.0	1.49
43	0:07:00.0	1.48
44	0:07:10.0	1.48
45	0:07:20.0	1.48
46	0:07:30.0	1.48
47	0:07:40.0	1.48
48	0:07:50.0	1.48
49	0:08:00.0	1.48
50	0:08:10.0	1.51

WELL ID: MW4 - Rising Head Test

Local ID: MW4
Date: 2/6/2020
Time: 12:56

INPUT

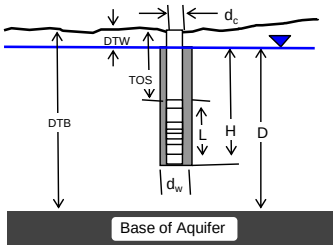
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3.5	Meter
Depths to:		
water level (DTW)	1.804	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

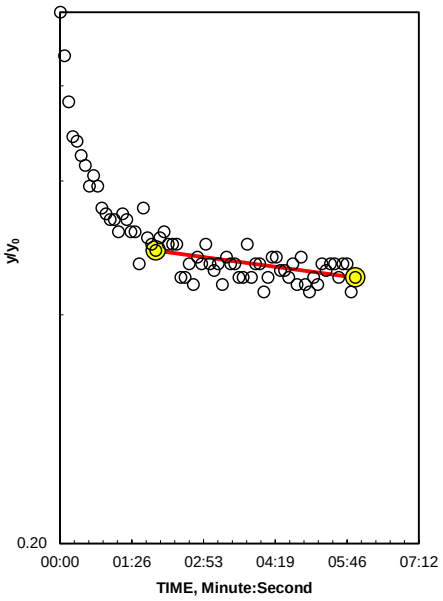
L_{wetted}	2.196	Meter
D =	8.196	Meter
H =	2.196	Meter
L/r_w =	43.92	
$y_{0\text{-DISPLACEMENT}}$ =	1.80	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.945	
B =	0.474	
ln(Re/rw) =	2.441	
Re =	1.89	Meter
Slope =	0.000147801	log_{10}/sec
$t_{90\%}$ recovery =	6766	sec

Input is consistent.

K =	0.00000012	Meter/Second
	0.000012	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	1.91
2	0:00:05.0	1.90
3	0:00:10.0	1.88
4	0:00:15.0	1.88
5	0:00:20.0	1.88
6	0:00:25.0	1.87
7	0:00:30.0	1.87
8	0:00:35.0	1.87
9	0:00:40.0	1.87
10	0:00:45.0	1.87
11	0:00:50.0	1.86
12	0:00:55.0	1.86
13	0:01:00.0	1.86
14	0:01:05.0	1.86
15	0:01:10.0	1.86
16	0:01:15.0	1.86
17	0:01:20.0	1.86
18	0:01:25.0	1.86
19	0:01:30.0	1.86
20	0:01:35.0	1.85
21	0:01:40.0	1.86
22	0:01:45.0	1.86
23	0:01:50.0	1.86
24	0:01:55.0	1.86
25	0:02:00.0	1.86
26	0:02:05.0	1.86
27	0:02:10.0	1.86
28	0:02:15.0	1.86
29	0:02:20.0	1.86
30	0:02:25.0	1.85
31	0:02:30.0	1.85
32	0:02:35.0	1.85
33	0:02:40.0	1.85
34	0:02:45.0	1.85
35	0:02:50.0	1.85
36	0:02:55.0	1.86
37	0:03:00.0	1.85
38	0:03:05.0	1.85
39	0:03:10.0	1.85
40	0:03:15.0	1.85
41	0:03:20.0	1.85
42	0:03:25.0	1.85
43	0:03:30.0	1.85
44	0:03:35.0	1.85
45	0:03:40.0	1.85
46	0:03:45.0	1.86
47	0:03:50.0	1.85
48	0:03:55.0	1.85
49	0:04:00.0	1.85
50	0:04:05.0	1.85

WELL ID: MW5 - Rising Head Test

Local ID: MW5
Date: 31/5/2020
Time: 13:43

INPUT

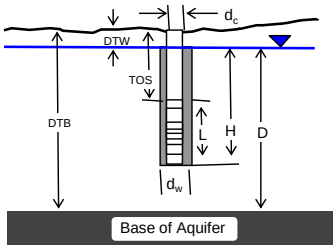
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3.5	Meter
Depths to:		
water level (DTW)	2.005	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

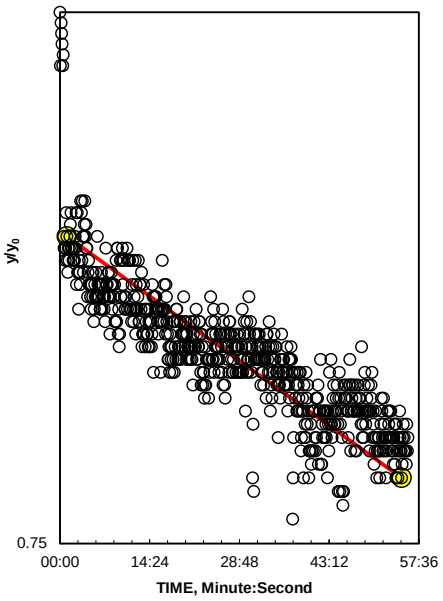
L_{wetted}	1.995	Meter
D =	7.995	Meter
H =	1.995	Meter
L/r_w =	39.90	
$y_{0\text{-DISPLACEMENT}}$ =	2.01	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.837	
B =	0.459	
ln(Re/rw) =	2.355	
Re =	1.73	Meter
Slope =	1.76102E-05	log_{10}/sec
$t_{90\%}$ recovery =	56785	sec

Input is consistent.

K =	0.000000015	Meter/Second
	0.0000015	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.18
2	0:00:30.0	2.18
3	0:01:00.0	2.16
4	0:01:30.0	2.16
5	0:02:00.0	2.16
6	0:02:30.0	2.16
7	0:03:00.0	2.15
8	0:03:30.0	2.16
9	0:04:00.0	2.16
10	0:04:30.0	2.16
11	0:05:00.0	2.15
12	0:05:30.0	2.15
13	0:06:00.0	2.16
14	0:06:30.0	2.15
15	0:07:00.0	2.16
16	0:07:30.0	2.16
17	0:08:00.0	2.15
18	0:08:30.0	2.16
19	0:09:00.0	2.15
20	0:09:30.0	2.15
21	0:10:00.0	2.16
22	0:10:30.0	2.15
23	0:11:00.0	2.16
24	0:11:30.0	2.15
25	0:12:00.0	2.15
26	0:12:30.0	2.16
27	0:13:00.0	2.15
28	0:13:30.0	2.15
29	0:14:00.0	2.15
30	0:14:30.0	2.15
31	0:15:00.0	2.15
32	0:15:30.0	2.15
33	0:16:00.0	2.15
34	0:16:30.0	2.15
35	0:17:00.0	2.16
36	0:17:30.0	2.15
37	0:18:00.0	2.15
38	0:18:30.0	2.15
39	0:19:00.0	2.15
40	0:19:30.0	2.15
41	0:20:00.0	2.15
42	0:20:30.0	2.15
43	0:21:00.0	2.15
44	0:21:30.0	2.15
45	0:22:00.0	2.15
46	0:22:30.0	2.15
47	0:23:00.0	2.15
48	0:23:30.0	2.15
49	0:24:00.0	2.15
50	0:24:30.0	2.15

WELL ID: MW6 - Rising Head Test

Local ID: MW6
Date: 31/5/2020
Time: 17:15

INPUT

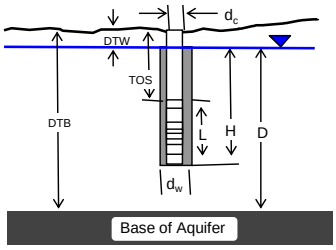
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	3	Meter
Depths to:		
water level (DTW)	0.635	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

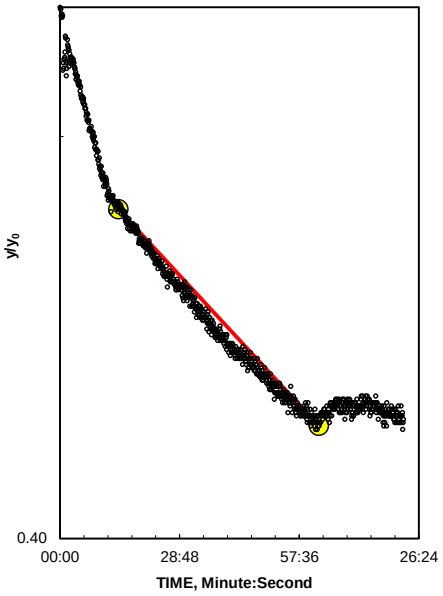
L_{wetted}	2.865	Meter
D =	9.365	Meter
H =	2.865	Meter
L/r_w =	57.30	
$y_{0\text{-DISPLACEMENT}}$ =	0.64	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	3.337	
B =	0.539	
ln(Re/rw) =	2.662	
Re =	2.35	Meter
Slope =	5.60442E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	17843	sec

Input is consistent.

K =	0.000000037	Meter/Second
	0.0000037	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	0.99
2	0:04:20.0	0.94
3	0:08:40.0	0.91
4	0:13:00.0	0.89
5	0:17:20.0	0.87
6	0:21:40.0	0.87
7	0:26:00.0	0.86
8	0:30:20.0	0.85
9	0:34:40.0	0.84
10	0:39:00.0	0.83
11	0:43:20.0	0.83
12	0:47:40.0	0.82
13	#N/A	#N/A
14	#N/A	#N/A
15	#N/A	#N/A
16	#N/A	#N/A
17	#N/A	#N/A
18	#N/A	#N/A
19	#N/A	#N/A
20	#N/A	#N/A
21	#N/A	#N/A
22	#N/A	#N/A
23	#N/A	#N/A
24	#N/A	#N/A
25	#N/A	#N/A
26	#N/A	#N/A
27	#N/A	#N/A
28	#N/A	#N/A
29	#N/A	#N/A
30	#N/A	#N/A
31	#N/A	#N/A
32	#N/A	#N/A
33	#N/A	#N/A
34	#N/A	#N/A
35	#N/A	#N/A
36	#N/A	#N/A
37	#N/A	#N/A
38	#N/A	#N/A
39	#N/A	#N/A
40	#N/A	#N/A
41	#N/A	#N/A
42	#N/A	#N/A
43	#N/A	#N/A
44	#N/A	#N/A
45	#N/A	#N/A
46	#N/A	#N/A
47	#N/A	#N/A
48	#N/A	#N/A
49	#N/A	#N/A
50	#N/A	#N/A

WELL ID: MW7 - Rising Head Test

Local ID: MW7
Date: 31/5/2020
Time: 15:45

INPUT

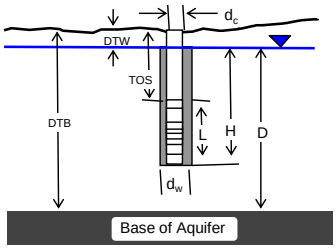
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	2	Meter
Depths to:		
water level (DTW)	1.6	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

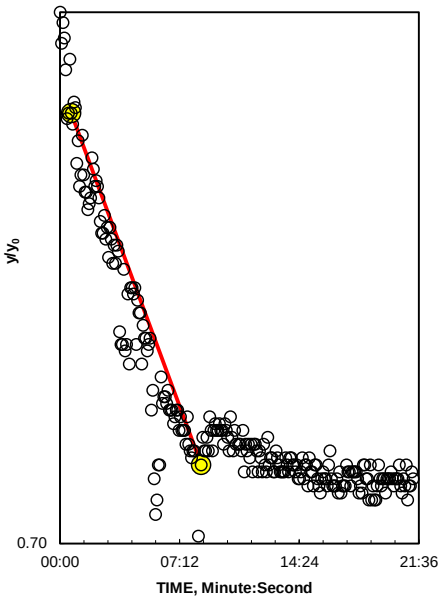
L_{wetted}	0.9	Meter
D =	8.4	Meter
H =	0.9	Meter
L/r_w =	18.00	
$y_{0\text{-DISPLACEMENT}}$ =	1.60	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.144	
B =	0.332	
ln(Re/rw) =	1.689	
Re =	0.89	Meter
Slope =	0.000218203	$\log_{10}$/sec
$t_{90\%}$ recovery =	4583	sec

Input is consistent.

K =	0.00000029	Meter/Second
	0.000029	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	1.89
2	0:00:10.0	1.89
3	0:00:20.0	1.88
4	0:00:30.0	1.87
5	0:00:40.0	1.87
6	0:00:50.0	1.87
7	0:01:00.0	1.86
8	0:01:10.0	1.86
9	0:01:20.0	1.87
10	0:01:30.0	1.86
11	0:01:40.0	1.85
12	0:01:50.0	1.86
13	0:02:00.0	1.86
14	0:02:10.0	1.86
15	0:02:20.0	1.86
16	0:02:30.0	1.85
17	0:02:40.0	1.85
18	0:02:50.0	1.85
19	0:03:00.0	1.85
20	0:03:10.0	1.85
21	0:03:20.0	1.85
22	0:03:30.0	1.85
23	0:03:40.0	1.83
24	0:03:50.0	1.84
25	0:04:00.0	1.83
26	0:04:10.0	1.83
27	0:04:20.0	1.84
28	0:04:30.0	1.84
29	0:04:40.0	1.84
30	0:04:50.0	1.84
31	0:05:00.0	1.84
32	0:05:10.0	1.83
33	0:05:20.0	1.83
34	0:05:30.0	1.82
35	0:05:40.0	1.81
36	0:05:50.0	1.81
37	0:06:00.0	1.81
38	0:06:10.0	1.82
39	0:06:20.0	1.82
40	0:06:30.0	1.83
41	0:06:40.0	1.82
42	0:06:50.0	1.82
43	0:07:00.0	1.82
44	0:07:10.0	1.82
45	0:07:20.0	1.82
46	0:07:30.0	1.82
47	0:07:40.0	1.82
48	0:07:50.0	1.82
49	0:08:00.0	1.82
50	0:08:10.0	1.80

WELL ID: MW7 - Rising Head Test

Local ID: MW7
Date: 31/5/2020
Time: 15:45

INPUT

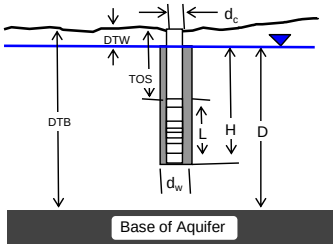
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.1	Meter
Screen Length (L)	2	Meter
Depths to:		
water level (DTW)	1.6	Meter
top of screen (TOS)	0.5	Meter
Base of Aquifer (DTB)	10	Meter
Annular Fill:		
across screen --	Medium Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

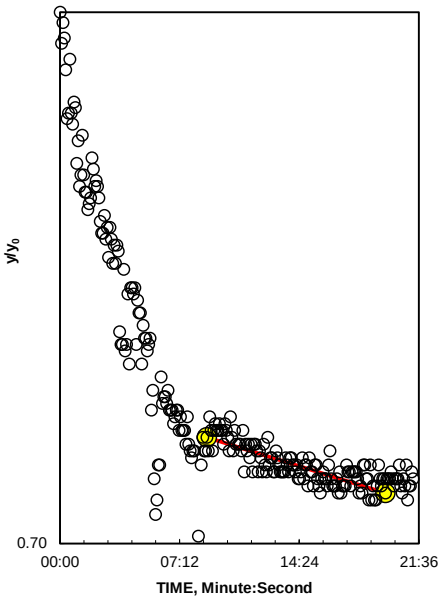
L_{wetted}	0.9	Meter
D =	8.4	Meter
H =	0.9	Meter
L/r_w =	18.00	
$y_{0\text{-DISPLACEMENT}}$ =	1.60	Meter
$y_{0\text{-SLUG}}$ =	0.00	Meter
From look-up table using L/r_w		
Partial penetrate A =	2.144	
B =	0.332	
ln(Re/rw) =	1.689	
Re =	0.89	Meter
Slope =	2.5174E-05	log_{10}/sec
$t_{90\%}$ recovery =	39724	sec

Input is consistent.

K =	0.000000034	Meter/Second
	0.0000034	



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

- Rising head test
- Groundwater was extracted via bailer

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	1.89
2	0:00:10.0	1.89
3	0:00:20.0	1.88
4	0:00:30.0	1.87
5	0:00:40.0	1.87
6	0:00:50.0	1.87
7	0:01:00.0	1.86
8	0:01:10.0	1.86
9	0:01:20.0	1.87
10	0:01:30.0	1.86
11	0:01:40.0	1.85
12	0:01:50.0	1.86
13	0:02:00.0	1.86
14	0:02:10.0	1.86
15	0:02:20.0	1.86
16	0:02:30.0	1.85
17	0:02:40.0	1.85
18	0:02:50.0	1.85
19	0:03:00.0	1.85
20	0:03:10.0	1.85
21	0:03:20.0	1.85
22	0:03:30.0	1.85
23	0:03:40.0	1.83
24	0:03:50.0	1.84
25	0:04:00.0	1.83
26	0:04:10.0	1.83
27	0:04:20.0	1.84
28	0:04:30.0	1.84
29	0:04:40.0	1.84
30	0:04:50.0	1.84
31	0:05:00.0	1.84
32	0:05:10.0	1.83
33	0:05:20.0	1.83
34	0:05:30.0	1.82
35	0:05:40.0	1.81
36	0:05:50.0	1.81
37	0:06:00.0	1.81
38	0:06:10.0	1.82
39	0:06:20.0	1.82
40	0:06:30.0	1.83
41	0:06:40.0	1.82
42	0:06:50.0	1.82
43	0:07:00.0	1.82
44	0:07:10.0	1.82
45	0:07:20.0	1.82
46	0:07:30.0	1.82
47	0:07:40.0	1.82
48	0:07:50.0	1.82
49	0:08:00.0	1.82
50	0:08:10.0	1.80

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