Summary of Response to Feedback on Environmental Impact Study for Keppel Club Site

I. Overview: Approach to planning and greenery

The Government takes a holistic and long-term approach to planning as it allows us to judiciously steward Singapore's limited land resources and guide sustainable development, while achieving social, economic and environmental outcomes, and to meet the aspirations and needs of Singaporeans. This means continuing to carefully balance demand for land to meet a variety of needs, such as housing, green spaces, workplaces, schools and recreational spaces.

The Government is committed to stewarding and protecting our green spaces even as we develop to meet our land use needs. When there is a need to develop greenfield, vegetated sites or sites in close proximity to nature, we will carry out environmental studies, as required, to better understand the topography, hydrology, flora and fauna of the area so that we are able to take a science-based approach towards greenery and wildlife management, and inform our planning and development strategy for the area. This process will help to improve how we co-exist with nature and wildlife, and integrate greenery into our urban landscape. Any decision to proceed is made only after such studies and engagement with nature group stakeholders are carried out upstream in the planning and development process.

Currently, we continue to see high demand for public housing, across both mature and non-mature estates in Singapore. This is due to larger cohorts of Singaporeans born in the late 1980s to 1990s reaching marriageable age, and more people choosing to have their own flats instead of living together as a larger household in the same flat. To meet this demand, agencies adopt a range of development options such as increasing the density of developments while ensuring liveability, as well as prioritising the development of brownfield sites such as the Keppel Club site, where feasible.

Hence a science-based approach is adopted, to balance the retention of nature areas and meeting land use needs.

II. Site context & milestones

The Keppel Club site is about 48 hectares and has been zoned 'Residential (Subject to Detailed Planning)' since Master Plan 2014 (see Figure 1).

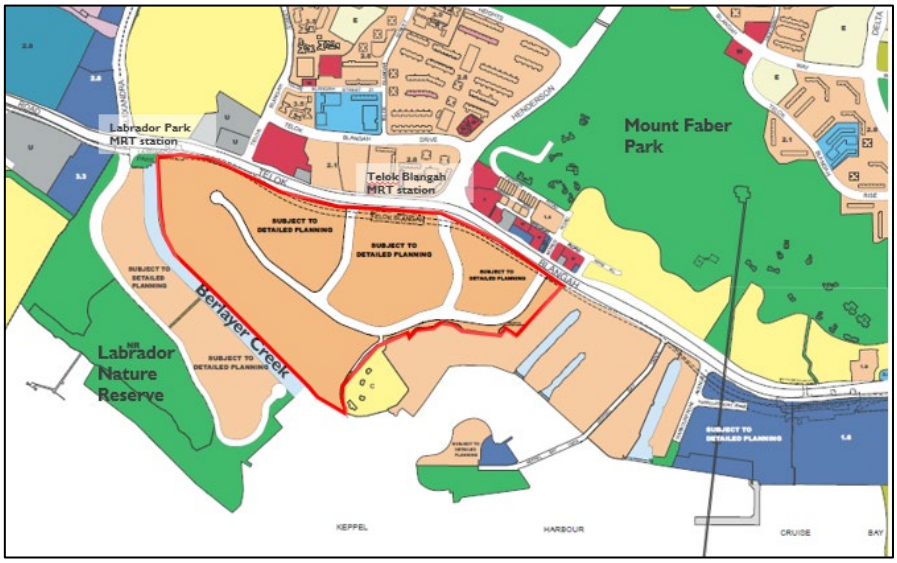

Figure 1: Zoning of Keppel Club Site According to Master Plan 2019

In 2020, URA and HDB engaged an external consultant to conduct an Environmental Impact Study (EIS) (for more details, please see the full report here). The purpose was to better understand the existing topography, hydrology, flora and fauna, to assess the nature and extent of environmental impacts arising from HDB's development plans and guide these plans in a way that would mitigate the potential environmental impacts.

The key EIS findings are summarised below:

i. Despite being highly manicured and managed, Keppel Club site provides foraging, nesting and ecological connectivity for birds between the Southern Ridges (comprising Mt Faber Park, Telok Blangah Hill Park and Kent Ridge Park) and Labrador Nature Reserve/ Sentosa. The field assessment conducted at the Study Area (see Figure 2 on the next page) documented 384 (194 marine and 190 terrestrial) fauna species, of which 27 species[1] are considered locally and/ or globally threatened.

ii. Three areas of high conservation value were identified (see Figure 2):

   a. The first area is Berlayer Creek, a tidally influenced natural waterway which supports one of the two mangrove forests in the southern part of mainland Singapore. This mangrove provides a recipient and dispersal

[1] Out of the 27 recorded species which are considered locally and/ or globally threatened, 4 are locally Critically Endangered (i.e. Oriental Pied Hornbill and Crested Goshawk), 9 are locally Endangered (i.e. Changeable Hawk-Eagle and Purple Heron), 13 are locally Vulnerable (i.e. Red-Legged Crake and Grey Heron) and 1 is globally Vulnerable (i.e. Long-Tailed Macaque).

site for mangroves to propagate from and to other mangrove sites in Singapore, acting as a critical stepping stone for marine connectivity. It also forms an important connection between terrestrial and marine habitats. The mangrove here also harbours the second highest abundance of conservation significant plant species.

b. The second area is Bukit Chermin, which consists of native-dominated secondary forest habitat. Bukit Chermin recorded the highest abundance of conservation significant plant species within the EIS study area, with many rare coastal plants. Bukit Chermin has high ecological value as it supports high faunal diversity and contains a wide range of flora.

c. The third area encompasses all marine areas, in particular seagrass meadows and rocky shore. Seagrass meadows can support numerous faunal species by providing feeding and nursery grounds while rocky shore can provide a myriad of microhabitats that can be utilised by many faunal species.

Figure 2. Areas of High Conservation Value (shaded in red) –

1. Mangroves along Berlayer Creek, 2. Bukit Chermin, 3. Marine area

iii. A total of 93 bird species were recorded in the site, 13 of which are considered species of conservation significance (see Figure 3 on the next page) and 21 of which are migratory bird species. Cross-referencing the 93 bird species recorded with earlier surveys of Keppel Club by Nature Society Singapore (2008)[2] and of Labrador Nature Reserve by NParks (2010)[3], a total of 27 bird species were common across all three surveys:

[2] www.keppelclub.com.sg/Gogreen/birdreport.pdf
[3] NParks' Nature Reserves Survey (2010-2012) of Labrador Nature Reserve, Sungei Buloh Wetland Reserve & Pulau Ubin Nature Area.

Scientific name	Common name	Global status (IUCN/CITES)	Local status (SRDB)	Distribution/Rarity (singaporebirds.com)	Residence	Native status
Haliaeetus leucogaster	White-bellied sea eagle	Least Concern	Not Assessed	Common	Resident breeder	Native
Haliastur indus	Brahminy kite	Least Concern	Not Assessed	Common	Resident breeder	Native
Aegithina tiphia	Common iora	Least Concern	Not Assessed	Common	Resident breeder	Native
Halcyon smyrnensis	White-throated kingfisher	Least Concern	Not Assessed	Common	Resident breeder	Native
Todiramphus chloris	Collared kingfisher	Least Concern	Not Assessed	Abundant	Resident breeder	Native
Butorides striata	Striated heron	Least Concern	Not Assessed	Common	Resident breeder	Native
Orthotomus atrogularis	Dark-necked tailorbird	Least Concern	Not Assessed	Common	Resident breeder	Native
Orthotomus sutorius	Common tailorbird	Least Concern	Not Assessed	Common	Resident breeder	Native
Spilopelia chinensis	Spotted dove	Least Concern	Not Assessed	Abundant	Resident breeder	Native
Treron vernans	Pink-necked green pigeon	Least Concern	Not Assessed	Abundant	Resident breeder	Native
Eurystomus orientalis	Oriental dollarbird	Least Concern	Not Assessed	Common	Resident breeder	Native
Corvus macrorhynchos	Large-billed crow	Least Concern	Not Assessed	Uncommon	Resident breeder	Native
Eudynamys scolopaceus	Asian koel	Least Concern	Not Assessed	Common	Resident breeder	Migrant
Centropus sinensis	Greater coucal	Least Concern	Not Assessed	Uncommon	Resident breeder	Native
Dicaeum cruentatum	Scarlet-backed flowerpecker	Least Concern	Not Assessed	Common	Resident breeder	Native
Hirundo tahitica	Pacific swallow	Least Concern	Not Assessed	Common	Resident breeder	Native
Merops viridis	Blue-throated bee-eater	Least Concern	Not Assessed	Common	Migrant breeder	Native
Anthreptes malacensis	Brown-throated sunbird	Least Concern	Not Assessed	Common	Resident breeder	Native
Cinnyris jugularis	Olive-backed sunbird	Least Concern	Not Assessed	Common	Resident breeder	Native
Oriolus chinensis	Black-naped oriole	Least Concern	Not Assessed	Common	Resident breeder	Native
Pycnonotus goiavier	Yellow-vented bulbul	Least Concern	Not Assessed	Abundant	Resident breeder	Native
Pycnonotus plumosus	Olive-winged bulbul	Least Concern	Not Assessed	Common	Resident breeder	Native
Amaurornis phoenicurus	White-breasted waterhen	Least Concern	Not Assessed	Common	Resident breeder	Migrant
Actitis hypoleucos	Common sandpiper	Least Concern	Not Assessed	Common	Winter visitor	Migrant
Acridotheres javanicus	Javan myna	Least Concern	Not Assessed	Abundant	Introduced resident breeder	Introduced
Aplonis panayensis	Asian glossy starling	Least Concern	Not Assessed	Common	Resident breeder	Native
Gracula religiosa	Common hill myna	Least Concern	Not Assessed	Uncommon	Resident breeder	Native

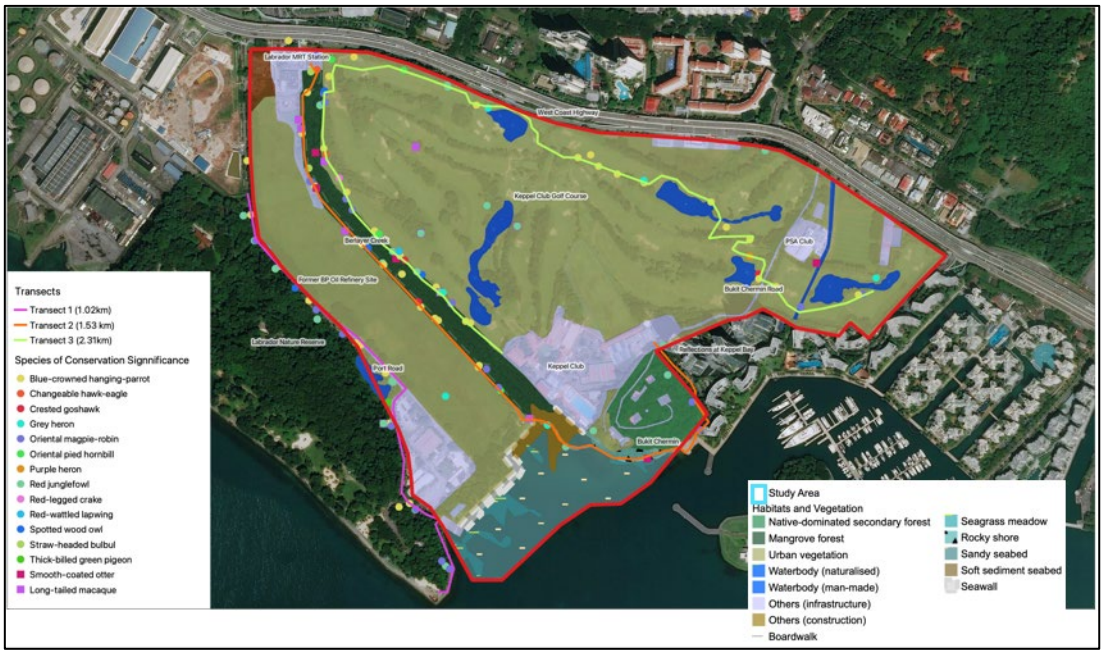

Figure 3. Distribution of Birds of Conservation Significance

III. Engagement with stakeholders

Together with URA and NParks, HDB carried out several engagements with Nature Group (NG) stakeholders since 2019 in scoping the EIS and over the course of the EIS. These sessions provided opportunities for parties to share their ideas and perspectives on how we can better co-create solutions to address the various concerns.

The EIS report was also published online for public feedback from 12 Apr 2022 to 11 May 2022. In total, 46 responses were received via HDB's feedback channels.

IV. Feedback received

We value the feedback from our partners and members of the public, and have considered every suggestion that has been submitted.

Some have voiced concerns on the general loss of greenery, the importance of Keppel Club in providing ecological connectivity between the Southern Ridges (i.e. Telok Blangah Hill Park, Mount Faber Park, Kent Ridge Park) and Labrador Nature Reserve/ Sentosa, as well as the impact of high-density development on the surroundings. There were also useful suggestions on how to better manage human and wildlife interactions in the new development.

Others have expressed their support for developing new housing in the area to meet continued demand, and gave suggestions on the facilities that they would like to see in the new development.

At the same time, there were also suggestions to commemorate the rich heritage of the site through the names of future roads, estates or parks, as well as suggestions to carry out an archaeological study prior to development.

We also received several detailed land use proposals from members of the nature community to further enhance the site's ecological connectivity to the surroundings. The suggestions include:

- An alternative alignment of the Henderson Corridor to lead more directly to the foothills of Mt Faber;

- Retaining existing terrain and trees along the Northern boundary of the development facing West Coast Highway; and

- Safeguarding ecological connectivity in the surrounding areas, should these areas be developed in the future.

V. Responses to feedback

We have always been mindful of the need to develop housing areas sensitively, to mitigate potential environmental impact.

NParks' Ecological Profiling Exercise has found that Keppel Club site serves as an ecological stepping stone between the Southern Ridges and Labrador Nature Reserve. Taking into consideration the EIS findings, the feedback received over the course of the EIS as well as during the public feedback period, agencies have adopted several key ideas, and the measures that agencies are proposing include:

A) **A new park at Keppel Club Site:** Close to 10ha of green spaces (~20% of the site), will be provided within the site, including a new Berlayer Creek Nature Park that will serve to buffer and extend the mangroves. These spaces will form green corridors throughout the estate, serving as recreational areas for residents, while providing conducive habitats for flora and fauna to thrive. The green corridors will preserve and strengthen ecological connectivity between Southern Ridges, Labrador Nature Reserve and Sentosa.

B) **Complementary wildlife connectivity along eastern boundary**: In response to feedback and suggestions from Nature Groups, agencies will safeguard a planting strip with an additional patch of greenery along the Eastern boundary (see Figure 4) to complement the other green corridors within the Keppel Club site. This will provide an alternative connection to the foothills of Mt Faber, for birds that are more sensitive to the urban environment (e.g. Straw-headed bulbul, Thick-billed green pigeon, Greater coucal). HDB and NParks will also explore ways to introduce wildlife crossings to facilitate ecological movement across the proposed new road which will serve the new developments.

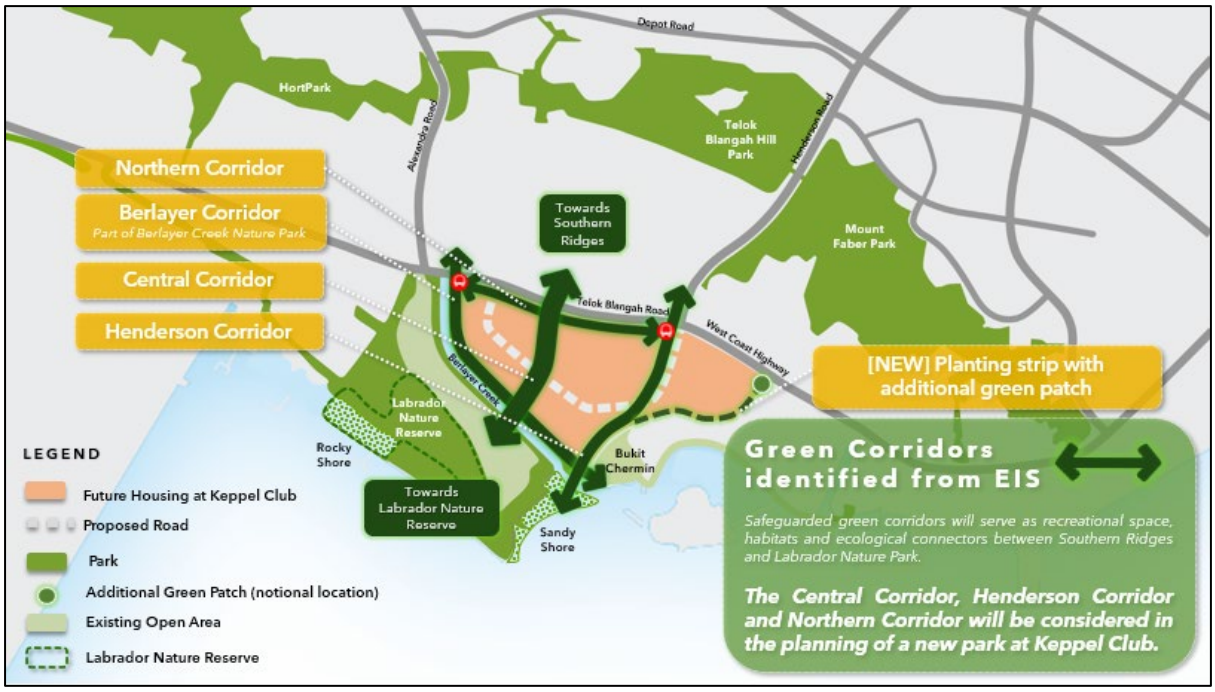

Figure 4: Revised Conceptual Plan for Keppel Club Site

C) **Creation of new habitats:** Agencies are studying the recommendation to extend Berlayer Creek inland to potentially introduce new ecological habitats (e.g. possible mangrove or freshwater swamp) and attract a larger range of biodiversity to the site.

D) **Landscaping to attract biodiversity**: The landscaping of the green corridors will take into consideration suggestions on the types of trees and plants that can be introduced to attract greater biodiversity. For example, green roofs on lower rise blocks flanking both sides of the green corridors can supplement the green spaces to serve as additional habitats for butterflies and smaller urban bird species.

E) **Retention of existing trees**: A mature Assam heritage tree (*Tamarindus indicus*), estimated to be about 100 years old, will be retained within the Central Corridor. Agencies are also exploring the possibility of retaining several large trees (i.e. Mahogany, Indian Bayleaf, Angsana, Weeping Fig) and conservation significant plants (i.e. White Fig and Akar Berdara Laut) within and on the fringe of the Northern Corridor and Berlayer Corridor where feasible.

F) **Management of human-wildlife interactions:** HDB and URA are working closely with NParks to consider how public education, community stewardship, wildlife population ecology and management initiatives under NParks' enhanced wildlife management framework can be applied to Keppel Club Site, to create an environment where residents can co-exist with nature.

G) **Biophilic design of future developments:** Guided by the Biophilic Town Framework which aims to better integrate nature and the urban environment, greenery would be woven throughout the developments in Keppel Club site. The housing developments will feature staggered building heights which will step down towards the green corridors as terraced green spaces. This would enable residents to enjoy views of the greenery at their doorstep, while taking into consideration the surrounding developments, and safeguarding vantage views from Mount Faber towards the coast. All the green spaces will also feature walking trails connecting the future residential estates to Telok Blangah MRT and Labrador Park MRT stations, providing residents with easy access to transport nodes within a green and natural setting.

H) **Implementation of Environmental Monitoring and Management Plan (EMMP):** HDB will engage a specialist EMMP consultant to develop an EMMP to mitigate and manage any potential environmental impact arising from development works, and closely monitor the works throughout the construction phase.

I) **Recognising the history and archaeological potential of the site:** HDB, together with NHB and URA, recognises the history and archaeological potential of the Keppel Club Site as a site that could contain multiple layers of history from the 14th century to World War II. HDB, NHB and URA will be commissioning an archaeological study at the Keppel Club Site. If artefacts are found, they will be assessed and excavated prior to development works. Agencies will also explore ways to commemorate and incorporate the rich heritage of the site into the planning and design of the area with relevant stakeholders.

J) **Safeguarding ecological connectivity in the surrounding areas:** Agencies will review the ecological connectivity between Keppel Club and the surrounding areas when plans for these areas are being studied.

As land use plans are not static, the Government regularly reviews our plans to ensure that they remain relevant to the changing needs of Singaporeans, and will only proceed with development or launch sites after considering all feasible options. As responsible land

stewards, agencies will continue to assess our various land use needs and engage stakeholders when we review the plans for other sites in the future.