



REPORT

# Environmental Management and Monitoring Plan (EMMP)

*HDB Eastern 2 Development for Phase 2*

Submitted to:

**Housing and Development Board (HDB)**

Submitted by:

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# DEFINITIONS

## Units of Measurement

ha	Hectare
m	Metre
m <sup>2</sup>	Square metre
m <sup>3</sup>	Cubic metre
mm	Millimetre
cm	Centimetre
km	Kilometre

## Acronyms and Abbreviations

BIA	Biodiversity Impact Assessment
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Code of Practice
COPPC	Code of Practice for Pollution Control
DA	Developing Agency
ECM	Earth Control Measures
ECP	East Coast Parkway
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EPHA	Environmental Public Health Act
EPMA	Environmental Protection and Management Act
ERP	Emergency Response Plan
ERSS	Earth Retaining Structure Systems
ERT	Emergency Response Team
HDB	Housing and Development Board
IUCN	International Union for the Conservation of Nature
LTA	Land Transport Authority
MRT	Mass Rapid Transit
NEA	National Environmental Agency
NParks	National Parks Board
PUB	Public Utilities Board
QECP	Qualified Erosion Control Professional
Site/HDB Eastern 2	Bayshore Development Area
SS	Singapore Standard

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TEL	Thomson-East Coast Line
TPC	Transit Priority Corridor
TPZ	Tree Protection Zone
URA	Urban Redevelopment Authority
WMC	Wildlife Management Contractor
WRP	Wildlife Response Plan

# Table of Contents

<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 Objective.....	2
1.2 Assumptions and Limitations.....	3
1.3 Document Structure.....	3
<b>2.0 SUMMARY OF EIA.....</b>	<b>3</b>
<b>3.0 PROJECT OVERVIEW.....</b>	<b>5</b>
3.1 Site Activities.....	6
3.1.1 Pre-construction activities.....	6
3.1.2 Site Clearance and Earthworks.....	7
3.1.3 Establishment of Temporary Worksite.....	8
3.1.4 Building Construction.....	8
3.1.4.1 Foundation Works.....	8
3.1.4.2 Construction of Superstructure and Finishing Works.....	8
3.1.4.3 General Landscaping Works.....	8
<b>4.0 APPLICABLE LEGISLATION AND STANDARDS.....</b>	<b>9</b>
<b>5.0 EMMP ORGANISATION.....</b>	<b>9</b>
5.1 Organisational Chart.....	9
5.2 Roles and Responsibilities.....	10
5.3 Training and Awareness.....	13
5.3.1 General EMMP Training.....	13
5.3.2 Biodiversity Awareness.....	13
<b>6.0 FLORA AND FAUNA MANAGEMENT PLAN.....</b>	<b>14</b>
6.1 Key Mitigating Measures.....	14
6.2 Flora and Arboriculture.....	14
6.2.1 Tree Protection Zones (TPZs).....	14
6.2.2 Verification of Hoarding Footprint.....	15
6.2.3 Flora and Arboriculture Inspection.....	15
6.3 Fauna.....	15
6.3.1 Installation of External Perimeter Hoarding and Temporary Barrier.....	15

6.3.2 Fauna Management during Site Clearance..... 17

6.3.3 Directional Site Clearance ..... 17

6.3.4 Pre-felling Fauna Inspection..... 18

6.3.5 Post-site Clearance Fauna Inspection ..... 20

6.3.6 Fauna Inspection ..... 20

**7.0 ENVIRONMENTAL IMPACT, MITIGATION AND MONITORING REGISTER ..... 21**

**8.0 EMERGENCY RESPONSE PLAN (ERP)..... 25**

8.1 Emergency Response Organisation ..... 26

8.2 Wildlife Response Plan ..... 26

**9.0 REPORTING AND REVIEW ..... 27**

**10.0 CLOSURE ..... 28**

**TABLES**

**Table 1: List of applicable Singapore legislation, regulations, and guidelines ..... 9**

**Table 2: Summary of Environmental Mitigation, Management and Monitoring ..... 21**

**Table 3: Summary of responsible parties for environmental incidents ..... 26**

**FIGURES**

**Figure 1: Bayshore Development Area and EMMP Boundary ..... 1**

**Figure 2: Infrastructure Project Phase 2 Boundary ..... 2**

**Figure 3: Map showing the EMMP boundary, EIA Study Area and Bayshore Development ..... 4**

**Figure 4: Land Use as per URA Masterplan 2019 ..... 4**

**Figure 5: Phase 2 Development Area ..... 5**

**Figure 6: Conceptual Development Plan (Source: HDB) ..... 6**

**Figure 7: EMMP Organisational Chart ..... 10**

**Figure 8: Hoarding Alignment, Sequence, and Direction of Hoarding Installation for Phase 2. .... 16**

**Figure 9: Direction of Clearance for Phase 2 ..... 18**

**Figure 10: Pre-felling fauna Inspection Protocol ..... 20**

**Figure 11: General Emergency Response Flowchart ..... 25**

**Figure 12: Wildlife Response Plan Flowchart ..... 27**

**APPENDICES**

**APPENDIX A ..... 29**

APPENDIX B .....30  
APPENDIX C .....31

## 1.0 INTRODUCTION

This document provides information about the Environmental Management and Monitoring Plan (EMMP) that is to be implemented for the Housing and Development Board (HDB) development for the Bayshore Development Area ("Site"/ "HDB Eastern 2") in **Figure 1**. The Site is located in the East Coast area and is bounded by residential area then Upper East Coast Road in the north, Guards Avenue, then Bedok Camp in the east, East Coast Parkway (ECP) in the south, and Bayshore Road in the west. The Site occupies a total area of approximately 45 hectares (ha) and is divided into three regions (**Figure 1**). The northern area comprises approximately 11.5 ha, whilst the southern area covers approximately 19.2 ha and the eastern area makes up the remaining 14.1 ha of the development site.

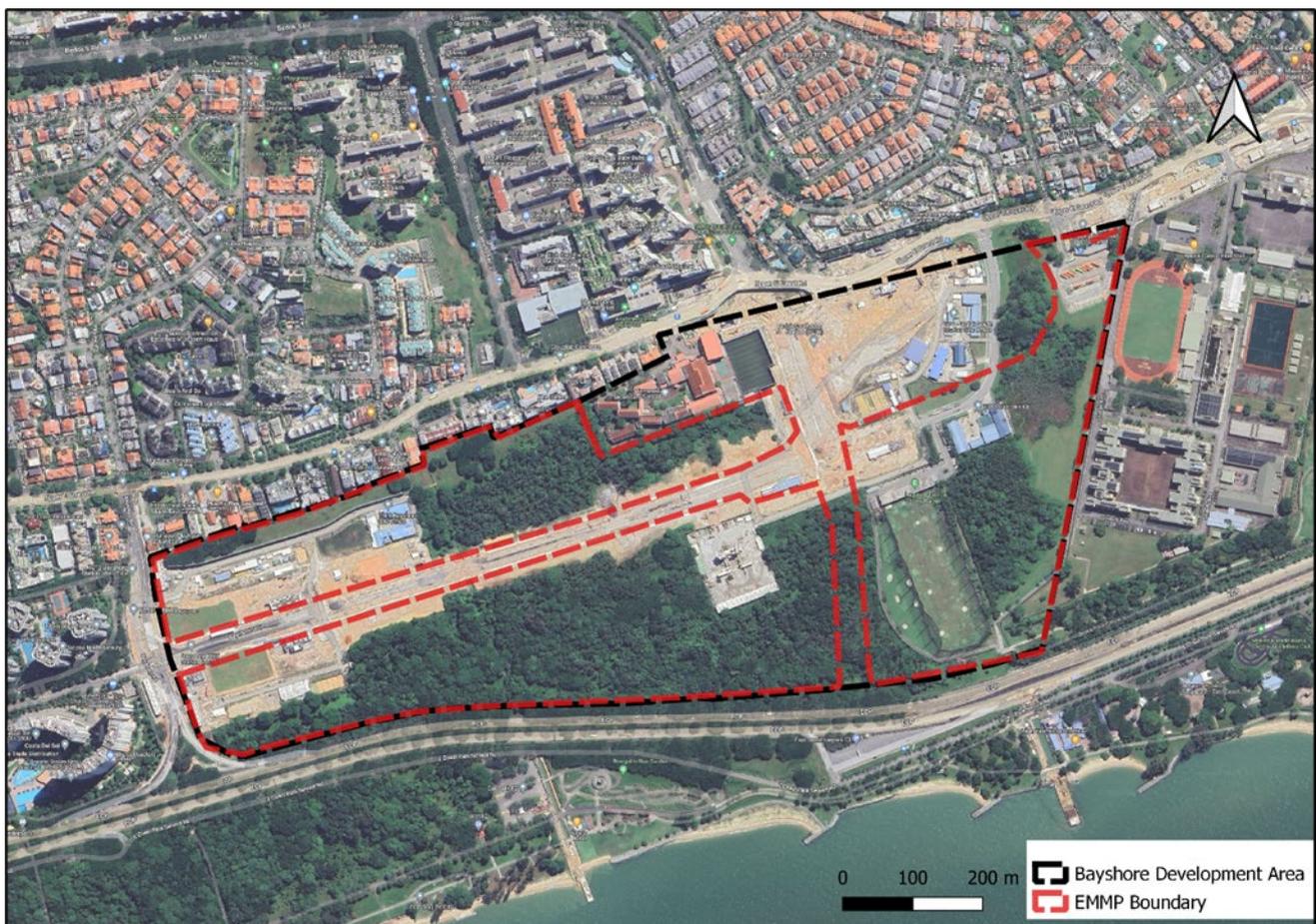


Figure 1: Bayshore Development Area and EMMP Boundary



**Figure 2: Infrastructure Project Phase 2 Boundary**

The planned development comprises three phases within the Site i.e Phase 1, 2 and 3 (**Figure 2**). The construction activities are expected to include earthworks and site clearance, and infrastructure works for future roads, drainages, sewers, service laying and road-related facilities. This is expected to be followed by site investigation and then building construction of future residential blocks. The works will be carried out in phases from 2024 to mid-2030.

Bayshore EMMP – Phase 1 was published on 30 April 2024 and works are currently ongoing.

The report discusses Phase 2 works. These include, but are not limited to, civil engineering works such as site investigation, site clearance, earthworks, road construction, box culvert construction, drainage, and sewerage works; as well as building works such as foundation, utilities/services laying and superstructure construction.

This document is considered a live document and shall be reviewed regularly and updated with site-specific information and activities. The EMMP details how the recommended mitigation measures prepared as part of the Environmental Impact Assessment (EIA)<sup>1</sup> gazetted in February 2023 (DHI, 2023) are to be implemented and specifies recommended monitoring measures to assess the effectiveness of the mitigation measures.

### 1.1 Objective

The EMMP is a systematic approach to mitigate environmental impacts and monitor the implementation of these mitigation measures to ensure that construction will not cause any significant adverse impact to the surrounding

<sup>1</sup> Environmental Study for Bayshore Development and Road Construction, Final Report, 1 February 2023

environment. The overall objective of the EMMP is to implement mitigation measures based on the impacts identified in the EIA for the Site. The specific objectives of this EMMP are to:

- Include implementation procedures, mitigating measures and actions, flora and fauna management plan and monitoring requirements for all stages of construction.
- To set target environmental objectives and propose the corresponding mitigation measures to be implemented by the Contractor at all stages of construction (i.e., pre-construction and construction).
- Define procedures for wildlife management at various construction stages.

All contractors and subcontractors shall comply with applicable EMMP requirements. The EMMP shall be submitted and approved by NParks prior to the start of any construction activities.

## 1.2 Assumptions and Limitations

The EMMP is based on findings of the EIA, gazetted in February 2023 (DHI, 2023). In addition, the EMMP relies in whole, or in part, on data and information provided in the EIA, by HDB, ECAS Consultants Pte. Ltd. (ECAS) (as Superintending Officer Representative (SO Rep)) and Jupiter Builder Pte Ltd the appointed contractor for Phase 2 Infrastructure Works. The information from these parties is assumed to be accurate, complete, and reliable at the time of writing.

## 1.3 Document Structure

The EMMP is structured as follows:

- Section 1: Introduction to the EMMP - provides the scope, objectives, assumptions and structure.
- Section 2: Summary of the EIA - provides key baseline findings, identify impacts and proposed mitigating measures.
- Section 3: Project Overview - provides a summary of the development, phases and activities for each phase.
- Section 4: Applicable Legislation and Standards - provides key legislation and standards used in the EIA and EMMP.
- Section 5: EMMP Roles and Responsibilities – provides organisational chart of key personnel, as well as key training requirements.
- Section 6: EMMP – provides EMMP for flora and fauna.
- Section 7: Environmental Impact, Mitigation and Monitoring Register.
- Section 8: Emergency Response Plan (ERP) – provides actions for environmental incidents.
- Section 9: Reporting and Review – regular review of the EMMP and reports to be submitted as part of the EMMP.
- Section 10: Closure

## 2.0 SUMMARY OF EIA

The EIA Study Area (**Figure 3**) focused solely on the forested regions within the site. The summary of the findings can be found in the EMMP Phase 1 document, for more information on the EIA study and the EMMP for Phase 1, including habitat types and the development plan, can be found in the HDB website [here](#).

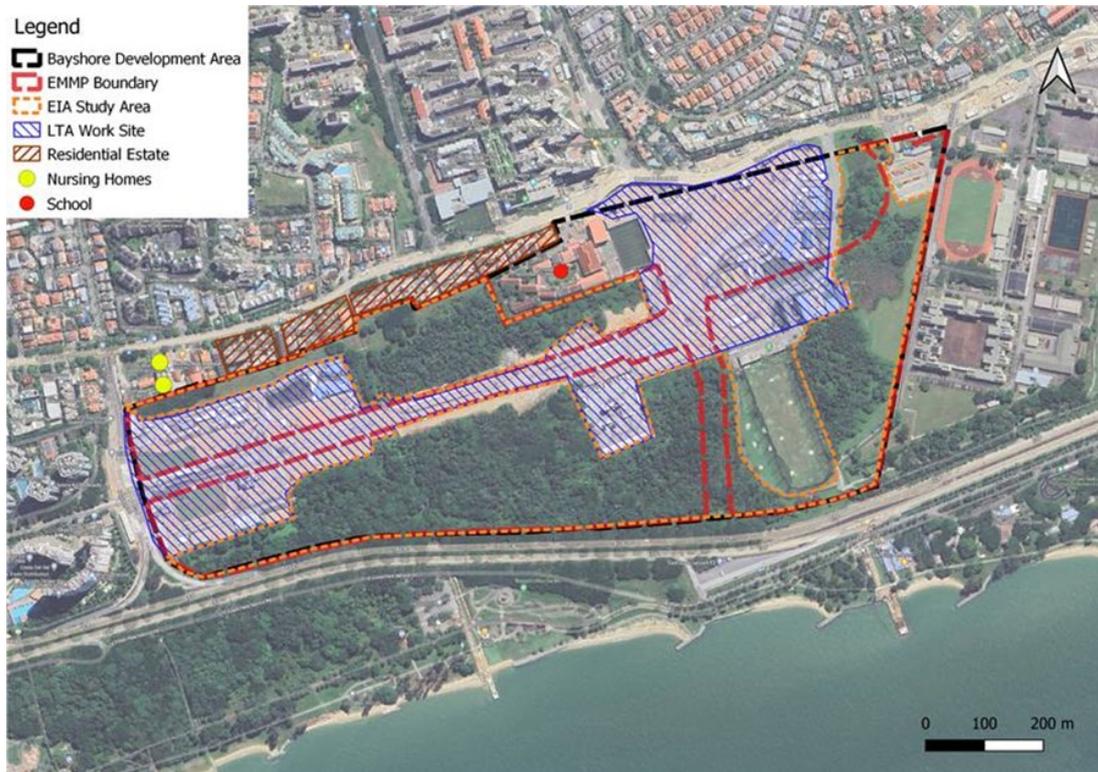


Figure 3: Map showing the EMMP boundary, EIA Study Area and Bayshore Development



Figure 4: Land Use as per URA Masterplan 2019

Based on the URA Masterplan 2019 (**Figure 4**), land uses within the Site include residential, parks, place of worship, a sports and recreation area, open space, a health and medical care, educational institution, commercial and residential facility and road and drainage networks.

### 3.0 PROJECT OVERVIEW

The current proposed works for Phase 2 include, but are not limited to, civil engineering works such as site investigation, site clearance, earthworks, road construction, box culvert construction, drainage, and sewerage works; as well as building works such as foundation, utilities/services laying and superstructure construction. This is expected to be followed by site investigation and then building construction of future residential blocks. The works will be carried out in phases from 2024 to mid-2030.

The Phase 2 development area, highlighted in green in **Figure 5**, encompasses 7.0 hectares. This section is strategically connected to the northern part of the site via Bayshore Road. This connection ensures easy access and integration with the surrounding infrastructure and developments. In addition, as seen by the non-vegetated portions of the site in **Figure 5**, it includes an area of land that was previously utilised as an LTA work site.



**Figure 5: Phase 2 Development Area**

The Site's conceptual development plan is shown in (**Figure 6**) below. The residential area will have several green features including the Linear Park at the northern edge and the central park, totalling approximately 3 ha. The residential area will be well-connected to two new MRT stations - Bayshore Station and Bedok South Station through a bus-only transit priority corridor (TPC). Bayshore Drive will be the main road cutting through the center of the master planning area lined with landscaped walking and cycling paths.



**Figure 6: Conceptual Development Plan (Source: HDB)**

### 3.1 Site Activities

The proposed public housing development works would entail civil engineering works such as site clearance (removal of existing trees and vegetation), site investigation, earthworks, construction of roads and drains, sewer works, building works, utilities/services laying and other related works.

In general, above-ground project construction works will require a construction worksite area for site offices, equipment and material storage, worker's canteens and worksite. The areas designated for these components will also support the construction foundation and drainage works during the development of the Site.

Construction phases are discussed in general in the following sub-sections.

#### 3.1.1 Pre-construction activities

Pre-construction activities will include land clearing and tree felling, construction of temporary roads and preparation of equipment and material storage areas.

The access to the project site is expected to be aligned with vehicular access from Bayshore Drive via Bayshore Road along the western boundary of the Site and from the Upper East Coast Road along the northern boundary of the Site.

Drainage associated with temporary and permanent access roads will be constructed and utilities which are shallow and likely to cause impedance to cut and cover works will be diverted first, so that there is no disruption in usage of utilities to nearby receptors. Depending on the utility to be diverted, it may involve tree felling, excavation, access road construction and concrete resurfacing works.

Land clearance and tree felling for road works may cause potential noise nuisance and dust emission to nearby human and ecologically sensitive receptors, as well as potential water quality impact to existing drains.

### **Proximity of Rain Trees along East Coast Parkway**

Outside of the Phase 2 boundary, near to the southern edge of the project site, rain trees (*Samanea saman*) along East Coast Parkway are in proximity to the hoarding work. As per requirement from N'Parks, the proposed works shall not affect the the row of rain trees (*Samanea saman*) along the East Coast Parkway as they are intended for streetscaping purposes. All proposed works in this area will take place with due care to avoid impacting the root zones or canopies of these trees.

#### **3.1.2 Site Clearance and Earthworks**

Clearance of trees and vegetation, and earthworks at the construction worksite areas and access roads will be required for Phase 2 (**Figure 5**). This will involve large machineries such as excavator, dump truck, low-bed trailer, chainsaw, and woodchipper machine, among others.

The Contractor's Qualified Erosion Control Professional (QECP) shall prepare an Earth Control Measures (ECM) Plan and obtain approval from the Public Utilities Board (PUB) prior to the start of site clearance and earthworks. During construction, the risk of sedimentation and erosion is heightened due to the earthworks involved. To mitigate these risks, the Contractor shall implement the following measures, if applicable:

- A temporary stormwater treatment system will be installed to treat turbid runoff, ensuring compliance with PUB requirements.
- Silt fences will be placed around the perimeter to contain silted runoff and prevent it from leaving the site.
- Where surface runoff enters existing stormwater drainage channels, cut-off drains with additional silt fences shall be installed to capture sediment and reduce contamination.
- Bund walls shall also be installed where necessary to reduce the velocity of surface runoff and further prevent soil erosion.
- In areas with a high risk of erosion, slopes shall be protected using 100% biodegradable Erosion Control Blankets (ECB), canvass sheets to stabilize the soil and prevent further erosion.
- Additionally, stockpiles shall be covered with tarpaulin when not in use or regularly dampened with water to maintain a wet surface and minimize dust and sediment runoff.

The EMMP Consultant shall map the trees on site to support tree-felling application by the Contractor. The mapping will include visual tree assessments for each tree specimen and locations of all trees at the Site that are of 1 m girth and above. Data recorded will also include tree species and approximate girth size and height. A report will then be furnished to include the construction impact assessment of each individual trees within the Site. This would determine if the tree specimens should be retained or removed if it is affected by any works from the proposed construction.

For wildlife management, the Contractor shall adhere to the requirements in **Section 6.3**. Directional site clearance should be done to remove fauna from the site. All fauna that may be encountered on site will be managed in accordance with the Wildlife Response Plan (WRP) and the Contractor shall have an NParks approved Wildlife Management Contractor (WMC) ready to be activated if needed.

For areas where ground levels are generally low, soil will be topped up to meet PUB platform level requirements. This may or may not accompany ground improvement works depending on the nature of the soil in the area. Construction site debris will be temporarily stored on site and then collected by licenced third parties for offsite disposal.

Land clearance works are planned to proceed generally from west to east subject to site conditions (**Figure 9**). Subsequently, excavation, foundation works and piling works are expected and will involve the use of heavy machineries. Site investigation works are expected during the infrastructure works phase.

### **3.1.3 Establishment of Temporary Worksite**

Temporary worksite structures will be established, including areas for site offices, container office, container meeting room, portable toilets, store container, sample room, waste management facilities and storage, rest area, ECM ponds and water treatment plants, washing bay and internal vehicle access areas for movement of vehicles and vehicle parking lot.

The construction works required for site clearance and earthworks, operation of machineries and increase in site vehicular traffic for the establishment of temporary worksites may cause potential noise nuisance and dust emission to nearby human and ecologically sensitive receptors

### **3.1.4 Building Construction**

#### **3.1.4.1 Foundation Works**

Foundation work for substructures including piles and pile caps will be constructed. Reinforcement bars will then be installed to enhance the strength of the concrete pile. Ready-mix concrete will be transported by a concrete truck and poured into boreholes. Hacking may be required should there be excess pile head after bored piling. The pile foundation will then be sealed.

Upon completion of foundation works, excavation may be necessary. Any excavated material will be placed in dump trucks and disposed offsite or used in other areas of the Site. Additional site investigation may be required as part of building construction works. The contractor shall ensure proper handling and disposal of construction waste to avoid any potential contamination to nearby water bodies, soil and groundwater.

#### **3.1.4.2 Construction of Superstructure and Finishing Works**

Following the completion of foundation works, superstructures will be constructed. Superstructure works may include forming working platforms, installation of precast, concrete works. The buildings will be constructed to its desired height using temporary formwork. Ready mix concrete will be transported to the Site for concreting works.

#### **3.1.4.3 General Landscaping Works**

As the final step towards the completion of, earthworks, infrastructure and building works, the contractor shall remove all temporary works and earth retaining structure systems (ERSS) for the reinstatement of working area to its original condition and/or required conditions. Landscaping works will be conducted to maintain or present the landscape and visual amenity values to the public.

## 4.0 APPLICABLE LEGISLATION AND STANDARDS

The applicable legislation and other standards referred to in the EMMP are listed below:

**Table 1: List of applicable Singapore legislation, regulations, and guidelines**

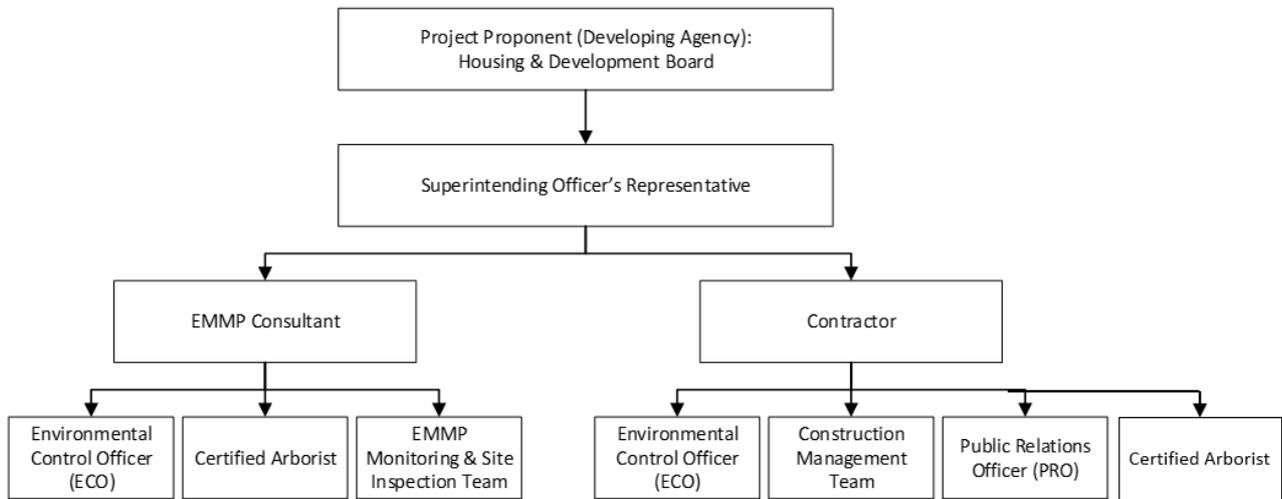
Parameter	Legislation, Regulations and Guidelines
<b>General</b>	<ul style="list-style-type: none"> <li>▪ Environmental Protection and Management Act (EPMA) 1999 and Regulations</li> <li>▪ Environmental Public Health Act (EPHA) 1987 and Regulations</li> <li>▪ Code of Practice on Pollution Control (COPPC) SS593:2013</li> </ul>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>• Wildlife Act 2020</li> <li>• Parks and Trees Act 2005 and Regulations</li> <li>• NParks' Species List (Red Data Book List) Third Edition, 2023</li> <li>• NParks' Biodiversity Impact Assessment (BIA) Guidelines 2021</li> <li>• International Union for the Conservation of Nature (IUCN) Red List of Threatened Species to assess species vulnerability, 2021 (International)</li> <li>• CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention) 1983 (International)</li> </ul>

## 5.0 EMMP ORGANISATION

The EMMP implementation organisational chart and roles and responsibilities of each party are provided in this section.

### 5.1 Organisational Chart

An organisational chart for the implementation of the EMMP is provided below in **Figure 7**.



**Figure 7: EMMP Organisational Chart**

## 5.2 Roles and Responsibilities

The following section detail overall roles and responsibilities for the EMMP.

### Authorities/Agencies

Authorities and agencies include, but are not limited to NParks, PUB, NEA, and URA. NParks will be reviewing and approving the EMMP prior to commencement of works and where required during the course of the project. Other agencies may also review and provide comments to the EMMP where required during the course of the project.

### Developing Agency (DA)

HDB, being the project owner oversees the construction phase of the project in accordance with the design. HDB, in conjunction with the SO Rep, EMMP Consultant and Contractor are 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 authorities/agencies, if required;
- Reporting to the authorities/agencies regarding implementation of the EMMP;

### SO Representative (SO Rep)

The SO Rep refers to the engineering consultant, ECAS, employed by HDB and is responsible for overseeing the construction works undertaken by various staff, contractors, and sub-contractors. The SO Rep should ensure that the construction works are performed by the contractors and personnel in accordance with the specification, contractual requirements and EMMP. The SO Rep 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 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 for submission of environmental audit reports.
- Carry out any complaint investigations.
- Resolve any non-compliance issues.
- Promote environmental awareness and responsibility and lead by example.

### **Contractor**

The term Contractor refers to all construction contractors and sub-contractors working onsite at any time. In addition to reporting to the SO Rep, the Contractor should:

- Work under the relevant contract scope, specifications, and other tender conditions.
- Ensure that the roles of ECO, Contractor's Certified Arborist, and WMC are adequately resourced.
- Participate in the required environmental site audits (via the SO Rep) undertaken by the ECO and undertake any corrective actions.
- Provide up-to-date information and advice to the SO Rep, ECO, Contractor's Certified Arborist, and WMC regarding any work activities which may contribute or continuously create adverse environmental conditions, or any changes to the work plan;
- Before the commencement of construction, the Contractor shall engage a certified Qualified Erosion Control Professional (QECP) to prepare an ECM Plan and obtain approval from PUB. Throughout the construction phase, the Appointed QECP and Contractor shall regularly review the effectiveness of the ECM to ensure it adapts to the evolving needs of the construction activities. All erosion and sedimentation control measures shall be maintained in good condition at all times. The Appointed QECP shall review and revise the ECM plan if there are any changes in construction activities and conduct monthly inspections in accordance with PUB's Erosion and Sedimentation Control Guidelines. The Contractor's appointed Earth Control Measures Officer (ECMO) and/or Environmental Control Officer (ECO) shall conduct daily inspections of these measures and promptly repair any damage identified. The vehicle washing point shall be strategically located to ensure that vehicle wheels are thoroughly cleaned before entering public roads. The wheel washing facilities shall have adequate drainage systems and appropriate measures to prevent standing water, thereby minimizing the risk of mosquito breeding.
- The Contractor shall also appoint a Registered Surveyor to map the trees on site (based on the EMMP's Consultant Certified Arborist's report) and the trees planned to be felled and obtain NParks approval. The following requirements should be noted:

- In areas where trees are to be retained, the Contractor should apply for tree felling approval after receiving the EMMP's Consultant Certified Arborist's report on the health, species, size and conservation significance of the trees.
- For trees that are to be retained, to clearly demarcate the Tree Protection Zones (TPZ) around these (see **Section 6.2.1**).
- Regarding fauna, the Contractor is required to follow the specific directions stated in this EMMP with regard to managing wildlife onsite. The Contractor shall have a Certified Animal Management Specialist to advise on the wildlife management plan and an NParks approved WMC ready to respond to any wildlife on site if needed.

An ECO shall be employed by the Contractor and be responsible for implementing the elements of the EMMP that fall within their responsibilities as outlined in the Code of Practice for Environmental Control Officers for Specified Premises dated August 2022. He/she should be a registered ECO with NEA and has at least three years' experience in environmental monitoring and auditing works. Resources to implement the environmental monitoring and audit program should be allocated. The ECO's duties include:

- Coordinate with the SO Rep to monitor and participate in the implementation of the environmental audit program, with assistance from the EMMP Consultant's ECO.
- Assist the SO Rep with the resolution of near misses/ incidents, non-compliance issues, and complaint management.
- Assist the EMMP Consultant's ECO with reporting of monitoring results to the SO Rep.

### **DA's EMMP Consultant and ECO**

The DA's EMMP Consultant and ECO shall:

- Prepare, submit, and present (if required) to NParks, HDB and other relevant Authorities and obtain approvals on the EMMP from the Regulatory Agencies.
- Liaise and coordinate with the HDB's appointed Contractors within the Project area (tentatively four contractors) and review and develop the Overall EMMP and detailed EMMP for each of the future activities.
- Meet on regular basis, to coordinate and review the implementation of management strategies as outlined in the EMMP.
- Report potential or actual incidents and non-conformances and to propose corrective actions.
- Identify indicators, precautions, construction methods, contingency plans, provide actions to achieve desired objectives.
- Prepare, submit, and present monthly EMMP reports in a timely manner throughout the construction works for each of the future activities.
- Conduct briefings and trainings to all the Contractors and subcontractors within the Overall EMMP Boundary on a regular basis and throughout the construction works.
- Review, highlight, recommend measures and provide advice in consultation with DA and SO Rep when Agencies'/ public/ interest groups have feedback on environmental matters.
- Prepare materials and attend, when needed, the briefings/ presentations to stakeholders e.g., Grassroots Leaders, other interest groups/ nature group and or organization, etc.

- Assist in engaging the stakeholders and relevant nature groups and/ or organizations to address site specific concerns.
- Institute a management process on any feedback received from stakeholders throughout the construction works and ensure queries are appropriately resolved, investigated, recorded, and compiled in a report.
- Prepare and maintain an Environmental Impact and Mitigation Register which provides a summary of the project activities, sensitive receptors and potential environmental impacts, mitigation measures, timelines, and residual impacts.
- Carry out weekly site inspections and attend progress meetings to provide updates on EMMP. Site inspections will be conducted monthly in the building stage.
- Prepare, submit, and present a summary completion report on the environmental mitigation and performance (Close-off EMMP Audit Report). The Close-off EMMP Audit Report is to be prepared for each of the future activities once the works on site is completed.

### **5.3 Training and Awareness**

Introduction to the EMMP has to be provided to all employees working onsite so that these can be followed, and any corrective actions identified by the Contractor ECO. Training requirements include awareness, understanding of the EMMP and importance of its implementation, and any further training for specific responsibilities. Records of attendance in trainings should be maintained by the Contractor ECO for the whole duration of the works.

#### **5.3.1 General EMMP Training**

A briefing of the overall EMMP structure and requirements should be given to new contractors as needed, which includes environmental impacts, identified receptors, minimum management, and monitoring requirements. Should any triggers be encountered for specific aspects of the EMMP, an EMMP Alert will also be issued to the Site for awareness, compliance and communication of any corrective action and any changes to EMMP requirements. Specific EMMP trainings will also be carried out, as detailed in the succeeding sections.

#### **5.3.2 Biodiversity Awareness**

Biodiversity awareness training will be provided to all site personnel by EMMP Consultant's Ecologist every six months. The objective of the training is to inform them on how to respond to any fauna encounters by adhering to the Wildlife Response Plan that has been formulated, and to emphasize on the site personnel responsibilities towards biodiversity. This includes the procedures that should be carried out before any site clearance, such as pre-felling tree inspections, to minimise the risk of fauna mortality and/or injury.

Toolbox briefings by EMMP Consultant's Ecologist will be conducted once during pre-construction as the Contractors come on board into the Project. During the construction phase, toolbox briefings will be conducted twice per year, or as needed for all Contractors as works progress. All site personnel shall undergo biodiversity awareness training provided by EMMP Consultant's Ecologist prior to commencing work at on-site, and every six months throughout the duration of the construction. Documentation of such trainings and briefings shall be maintained.

## 6.0 FLORA AND FAUNA MANAGEMENT PLAN

### 6.1 Key Mitigating Measures

Key mitigating and monitoring measures that shall be adopted on site focuses on careful execution of construction activities to implement control measures in place to prevent fauna from accessing or being trapped within the construction zone, as well as to prevent soil erosion into drains that is connected to nearby waterbodies. The key mitigating measures below are referenced from the EIA (DHI, 2023) and in coordination with the plans by the Contractor (**APPENDIX A**):

- Hoardings shall be erected along the existing main roads first (i.e., Bayshore Road and newly constructed Bayshore Drive), and the ECP, and shall proceed eastwards (**Section 6.3.1**). This is to prevent any wildlife from roaming onto the ECP and main roads during the site clearance and to avoid potential roadkill.
- Tree-felling and directional vegetation clearance will be carried out for the phases of the project. (**Section 6.3.3**). Should there be any wildlife trapped onsite during the final stages of clearance, the Wildlife Response Plan (WRP) will be activated to rescue these wildlife (**Sections 6.3.2** and **Section 8.2**);
- Pre-felling wildlife inspections shall be conducted by EMMP Consultant's Ecologist before any vegetation clearance to minimise fauna injury and/or mortality. The requirements and procedure of the pre-felling fauna inspection is elaborated in **Section 6.3.4**. The EMMP Consultant's Ecologist shall also look out for any sensitive wildlife burrows, nesting sites, and bee hives prior to the clearance of trees and vegetation.
- The Contractor is to ensure that the use of erosion blankets (i.e., made of organic material without plastic netting to prevent animals from getting trapped in these) is implemented at the Project Site to minimise potential entrapment of fauna.
- A WRP (**Section 8.2**) shall be activated when any fauna is trapped, injured, or requires any form of rescue on site.
- No night works will take place during the infrastructure works. Should night works be required, a Lighting Management Plan (LMP) may be required and shall be approved by NParks.

### 6.2 Flora and Arboriculture

#### 6.2.1 Tree Protection Zones (TPZs)

Currently, there are no trees to be retained within Phase 2. However, should the retention of trees within Phase 2 be required, TPZs shall be established according to the guidelines. Key guidelines that are reflected below reference NParks' Guidelines on Greenery Provision and Tree Conservation for Developments (NParks, 2018):

- The material chosen for the TPZ fencing should be effective to prevent or, as much as possible, minimise any damages/injuries to the retained trees throughout the duration of the construction phase.
- The Contractor's Certified Arborist shall recommend and review the size and material used for the TPZ. If necessary, the certified arborist should provide alternative strategies to ensure that no damages are inflicted on the retained trees and that the survivability of the retained trees are not compromised.
- An access door providing unhindered access should be installed for each retained area to allow the EMMP Consultant's Certified Arborist to conduct the inspection of the retained trees.

## 6.2.2 Verification of Hoarding Footprint

Upon the installation of external hoarding, the Contractor's Certified Arborist shall ensure no encroachment of the hoarding line into the TPZ for the proposed areas to be retained. This shall be inspected by the EMMP's Consultant's Flora Specialist and Certified Arborist.

## 6.2.3 Flora and Arboriculture Inspection

During the infrastructure works, weekly site inspections shall be carried out. As the site clearance progresses, the frequency of site inspection can be reduced to monthly since most of the vegetation will already be cleared as the proposed development progresses into the building stage. For the proposed areas to be retained for future park development located adjacent to the proposed drain reconstruction works, the frequency of site inspections will remain weekly, until all relevant works are completed.

The EMMP Consultant's Flora Specialist and Certified Arborist are to identify the following during the flora and arboriculture inspections:

- Unauthorised removal of vegetation beyond the worksites, if any.
- Vegetation removal in areas that is outside the Project Boundary.
- Forest edge effects and recommend appropriate mitigation measures, where necessary.
- Exotic fast-growing plants and provide recommendations for removal, where necessary.
- Monitor the health of trees and/or plant specimens within the areas to be retained; and
- Monitor the health of trees that are located within 10 m outside the hoarding boundary of the Project Site. The appointed Certified Arborist shall highlight trees that may potentially fall into any active work site, or those that are deemed hazardous to the safety of the workers, and provide recommendations, where necessary.

The extent of the inspections will vary as the project progresses from site clearance to excavation and into the various construction phases. During early infrastructure works, detailed and frequent inspections are effective for management of site clearance. During excavation works, it is important to continue the inspections regularly to maintain the areas to be retained as well as to monitor for any unauthorised removal of vegetation that may happen outside the hoarding boundary of the Project Site.

## 6.3 Fauna

### 6.3.1 Installation of External Perimeter Hoarding and Temporary Barrier

Installation of external hoardings and temporary barriers must be completed before site clearance can commence.

The following sub-sections detail the works.

#### *External Perimeter Hoarding*

External hoardings will be 2.4 m height, with the allowable exception for external hoarding along the southern Site boundary near the ECP to be 2.4 m height without any embedded footing. Hoarding installation should follow the sequence as described and shown in **Figure 8**. In Phase 2, external hoardings (2.4m) with noise barrier shall first be installed along the ECP in the south and along the western portion of the site as highlighted in blue (i.e., Phase 1 in **Figure 8**). Following this, the portion of Phase 2 in **Figure 8** where hoardings (2.4m) will be installed can be seen highlighted in the red section. Finally, hoardings (2.4m) in the forested area, along the Phase 2 eastern boundary (i.e., Phase 3 in **Figure 8**) highlighted in black.

Generally, the hoarding direction will be installed from the west to east of the Project Area. Localised vegetation clearance is expected to be carried out to provide working space for the installation of the perimeter hoarding and perimeter drain construction. This working space is estimated to be up to 6-m wide along the hoarding alignment within the Project Boundary. For such localised vegetation clearance, pre-felling fauna inspections shall be conducted by an Ecologist provided by the EMMP Consultant, prior to the removal of any vegetation (**Section 6.3.4**).



**Figure 8: Hoarding Alignment, Sequence, and Direction of Hoarding Installation for Phase 2.**

### **Temporary Barriers**

Temporary barriers shall also be erected to demarcate sites if short ad-hoc works (i.e., SI work) are required before site clearance is complete to prevent fauna from entering the ad-hoc work areas. The recommended specifications of the temporary barriers are as follows:

- Barriers are at least 1.8-m high.
- Sufficient counterweight must be present to withstand impact from large animals (e.g., Eurasian wild boars, if any).
- Barriers are covered with an opaque sheet—large animals may attempt to jump over the barrier if they are able to see the other side.
- No gaps that may allow fauna to pass through

After the installation of the hoardings and temporary barriers, the EMMP Consultant's Ecologist shall inspect the integrity of the structures to ensure that it meets the specifications listed above. Temporary barriers can only be removed once the site clearance for the rest of the Project Area is completed.

### 6.3.2 Fauna Management during Site Clearance

The objective of fauna management during site clearance is to look out for any fauna from the worksite, and if necessary, to conduct translocation of fauna from the worksite before the start of construction works to prevent fauna entrapment, injury, and mortality, whilst minimising contact between human and wildlife.

Fauna species that may be encountered during site clearance include those that have been recorded to be present in the area, such as Sumatran palm Civet (*Paradoxurus musangus*) and Common Tree Shrew (*Tupaia glis*). Other fauna species to take note would be ground-dwelling mammals, such as the Eurasian Wild Boar (*Sus scrofa*) and the nationally Endangered Smooth-coated Otter (*Lutrogale perspicillata*), as well as fauna species that may be implicated in human-wildlife conflicts, such as snakes (e.g., Painted Bronzeback (*Dendrelaphis pictus*) and Equatorial Spitting Cobra (*Naja sumatrana*). These fauna species have been recorded near the Project Site and deemed probable to occur. Although these were not sighted within the Project Site during the EIA study, the possibility of these species occurring within the Project Site has been considered.

Prior to the start of works, the worksite should be completely hoarded. If Eurasian Wild Boars are encountered during site clearance, works will be stopped, EMMP consultant to inform NParks (**Section 8.2**), and wild boar removal operations shall be conducted by certified WMCs engaged by the Contractor (**Section 8.2**).

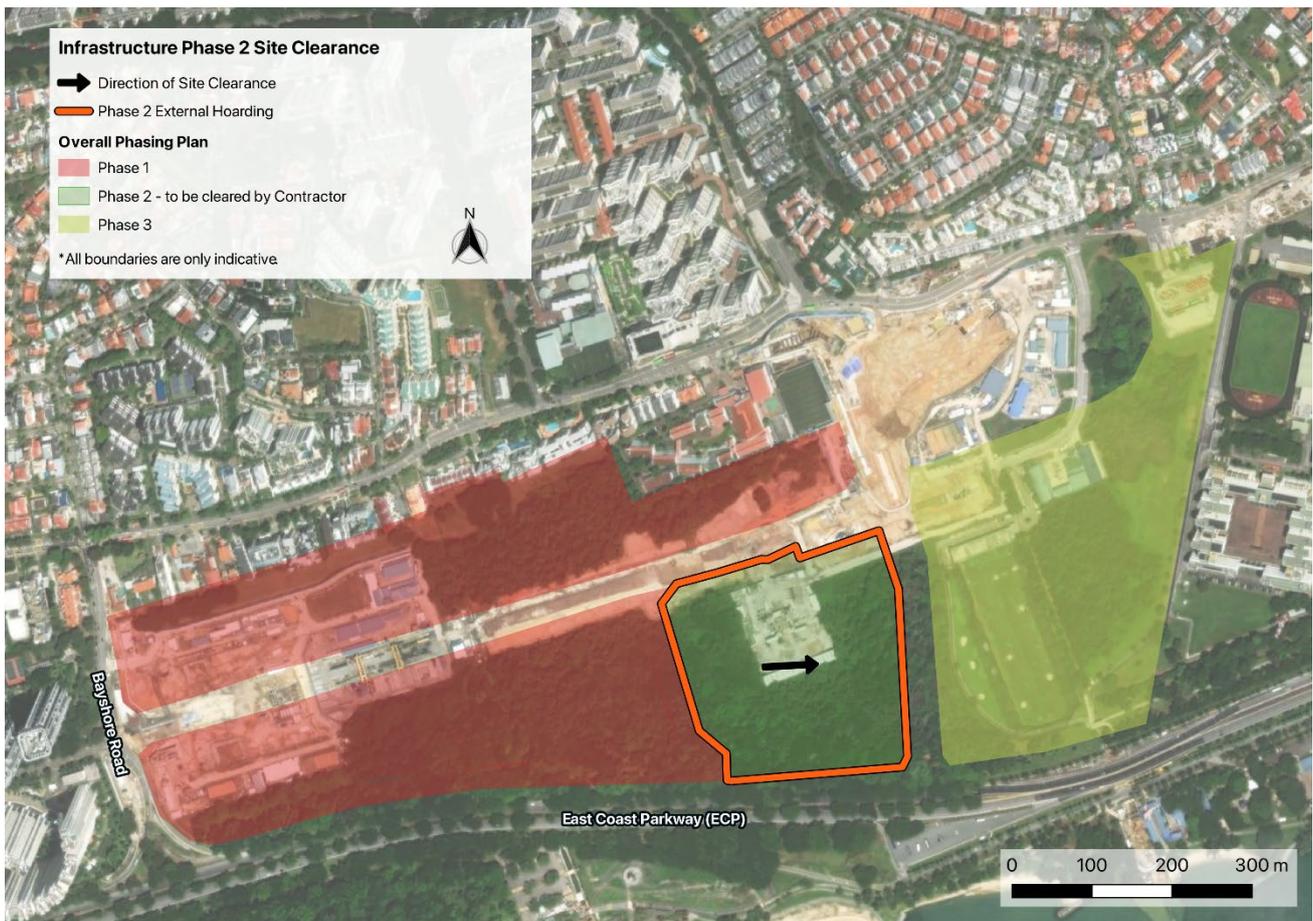
Site clearance should be conducted in a directional manner as much as possible, from the west to the east for each work phase. The disturbance generated by site clearance activities is expected to encourage fauna to move out of the worksite on their own. After site clearance is complete, the Ecologist engaged by the EMMP Consultant will visually inspect the site for any presence of fauna. If there are fauna still present and trapped on-site, the Wildlife Response Plan will be activated accordingly (**Section 8.2**). Biodiversity awareness training shall also be conducted to prepare the site team for fauna encounters (**Section 5.3.2**).

The following sub-sections detail the workflow for site clearance following the installation of perimeter hoarding and temporary barriers (**Section 6.3.1**).

### 6.3.3 Directional Site Clearance

After the installation of the external hoarding is completed, site clearance can commence according to the indicated sequence (**Figure 9**). The sequence of the site clearance takes into consideration future site access, locations of the ECM ponds and sedimentation tanks, as well as other site limitations, such as existing infrastructure, that may be currently present on site.

The directional clearance in Phase 2 is from west to east. Additional details of the site clearance can be referred to in the Contractor's site clearance plan in Appendix A.



**Figure 9: Direction of Clearance for Phase 2.**

### 6.3.4 Pre-felling Fauna Inspection

Before any vegetation clearance, pre-felling fauna inspection will be conducted by the appointed Ecologist provided by the EMMP Consultant team, for the undergrowth and trees that are approved for felling. Depending on the density of undergrowth and trees within the area, both inspections can be conducted at the same time on the first day during each round of inspection. The overall protocol of the inspection is reflected in **Figure 10**.

Clearance of undergrowth will first be conducted prior to felling of trees. After the completion of undergrowth clearance, the inspected areas shall be left to fallow for three days to encourage arboreal fauna to leave the site. No tree felling can take place within this fallow period of three days.

After which, pre-felling fauna inspection for the trees can proceed. If there are no fauna and/or faunal activity observed during the inspection, the remaining trees can be cleared. Pre-felling fauna inspection is valid for seven days, i.e., if the inspected trees or vegetation are not removed within seven days of the Ecologist provided by the EMMP Consultant team inspection, the inspection will be repeated.

The pre-site clearance fauna inspections include the identification and reporting of the following:

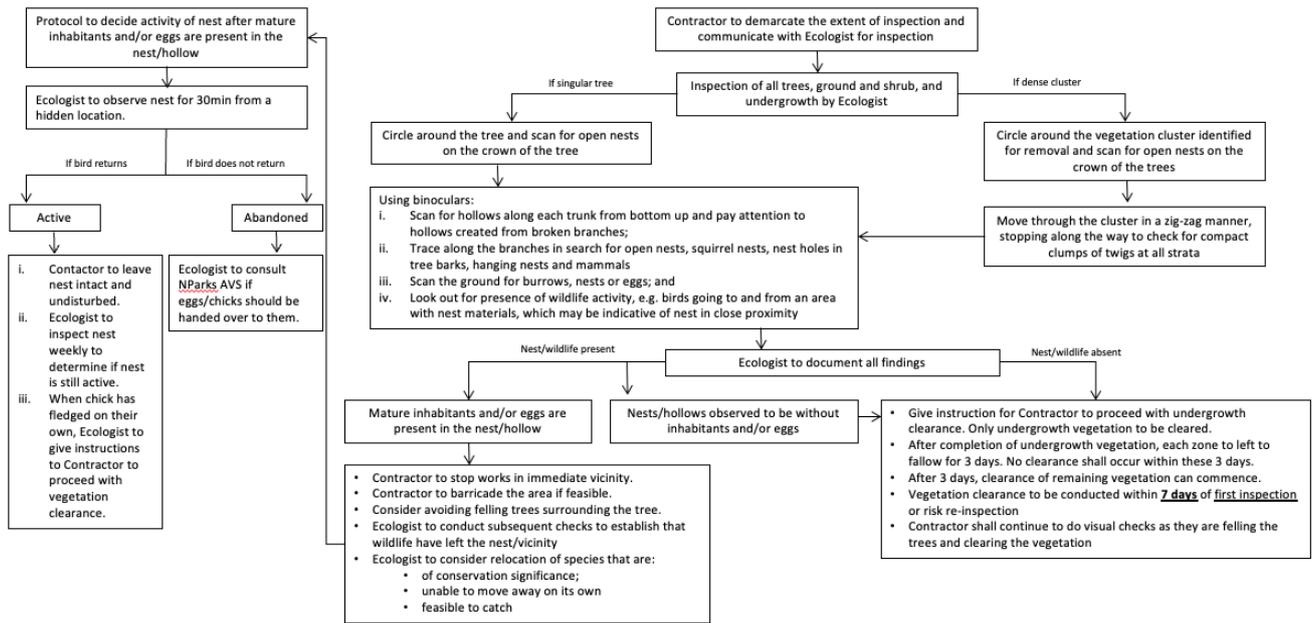
- active bird nests, including hollows, and other forms of nesting structures utilised by birds,
- active mammal nests/burrows/roosts,
- other less-mobile animals that are at risk of injury/mortality during tree felling or vegetation removal (e.g., Sunda pangolin), and/or
- animals that may be implicated in human-wildlife conflict (e.g., snakes).

During pre-felling fauna inspections, tree trunks, branches and canopy are to be checked by the EMMP Consultant's Ecologist with binoculars from multiple angles and distances. Any cavities in tree trunks that may be utilised as nesting/roosting structures are to be noted for closer inspection if deemed potentially active. If a nest is potentially identified and activity level is uncertain, the Ecologist will conduct or supervise the closer investigation of the nest site utilising elevating equipment where required.

If animals or active nests are found, the Contractor shall:

- not disturb the animal and allow them to move away on their own before tree felling or vegetation removal, unless the Ecologist deems it necessary to relocate them,
- allow nesting birds to fledge and leave the nests on their own before tree felling or vegetation removal, and
- for other animal encounters, the Wildlife Response Plan shall be carried out (**Section 8.2**).

The EMMP Consultant's Ecologist will produce a pre-felling fauna inspection report, indicating any relevant information collected during the inspection, including Tree Tag ID (and/or flora location coordinates if not tagged), animal observations, recommended actions, and photographic evidence.



**Figure 10: Pre-felling fauna Inspection Protocol**

### 6.3.5 Post-site Clearance Fauna Inspection

After the site clearance has been completed for each zone, the Ecologist engaged by the EMMP Consultant will visually inspect the zone for the presence of target fauna. If there are remaining fauna within the zone, the Ecologist will develop species-specific methods to remove them in consultation with the Contractor and NParks (Section 8.2). If there are no target fauna left within the worksite after it has been completely cleared, works can proceed.

### 6.3.6 Fauna Inspection

Weekly fauna inspections will be conducted by the EMMP Consultant’s Ecologist within the EMMP Boundary. Monthly inspections will be conducted in the building stage. This is to ensure contractor’s compliance and identify features that may result in fauna injury and/or mortality. The following will be noted during the inspections:

- 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; and
- Improperly disposed/stored food and food packaging.

## 7.0 ENVIRONMENTAL IMPACT, MITIGATION AND MONITORING REGISTER

A summary of the impacts, proposed mitigation, and monitoring requirements for each of the identified environmental impacts is provided in this section. The register is intended to be used as a checklist for weekly EMMP inspection. Depending on the phase of the works, the register/checklist will be classified into earthworks and infrastructure and building mitigation/management and monitoring requirements. Completed checklists will be provided as part of Monthly EMMP reports.

**Table 2: Summary of Environmental Mitigation, Management and Monitoring**

Environmental Aspect	Mitigation / Management Measures	Monitoring Requirements	Frequency	Responsible Party	Triggers
<b>Flora and Fauna</b>					
<b>Pre-construction</b>					
<b>Flora</b> <ul style="list-style-type: none"> <li>■ Loss of vegetation/ habitat</li> <li>■ Decline in Plant Health</li> </ul>	<ul style="list-style-type: none"> <li>■ Prior to commencement of site works, flora monitoring and management plan should be crafted by the contractor and reviewed by the EMMP Consultant in consultation with NParks, where necessary.</li> </ul>	Inspection of trees and plant specimens affected by construction works	As needed prior to Site clearance	Contractor, EMMP Consultant and NParks	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
	<ul style="list-style-type: none"> <li>■ Verification and review of footprints for hoarding, access roads and site investigation work by the EMMP Consultant.</li> </ul>			EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ Ensure that the project boundary is clearly identified on engineering drawings and appropriately demarcated on site by the Contractor.</li> </ul>			Contractor	
	<ul style="list-style-type: none"> <li>■ Ensure that the proposed areas to be retained for future park development are properly demarcated on-site via TPZ (<b>Section 6.2.1</b>), if required, by the Contractor and inspected by the EMMP Consultant</li> </ul>			Contractor and EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ Proper waste disposal guidelines of construction waste and hazardous material should be strictly adhered to, in order to prevent habitat pollution which impedes seedling recruitment by the Contractor.</li> </ul>			Contractor	
	<ul style="list-style-type: none"> <li>■ Tree Monitoring and Management Plan to be implemented by Contractor's Certified Arborist.</li> </ul>			Contractor's Certified Arborist (CA)	
	<ul style="list-style-type: none"> <li>■ Ensure that the TPZs, if required, are properly and adequately installed in accordance with the Guideline reflected in <b>Appendix B</b> and in <b>Section 6.2.1</b> before site clearance commences by the Contractor.</li> </ul>			Contractor's CA and Contractor	
<b>Fauna</b> <ul style="list-style-type: none"> <li>■ Fauna mortality and injury</li> </ul>	<ul style="list-style-type: none"> <li>■ Prior to the commencement of site works, Wildlife Response Plan (WRP) and pre-felling procedures shall be crafted by the Contractor and reviewed by the EMMP Consultant in consultation with NParks.</li> </ul>	Visual Inspection	As needed prior to Site clearance	EMMP Consultant, Contractor and NParks	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
	<ul style="list-style-type: none"> <li>■ Pre-felling fauna inspections will be conducted by the EMMP Consultant prior to the removal of any vegetation. Clearance of undergrowth will first be conducted, and area shall be left to fallow for 3 days to encourage arboreal fauna to leave the site prior to felling of trees on site. The pre-felling fauna</li> </ul>			EMMP Consultant and Contractor	

Environmental Aspect	Mitigation / Management Measures	Monitoring Requirements	Frequency	Responsible Party	Triggers
	<p>inspections for trees is valid for seven days validity, of which, the inspection will be repeated if the trees are not cleared by the contractor.</p> <ul style="list-style-type: none"> <li>To inspect all hoardings and temporary barriers and ensure that they are set up with no gaps before the commencement of site clearance by EMMP Consultant.</li> <li>Wild boar removal (if any) shall be carried out by a certified Wildlife Management Contractor (WMC) engaged by the Contractor.</li> <li>Implementation of a traffic management plan that includes driver awareness training and imposition of speed limits (i.e., 20 km/hr within the site) to prevent possible roadkills by the contractor.</li> <li>Biodiversity Awareness Training by the EMMP Consultant to be carried out to ensure workforce complies to the fauna response procedures, general housekeeping and understands the ecological value of site.</li> </ul>			<p>EMMP Consultant and Contractor</p> <p>EMMP Consultant, Contractor and WMC</p> <p>Contractor</p> <p>EMMP Consultant and Contractor</p>	
<b>Construction (Site Clearance, Earthworks and Infrastructure Works)</b>					
<p><b>Flora</b></p> <ul style="list-style-type: none"> <li><b>Loss of vegetation/habitat</b></li> <li><b>Decline in plant health</b></li> </ul>	<ul style="list-style-type: none"> <li>Identify unauthorised removal of vegetation beyond the worksites (within 10 m from hoarding boundary) by the EMMP Consultant.</li> <li>Identify impacts to adjacent habitats as a result of construction activities, e.g., soil erosion and pollution by EMMP Consultant's ECO and Contractor ECO.</li> <li>Identify exotic fast-growing plants and provide recommendations for removal, where necessary by Contractor.</li> <li>Monitor the health of plant specimens retained on site, if any by Contractor ECO.</li> </ul>	Inspection of trees and plant specimens affected by construction works	<ul style="list-style-type: none"> <li>Weekly inspections during earthworks and infrastructure.</li> </ul>	<p>EMMP Consultant</p> <p>EMMP Consultant's ECO, Contractor's ECO</p> <p>EMMP Consultant and Contractor</p> <p>EMMP Consultant and Contractor's ECO</p>	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
<p><b>Arboriculture</b></p> <ul style="list-style-type: none"> <li><b>Loss of vegetation/habitat</b></li> <li><b>Decline in plant health</b></li> </ul>	<ul style="list-style-type: none"> <li>Ensure trees that are reflected as to be retained in the approved tree felling plan are not cleared, unless approved by Client and the EMMP Consultant's Certified Arborist.</li> <li>Ensure trees in the retained areas remain viable, no trees are cleared and/or no works have encroached into these areas by Contractor.</li> </ul>	Visual Inspection	<ul style="list-style-type: none"> <li>Weekly inspections during earthworks and infrastructure.</li> </ul>	<p>Contractor, EMMP Consultant's Certified Arborist (CA) and Client</p> <p>EMMP Consultant's CA and Contractor's CA</p>	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
<p><b>Fauna</b></p> <ul style="list-style-type: none"> <li><b>Fauna mortality and injury</b></li> </ul>	<ul style="list-style-type: none"> <li>Implement Wildlife Response Plan (WRP), pre-felling procedures, and post-site clearance inspections by Contractor and inspected by EMMP Consultant.</li> <li>Pre-felling fauna inspection to minimise injury and mortality of fauna as a result of vegetation clearance by EMMP Consultant.</li> </ul>	Visual Inspection	<ul style="list-style-type: none"> <li>As needed during Site clearance; site inspection to be</li> </ul>	<p>EMMP Consultant, EMMP Consultant's ECO, and Contractor</p> <p>EMMP Consultant</p>	Non-compliance to any of the minimum controls or mitigation measures are observed on-site

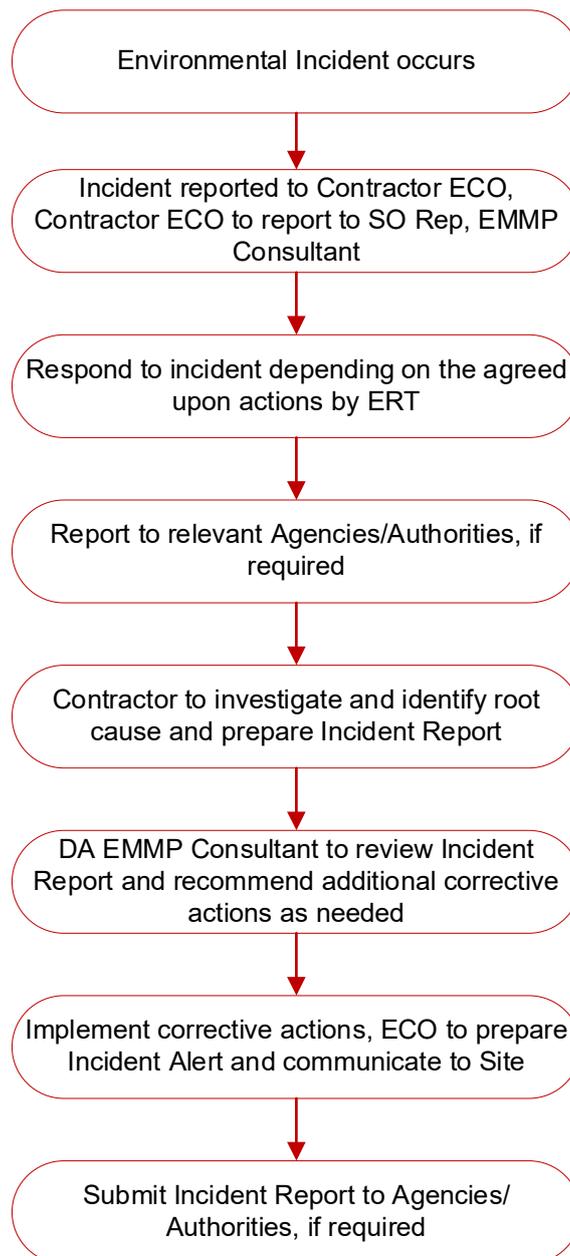
Environmental Aspect	Mitigation / Management Measures	Monitoring Requirements	Frequency	Responsible Party	Triggers
<ul style="list-style-type: none"> <li>■ <b>Human-wildlife conflicts</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Pre-felling fauna inspections will be conducted prior to the removal of any vegetation (including 3-days fallow period, and 7-days validity) (<b>Section 6.3.4</b>) by EMMP Consultant.</li> </ul>		conducted weekly	EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ Post-site clearance inspections will be conducted after completion of site clearance for each zone by EMMP Consultant</li> </ul>			EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ External site hoardings, as well as temporary hoardings must not have gaps in order to prevent entry of animals by Contractor and inspected by EMMP Consultant</li> </ul>			EMMP Consultant, EMMP Consultant's ECO, and Contractor	
	<ul style="list-style-type: none"> <li>■ Directional site clearance must be adhered to so as to minimise fauna injury and mortality (<b>Section 6.3.3</b>) by Contractor.</li> </ul>			Contractor	
	<ul style="list-style-type: none"> <li>■ Biodiversity Awareness Training to be carried out ensure workforce complies to the fauna response procedures, general housekeeping and understands the ecological value of site by EMMP Consultant.</li> </ul>			EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ Site inspections to be conducted weekly to minimise potential environmental impacts to fauna by EMMP Consultant's ECO.</li> </ul>			EMMP Consultant's ECO	
<b>Construction (Building Works)</b>					
<b>Flora and Arboriculture</b> <ul style="list-style-type: none"> <li>■ <b>Decline in plant health</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Ensure trees in the retained areas remain viable, no trees are cleared and/or no works have encroached into these areas by Contractor.</li> </ul>	Visual Inspection	<ul style="list-style-type: none"> <li>■ Inspections monthly or more frequently as needed.</li> </ul>	EMMP Consultant's CA, ECO and Contractor's CA	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
	<ul style="list-style-type: none"> <li>■ Identify impacts to adjacent habitats as a result of construction activities, e.g., soil erosion and pollution by Contractor.</li> </ul>			EMMP Consultant and Contractor	
	<ul style="list-style-type: none"> <li>■ Identify exotic fast-growing plants and provide recommendations for removal, where necessary, by Contractor.</li> </ul>			EMMP Consultant and Contractor	
	<ul style="list-style-type: none"> <li>■ Monitor the health of plant specimens retained on site, if any, by Contractor.</li> </ul>			EMMP Consultant and Contractor	
<b>Fauna</b> <ul style="list-style-type: none"> <li>■ <b>Fauna mortality and injury</b></li> <li>■ <b>Human-wildlife conflicts</b></li> <li>■ <b>Light disturbances</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Perimeter site hoardings as well as temporary hoardings must not have gaps in order to prevent entry of animals by Contractor.</li> </ul>	Visual Inspection	<ul style="list-style-type: none"> <li>■ Inspections monthly or more frequently as needed</li> </ul>	EMMP Consultant, ECO, and Contractor	Non-compliance to any of the minimum controls or mitigation measures are observed on-site
	<ul style="list-style-type: none"> <li>■ Biodiversity Awareness Training to be carried out ensure workforce complies to the fauna response procedures, general housekeeping and understands the ecological value of site by EMMP Consultant.</li> </ul>			EMMP Consultant	
	<ul style="list-style-type: none"> <li>■ Site inspections to be conducted monthly (or more frequently as needed) to minimise potential environmental impacts to fauna by EMMP Consultant.</li> </ul>			EMMP Consultant	

Environmental Aspect	Mitigation / Management Measures	Monitoring Requirements	Frequency	Responsible Party	Triggers
	<ul style="list-style-type: none"> <li>■ For night works (if required based on the approved LMP by NParks), an approved LMP shall be implemented on site by appointed Contractor(s) for building works.</li> </ul>			EMMP Consultant, ECO, and Contractor	

## 8.0 EMERGENCY RESPONSE PLAN (ERP)

An overall ERP is provided in this section, will be supplemented by the Contractor's site-specific ERP and emergency response team (ERT) and ERP organisation. The Plan shall include incident response, protocols and parties that need to be inform in an event of an incident, monitoring and management. The immediate response to all incidents will be to make the area safe and undertake measures to prevent further environmental harm. Regular ERP drills will be required in order to ensure that all parties are aware of responsibilities in the event of an emergency.

A general flowchart for emergency response is provided below:



**Figure 11: General Emergency Response Flowchart**

## 8.1 Emergency Response Organisation

**Table 3** below lists the responsible parties for reporting, response, and notification in the event of any environmental incident:

**Table 3: Summary of responsible parties for environmental incidents**

Incident	Notification	Responsible Person
<b>All environmental incidents</b>	All environmental-related incidents should be reported by personnel to the Contractor's ECO by means of an incident report form. Contractor ECO to report to SO Rep and EMMP Consultant; Subsequent actions to be based on succeeding sections below, to be amended as needed based on Contractor's ERP	<ul style="list-style-type: none"> <li>■ All personnel</li> </ul>
<b>Encounter of dead and injured animals</b>	<ul style="list-style-type: none"> <li>■ Contractor ECO to report to EMMP Consultant and SO Rep</li> <li>■ SO Rep to report to DA</li> </ul>	<ul style="list-style-type: none"> <li>■ As with notification requirement</li> <li>■ Contractor to contact WMC</li> </ul>
<b>Fire</b>	<ul style="list-style-type: none"> <li>■ Fire wardens to report to SO Rep, Singapore Civil Defence Force (SCDF)</li> </ul>	<ul style="list-style-type: none"> <li>■ As with notification requirement</li> <li>■ SCDF</li> </ul>

## 8.2 Wildlife Response Plan

The WRP will be activated whenever a trapped/injured/dead/dangerous animal is encountered around or within the worksite. The objective of the WRP is to minimise animal injury and mortality by responding appropriately to the different scenarios in **Figure 12**. This will be emphasized during the toolbox briefings. All wildlife incidents shall be reported and documented in a Wildlife Incident Form (**APPENDIX B**). Sightings of fauna roadkill will also be conducted daily by Contractor's appointed ECOs within the internal roads of the Project Site. Where necessary, the WMC engaged shall be listed under NParks' public register of certified WMC and approved by NParks to carry out removal and rescue in accordance with S10 directives.

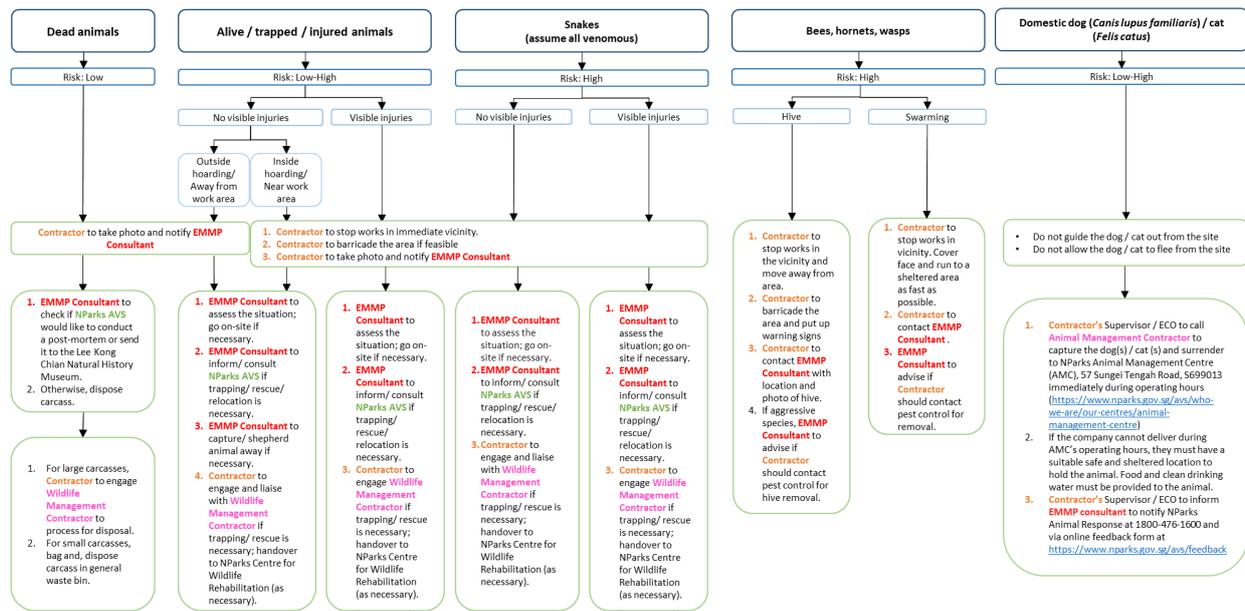


Figure 12: Wildlife Response Plan Flowchart

## 9.0 REPORTING AND REVIEW

This section outlines the EMMP reporting requirements and review should any plans and Site conditions change, or if the proposed mitigation and monitoring need to be updated. At a minimum, the EMMP should be reviewed every six months. The required reports and reviews are as follows:

- Submission and presentation (if required) to NParks, HDB and other relevant Authorities and obtain approvals on the EMMP;
- Liaise and coordinate with HDB's appointed Contractor/s, prepare the EMMP for each of the future activities.
- Regular site inspections and progress meetings to provide updates on the EMMP implementation. Checklists for site inspections will be prepared to facilitate reporting and compilation of data throughout the project's development. A common data repository (i.e., a SharePoint site) will be designated for data storage and sharing.
- Report potential or actual incidents and non-conformances and to propose corrective actions.
- Monthly EMMP reports throughout the construction works that includes pre-felling fauna inspection reports, and any weekly inspections.
- Prepare materials and attend, when needed, the briefings / presentations to stakeholders e.g., Grassroots Leaders, other interest groups / nature group and or organization, etc;
- Prepare and maintain an Environmental Impact and Mitigation Register which provides a summary of the project activities, identified sensitive receptors and potential environmental impacts, mitigation measures, timelines, and the residual impacts.
- Prepare, submit, and present a Close-off EMMP Audit report on the environmental mitigation and performance once the works on site is completed.

Weekly (and subsequently monthly) inspections and monthly EMMP reports, identified issues and additional actions taken to mitigate these will be submitted. Each subsequent monthly EMMP report will include trends and report on successful or failed follow-up actions until an issue has been effectively mitigated.

## **10.0 CLOSURE**

The EMMP includes flora and fauna management plans formulated in alignment with contractor plans and method statements. Contractors and subcontractors shall comply with applicable EMMP management, mitigation, monitoring, and reporting requirements. A change in the EMMP will be communicated to site personnel for compliance, and to authorities for approval, as needed.

**APPENDIX A**

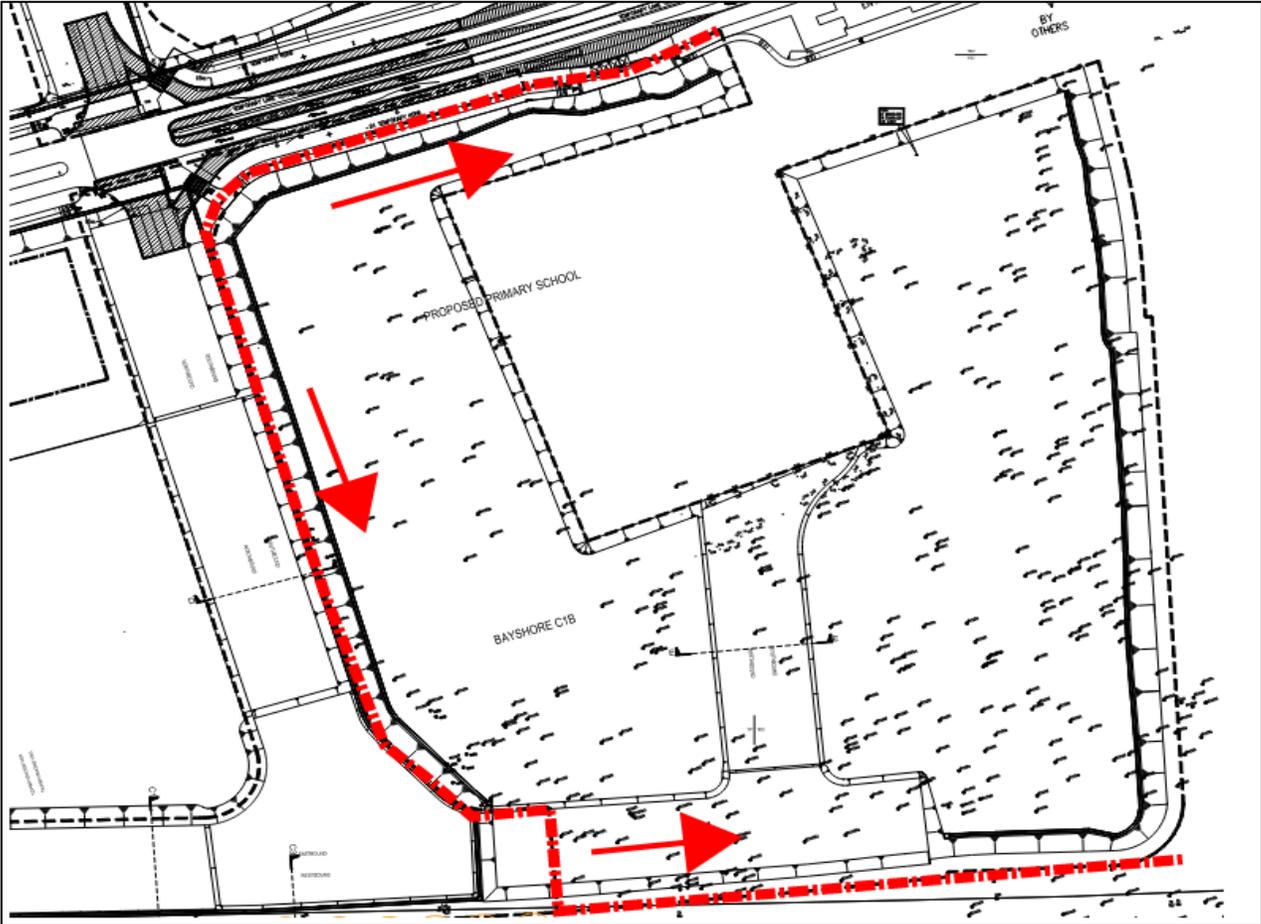
**Contractor Management Plans**

# Proposed Hoarding Plan



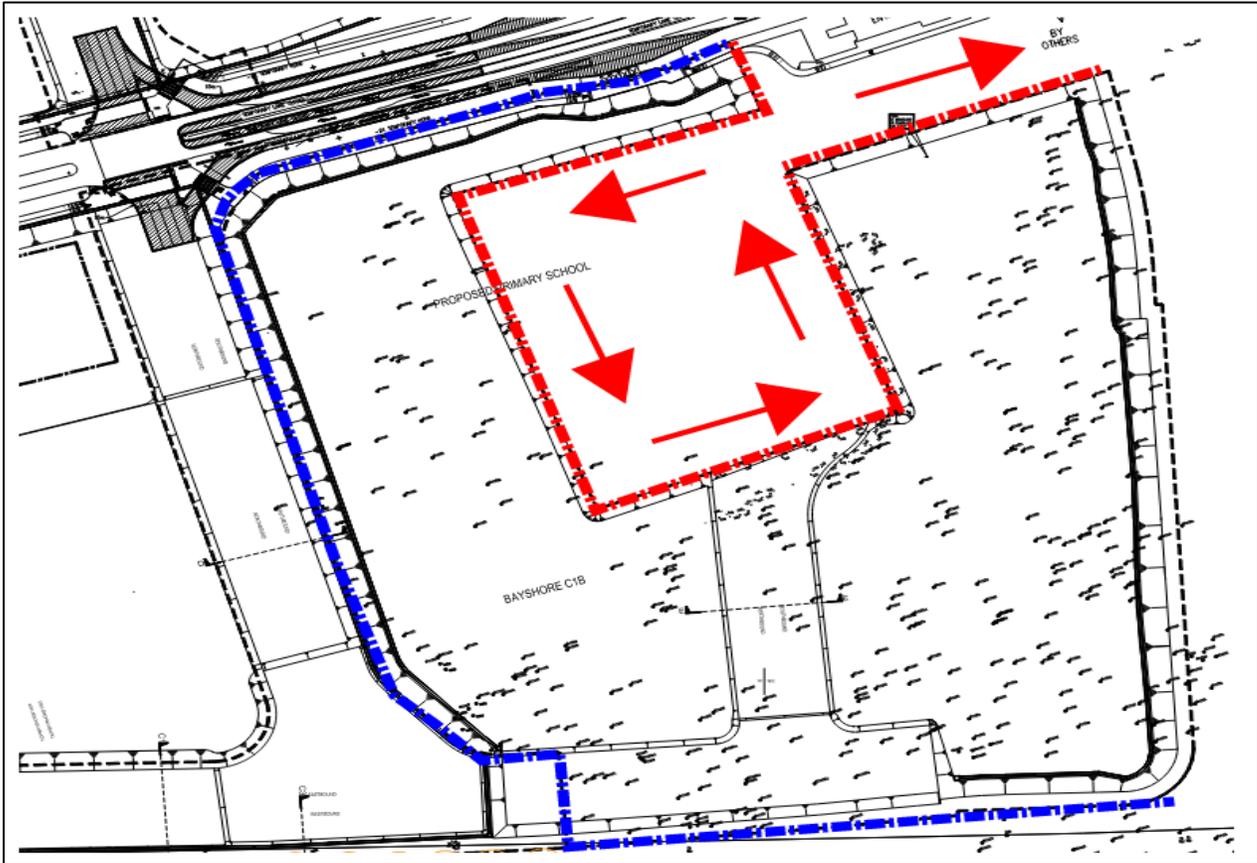
Step	Activities	Remarks
1	Install 2.4m height hoarding along the site boundary.	
2	Install 2.4m height hoarding along the site boundary.	
3	Install 2.4m height hoarding for the remaining site boundary.	
4	Hoarding works completed.	

**Step 1:** Install 2.4m height hoarding at turf area along the site boundary.



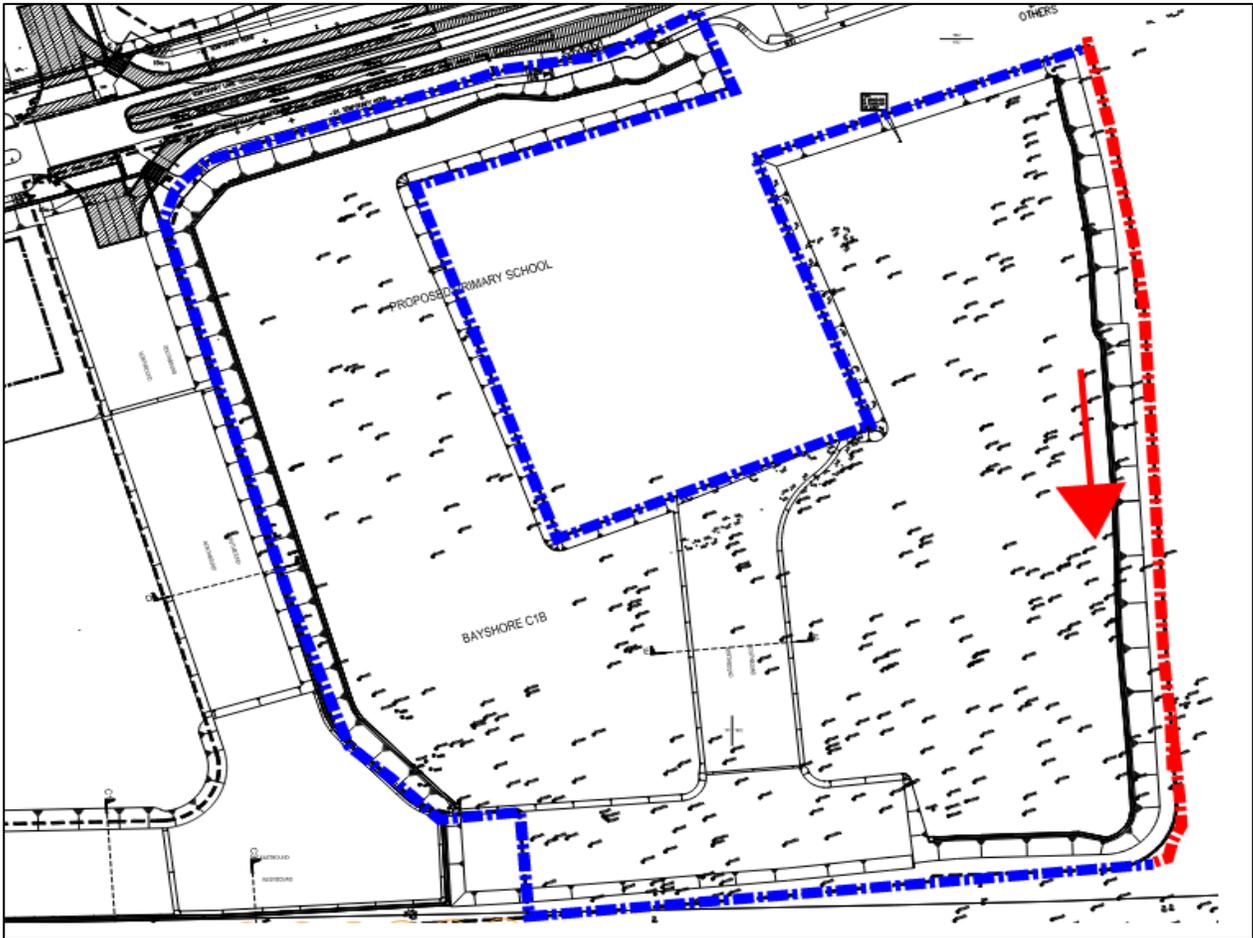
- On-going 2.4m height hoarding
- Direction of hoarding installation
- Completed 2.4m height hoarding

**Step 2:** Install 2.4m height hoarding at turf area along the site boundary.



- ■ On-going 2.4m height hoarding
- Direction of hoarding installation
- ■ Completed 2.4m height hoarding

### Step 3: Install 2.4m height hoarding for the remaining site boundary.

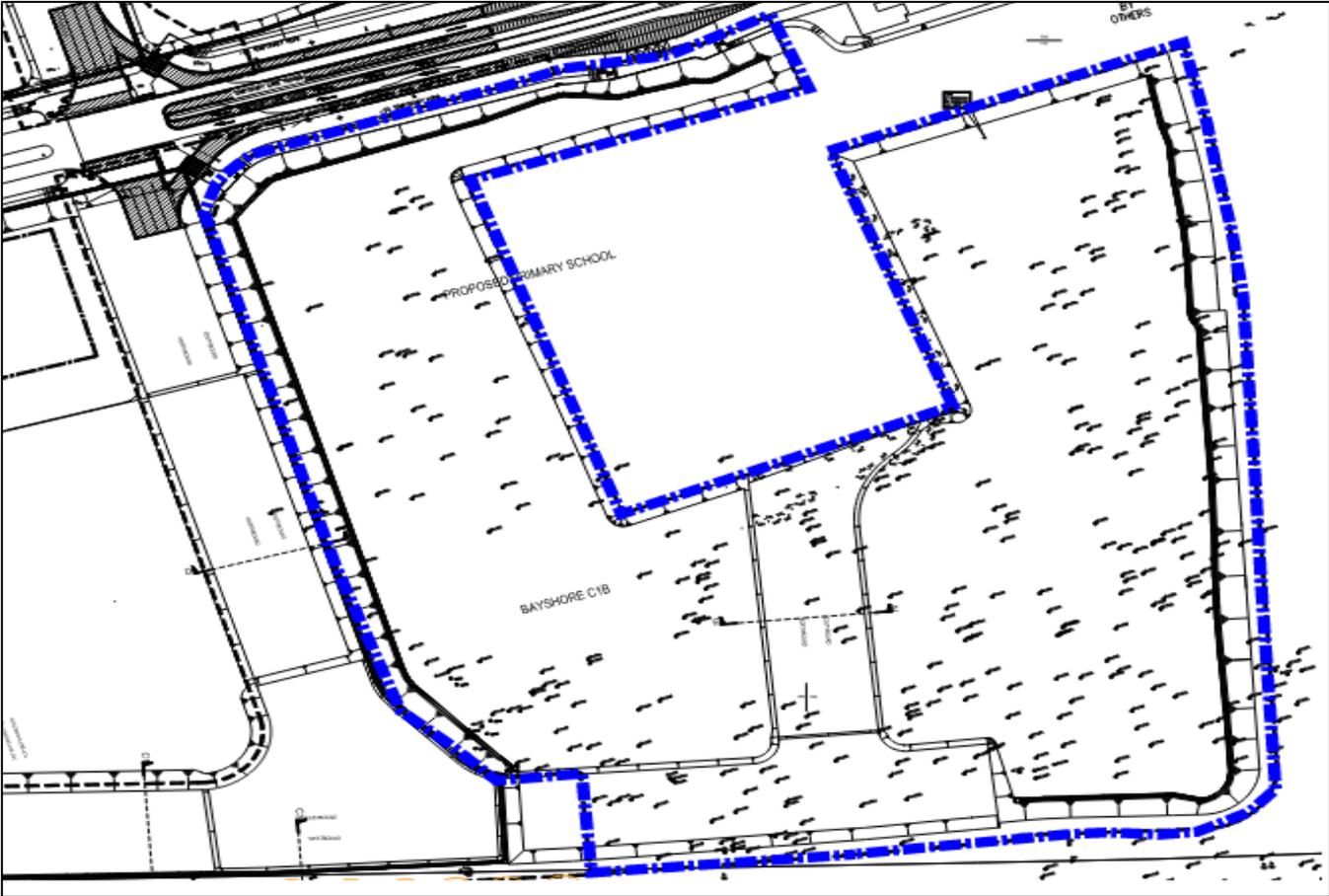


— On-going 2.4m height hoarding

→ Direction of hoarding installation

— Completed 2.4m height hoarding

# Step 4: Hoarding works completed.



— On-going 2.4m height hoarding

→ Direction of hoarding installation

— Completed 2.4m height hoarding

APPENDIX B

## Wildlife Incident Form

## WILDLIFE INCIDENT FORM

Date (YYYY/MM/DD):	Time:
Description of Location:	GPS Coordinates:
Wildlife Observed:	Animal Condition: <input type="checkbox"/> Alive <input type="checkbox"/> Killed <input type="checkbox"/> Dead <input type="checkbox"/> Injured Animal Activity: <input type="checkbox"/> Moving <input type="checkbox"/> Resting <input type="checkbox"/> Trapped
Photographs Taken: <input type="checkbox"/> Yes <input type="checkbox"/> No	NParks Notified: <input type="checkbox"/> Yes <input type="checkbox"/> No  Name of NParks Staff Notified: _____
Describe Incident (e.g., activities being carried out; what animal was doing; personnel involved):   	
Actions Taken:   	
Reported by: _____	Reported to: _____
Contact #: _____	Contact #: _____
Remarks:   	

APPENDIX C

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