Appendix F

Ecological Impact Assessment

Prepared by

Ramboll Hong Kong Limited in associated with Ecosystems Limited

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT VARIOUS LOTS IN DD92 AND ADJOINING GOVERNMENT LAND, KWU TUNG SOUTH, SHEUNG SHUI, N.T.

ECOLOGICAL IMPACT ASSESSMENT

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1. INTRODUCTION

1.1 Background

1.1.1 The proposed development is located at various lots in DD92 and the adjoining Government land, Kwu Tung South (Application Site). It falls within the Approved Kwu Tung South Outline Zoning Plan (OZP) (No. S/NE-KTS/22), gazetted on 31 May 2024 and is currently zoned "Comprehensive Development Area (3)" ("CDA(3)"). A Section 12A planning application (No. Y/NE-KTS/15) to increase the development intensity of the subject site from a max. plot ratio of 0.4 to a max. plot ratio of 2.0 for residential development was approved by the Town Planning Board on 28 October 2022. Based on the approved residential development, the Applicant now submits a new Section 16 planning application.

1.1.2 The Application Site was subject to a previous Section 12A application (No. Y/NE-KTS/3) approved in 2011 for rezoning the Application Site to "CDA" for residential use, followed by two Section 16 applications (Nos. A/NE-KTS/364 and 484) which were approved in 2015 and 2021 respectively for residential use as well. The latest Section 12A application (No. Y/NE-KTS/15) was approved by the Town Planning Board to increase the plot ratio and building height of the Application Site for comprehensive residential development. **Throughout the process, it has long been established that the Application Site was suitable for residential development since 2011 under the OZP.**

1.1.3 The Application Site is dominated by wasteland, with minor scattered plantation and paved areas. No important habitat as stipulated in Annex 8 of the EIAO-TM (such as native woodland larger than one hectare, brackish or freshwater marshes larger than one hectare, natural stream courses longer than 500 metres, etc.), was identified within the Application Site. According to the OZP (No. S/NE-KTS/22), no land area within 500m distance is of conservation planning intention such as CA, SSSI, and the lands adjacent the Application Site are mostly zoned as Residential, Recreation, or Agriculture. **The Application Site is therefore not an important habitat or recognized sites.**

1.1.4 Ramboll Hong Kong Limited in association with Ecosystems Limited, was appointed by the Applicant, to be the Ecological Consultant for conducting an ecological impact assessment (EcoIA). This report provided the ecological baseline and assessment.

2. APPROACH AND METHODOLOGY

2.1 Application Site and Study Area

2.1.1 The Application Site is located at the northern part within an area known as Kwu Tung South and is to the immediate south of the Kwu Tung North New Development Area (KTN NDA). It is bounded by Kwu Tung Road to the north, Hang Tau Road to the east and an existing footpath to the south connecting to the Sheung Yue River. To the immediate west of the Application Site are some existing planting areas and an meander established under the rehabilitation works of River Beas managed by the Agriculture, Fisheries and Conservation Department (AFCD). The Application Site is accessible by the existing Hang Tau Road.

2.1.2 The Study Area for ecological assessment covered the Application Site and area within 500m from the Application Site boundary (**Figure 1**).

2.2 Relevant Legislations and Guidelines

2.2.1 The Hong Kong Special Administrative Region ordinances and associated regulations/guidelines relevant to the proposed ecological impact assessment include the following:

- Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislation, the Forestry Regulations (Cap. 96A);
- Wild Animals Protection Ordinance (WAPO) (Cap. 170);
- Country Parks Ordinance (Cap. 208) and its subsidiary legislation;
- Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM); and
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) and its subsidiary legislation.

2.2.2 The ecological impact assessment makes reference to the following guidelines and standards:

- Hong Kong Planning Standards and Guidelines Chapter 10, "Conservation";
- Planning, Environment &. Lands Branch Technical Circular No. 1/97 / Works Branch Technical Circular No. 4/97, "Guidelines for Implementing the Policy on Off-site Ecological Mitigation Measures";
- EIAO Guidance Note (GN) No. 3/2010 – Flexibility and Enforceability of Mitigation Measures Proposed in an EIA Report;
- EIAO GN No. 6/2010 - Some Observations on Ecological Assessment from the Environmental Impact Assessment Ordinance Perspective;
- EIAO GN No. 7/2023 – Ecological Baseline Survey for Ecological Assessment; and
- EIAO GN No. 10/2023 – Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys.

2.2.3 This ecological impact assessment also makes reference to the following Mainland legislation:

- List of Wild Animals under State Priority Conservation, promulgated by the National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs; and
- List of Wild Plants under the State Priority Protection, promulgated by the National Forestry and Grassland Administration and the Ministry of Agriculture and Rural Affairs.

2.2.4 Other international conventions and guidelines that are relevant to the ecological impact assessment include the followings:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- International Union for Conservation of Nature (IUCN) Red List of Threatened Species; and
- United Nations Convention on Biological Diversity

2.3 Criteria of Evaluating Species of Conservation Importance

2.3.1 Species of flora and fauna with conservation importance will be given special attention. In accordance with Table 3, Annex 8 of EIAO-TM, the ecological

value of species will be assessed in terms of protection status, distribution, and rarity. However, exotic invasive species, escaped cultivars or captive species, vagrants and introduced species will be excluded, besides, the local conservation status will also be considered.

2.3.2 The following laws/regulations and conventions for conservation were relevant with evaluation of the conservation importance of flora and fauna species. The following list is by no means exhaustive. Other literature and references would also be reviewed when necessary.

- IUCN Red List of Threatened Species (listed in Threatened Categories, i.e. Vulnerable, Endangered, Critically Endangered, Extinct in the Wild and Extinct);
- China Plant Red Data Book;
- Category I or II protected species in mainland China in the List of Wild Animals and Plants under State Priority Conservation;
- Threatened Species List of China's Higher Plants;
- Red List of China's Vertebrates (listed in Threatened Categories (listed in Threatened Categories, i.e. Vulnerable, Endangered, Critically Endangered, Extinct in the Wild and Extinct);
- CITES;
- Forestry Regulations (Cap. 96A) which are subsidiary legislation of the Forests and Countryside Ordinance (Cap. 96);
- Wild animal protection ordinance (WAPO, Cap. 170), subject to local conservation status;
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586), subject to local conservation status;
- PRC Wild Animal Protection Law;
- Plant species considered 'Rare' or 'Very Rare' listed by Corlett *et al.* (2000), or regarded as rare by Yip *et al*. (2010) where applicable; and
- Fauna species considered of concern in Fellowes *et al*. (2002).

2.4 Approach of Existing Information Review

2.4.1 A literature review was conducted to characterize the existing conditions within the Study Area and to identify habitats and species of potential importance in the area. The literature included Government and private sector reports, independent and Government published literature, academic studies, vegetation maps and land use maps. Reviewed information included, but not be limited to, the following:

- Outline Zoning Plan
- Historical and latest government aerial photos
- Hong Kong Biodiversity Database
- Rare and Precious Plant of Hong Kong (AFCD 2003a)
- Hong Kong Biodiversity – Newsletter of AFCD, (Shek 2004), (Shek and Chan 2005) and (Chan and Shek 2006)
- Memoirs of Hong Kong Natural History Society
- Porcupine! – Newsletter of Department of Ecology and Biodiversity, University of Hong Kong
- North East New Territories (NENT) New Development Areas Environmental Impact Assessment (AEIAR-175/2013) (ARUP 2013)
- Northern Link Environmental Impact Assessment (AEIAR-259/2024) (AECOM 2023)
- The minutes of the 706th Meeting of the Rural and New Town Planning

Committee

- Focus on Hong Kong Bats: Their Conservation and the Law (Fauna Conservation Department, KFBG 2006)

2.5 Methodology of Ecological Field Surveys

2.5.1 The methodology of the ecological surveys made reference to the technical guidelines of ecological assessment in Annexes 16 of Technical Memorandum under Environmental Impact Assessment Ordinance and the relevant Guidance Notes (GN 7/2010 and GN 10/2010 for the surveys in 2022-2023; GN 7/2023 and GN 10/2023 for the surveys in 2024).

2.5.2 Surveys on habitat and vegetation, avifauna, butterfly, odonate, firefly, reptile, amphibian, mammal (including active search survey, infrared camera trapping method and bat survey), and freshwater aquatic fauna (including fishes, freshwater, invertebrates & aquatic reptiles) were conducted.

2.5.3 Ecological field surveys covering both dry and wet seasons were conducted from November 2022 to April 2023, and from May 2024 to October 2024 (12 months in total), to obtain the ecological baseline information of the Application Site and the 500m Study Area including all months (**Table 2.1**).

Table 2.1 Ecological field survey programme

Survey^	2022		2023				2024					
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	Dry season					Wet season						
Habitat and Vegetation	✓					✓	✓					✓
Avifauna	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Butterfly	✓				✓	✓	✓	✓	✓	✓	✓	✓
Odonate						✓	✓	✓	✓	✓	✓	✓
Firefly							✓	✓				✓
Reptile						✓	✓	✓	✓	✓	✓	✓
Amphibian					✓	✓	✓	✓	✓	✓	✓	✓
Mammal (including Active Search Survey, Infrared Camera Trapping Method, and Bat Survey)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Freshwater Aquatic Fauna (including fishes, freshwater Invertebrates & aquatic reptiles)	✓				✓	✓	✓	✓	✓	✓	✓	✓

Remark:
^ The proposed time of the day is different among surveys, it will be discussed in the following paragraphs.

Habitat and vegetation survey

2.5.4 Habitats within the Study Area were mapped based on government latest aerial photos and field ground-truthing. Representative areas of each habitat type and the Application Site were surveyed on foot. Plant species encountered in each habitat type and their relative abundance were recorded with special attention to rare or protected species. Nomenclature of vascular plant species follows Hong Kong Herbarium (2021), whilst their rarity in Hong Kong follows Corlett *et al.* (2000) and Yip *et al*. (2010) where applicable.

Avifauna survey

2.5.5 The avifauna of each habitat types within the Study Area was surveyed using transect method (**Figure 1**). Survey time of surveys during 2022 to 2023 were daytime (early morning) and nighttime, while the survey time of surveys in 2024 were early morning, dusk and night-time, referring to the latest EIAO-TM issued on 30th June 2023. The presence and abundance of avifauna species at various habitats was recorded visually and aurally. Observations were made using binoculars (at least 8x) and photographic records were taken, if possible. All birds seen within 10 m from either side of the survey transect were identified and counted. Bird species encountered outside survey locations but within the Study Area were also recorded. The location(s) of any avifauna species of conservation importance encountered were recorded, along with notable behaviour. Ornithological nomenclature in this study follows AFCD (2022).

Butterfly and Odonate surveys

2.5.6 Butterflies and odonates of different habitats within the Study Area were surveyed using transect count method during daytime (**Figure 1**). The survey transects covered all representative habitats recorded within the Study Area, as well as the Application Site. Butterflies and odonates within 10 m from either side of the survey transect were identified and counted. Relative abundance of butterflies and odonates in each type of habitat was estimated. Butterflies and odonates encountered outside transects but within the Study Area were recorded in order to produce a complete species list. Nomenclature of butterfly and odonate follows AFCD (2022).

Firefly survey

2.5.7 Firefly surveys were conducted in surveys in 2024 referring to the latest EIAO-TM issued on 30th June 2023. Firefly surveys were conducted in dusk and night-time (started shortly after sunset and continued until 120 minutes after sunset when the fireflies are most active) along the transect (**Figure 1**). During the survey, fireflies observed, including larvae and adults, were identified to the species level, where possible. The location of firefly species of conservation importance or any notable behaviour (e.g. breeding) were recorded. Lighting devices (e.g. headlamps, torches, etc.) were switched off most of the time to enhance detection of fireflies, where site situation permits. Nomenclature and conservation status of fireflies (e.g. endemic to Hong Kong) follow Yiu (2023).

Herpetofauna (reptiles and amphibians) survey

2.5.8 Herpetofauna surveys (including day and night-time surveys) were carried out. Herpetofauna surveys were conducted through direct observation and active searching in all potential hiding places such as among leaf litter, inside holes, under stones and logs along the survey transects within the Study Area. During the surveys, all reptiles and amphibians sighted and heard were recorded. Auditory detection of species-specific calls was used to survey frogs and toads during night surveys. Nomenclature follows AFCD (2022).

Mammal survey

<u>Active Search Survey</u>

2.5.9 Mammal surveys (including day and night-time surveys) were carried out covered representative habitats within the Study Area. Mammals and their tracks and signs (including droppings) were actively searched and recorded by direct observation within the Study Area (**Figure 1**). Mammal surveys were also conducted during dusk in the survey in 2024 referring to the latest EIAO-TM

issued on 30th June 2023.

Infrared Camera Trapping Method

2.5.10 Infrared camera traps were deployed within the Application Site and outside the Application Site but within the Study Area to survey cryptic non-flying terrestrial mammals. The locations of the infrared camera are shown in **Figure 1**.

Bat Survey

2.5.11 The bat survey of the current study included a search for bat roosting sites within the Study Area, by both literature review within the Study Area, and field search on potential sites (such as Chinese Fan-palm, bamboos, abandoned village houses, or tunnel/underground channel check), if any, within and near the Application Site and along the survey transects.

2.5.12 Bats were also surveyed by direct count and observation of behaviour, including the size, flying pattern and height once they were observed during survey.

2.5.13 Besides, ultrasonic bat detectors were also used as an indirect survey tool for bats during the survey programme in 2024 to detect the presence of bat species within the Study Area as supplementary information. Such ultrasonic detectors identify bat species by recording the species-specific echolocation calls produced by bats when they are flying. Ultrasonic bat detectors (Wildlife Acoustics – Echo Meter Touch 2 PRO) were used to record the bat calls during and after sunset. The recorded data were reviewed for species identification.

2.5.14 The abovementioned bat surveys were conducted at appropriate timings, i.e. direct observation and use of ultrasonic bat detectors were conducted during and after sunset; while search for bat roosting sites were conducted during daytime.

2.5.15 Nomenclature of mammal recorded from all the above methods follows the biodiversity database maintained by Agriculture, Fisheries and Conservation Department (AFCD 2022).

Freshwater Aquatic Fauna survey

2.5.16 Aquatic fauna, including freshwater macro-invertebrates and fishes, were identified and studied by direct observation and active searching and standard field sampling techniques with hand nets. The aquatic sampling locations are shown in **Figure 1**. Organisms, mostly fish and aquatic macro-invertebrates (e.g. freshwater crabs & shrimps, freshwater molluscs and aquatic insect larvae) were recorded and identified. All the aquatic reptiles found will be identified to the lowest possible taxonomic level with their abundance recorded, and the nomenclature follows AFCD (2022).

2.6 Impact Assessment

2.6.1 Although the present study is not a formal EIA, the assessment made reference to the criteria and guidelines as stated in Annexes 8 and 16 of the TM-EIAO. The ecological importance of the habitats within the Application Site and surrounding areas were evaluated in accordance with the criteria stipulated in Annex 8 of EIAO (TM). In accordance with Table 3, Annex 8 of the EIAO

(TM), the ecological value of recorded species will be assessed in terms of protection status (e.g. fauna protected under Wild Animals Protection Ordinance (except birds), and flora and fauna protected under regional/global legislation/conventions), species distribution (e.g. endemic), and rarity (e.g. rare or restricted). The potential impact arising from the proposed development will be evaluated and mitigation measures will be recommended following the hierarchy detailed in Annex 16 of TM-EIAO, i.e. the order of priority: avoidance, minimization and compensation. Wherever possible, on-site mitigation measures are preferred over off-site mitigations.

3. ECOLOGICAL BASELINE RESULTS

3.1 Literature Review

Recognized Site of Conservation Importance: Long Valley and Ho Sheung Heung Priority Sites for Enhanced Conservation

3.1.1 The south-eastern boundary of Long Valley and Ho Sheung Heung Priority Sites for Enhanced Conservation (LVHSH Priority Site) is located about 300m away from the northeast of the Application Site, separated by the Fanling Highway (**Figure 2**). It was one of the 12 Priority Sites with ecological importance for enhanced conservation identified by the Government under the New Nature Conservation Policy in 2004, which was introduced to regulate, protect and manage natural resources for the conservation of the biodiversity of Hong Kong in a sustainable manner (AFCD, 2025a). The LVHSH Priority Site comprises three major habitat types i.e. fishpond, wet agricultural land (including marsh as abandoned wet agricultural land) and Fung Shui wood. It supported moderate faunal diversity and also species of conservation importance of three taxa groups including avifauna e.g. Asian Dowitcher (*Limnodromus semipalmatus*), Greater Spotted Eagle (*Clanga clanga*), Japanese Yellow Bunting (*Emberiza sulphurate*), butterfly e.g. Colon Swift (*Caltoris bromus bromus*), Brown Onyx (*Horaga albimacula triumphalis*), Vagrant (*Vagrans egista brixia*) and mammal e.g. Lesser Bamboo Bat (*Tylonycteris pachypus*) (AFCD, 2025b).

Important Habitat: Inner Deep Bay and Shenzhen River Catchment Important Bird Area

3.1.2 The boundary of the Inner Deep Bay and Shenzhen River Catchment Important Bird Area (IBA) is also located about 300m away from the northeast of the Application Site, separated by the Fanling Highway (**Figure 2**). It is one of the two Important Bird Area in Hong Kong, it is about 3150ha spanning from Sheung Pak Nai to Man Kam To. It is an Important Bird Area identified by BirdLife International as a globally important wetland site that supports very large numbers of passage and wintering waterbirds including some threatened species e.g. Dalmatian Pelican (*Pelecanus crispus*), Black-faced Spoonbill and Oriental Stork (*Ciconia boyciana*) (HKBWS, 2004). It covers an estuarine area comprising a variety of habitats, including freshwater wetland, marine-coastal (intertidal mudflats and mangroves) and man-made (aquaculture fish ponds, tidal shrimp ponds (gei wai) and oyster farms) habitats (BirdLife International, 2022).

Existing Planting Area

3.1.3 A patch of Existing Planting Area currently maintained by the Agriculture, Fisheries and Conservation Department (AFCD) under the Rural Drainage Rehabilitation Scheme for River Beas, is located to the west next to the Application Site with two small parts located within the Application Site.

Other Recognized Site of Conservation Importance/ Important Habitat

3.1.4 Other recognized sites of conservation importance in the vicinity of the Study Area included Long Valley Nature Park (LVNP), Deep Bay Wetland Area (including Mai Po Nature Reserve, Mai Po Inner Deep Bay Ramsar Site, Mai Po Marshes SSSI and Inner Deep Bay SSSI), Wetland Conservation and

Wetland Buffer Areas, Ho Sheung Heung and Man Kam To Road Egretries, Fung Shui Wood (at Ho Sheung Heung, Tsung Pak Long and Kam Tsin), Ecologically Important Streams at Kau Lung Hang and Long Valley Nature Park (LVNP). However, all these sites are outside the 500m Study Area and no potential ecological impacts are expected.

Species of Conservation Importance

3.1.5 The Study Area of the North East New Territories (NENT) New Development Areas Environmental Impact Assessment (AEIAR-175/2013) (ARUP 2013) overlaps the Application Site and partially overlaps the northern part of the Study Area of the current Study. There was no flora or non-avian fauna species of conservation importance recorded within the overlapped part.

3.1.6 The Study Area of Northern Link Environmental Impact Assessment (AEIAR-259/2024) (AECOM 2023) partially overlaps the northern part of the Study Area of the current Study. Several species of conservation importance were recorded and they are listed in **Table 3.1** and shown in **Figure 3**. However, all of them were recorded in area to the north of Fanling Highway.

3.1.7 According to the minutes of the 706th Meeting of the Rural and New Town Planning Committee, two fauna species of conservation importance, Malayan Night Heron and Leopard Cat, were found using the meander to the west outside the Application Site (**Table 3.1**).

Table 3.1 Fauna species of conservation importance recorded in the vicinity of the Application Site from the literature review

Species	Locations	Rarity in Hong Kong [1]	Distribution in Hong Kong [1]	Conservation /Protection status [2] [3] [4] [5] [6] [7] [8]
Avifauna				
Malayan Night Heron * *Gorsachius melanolophus*	At the meander to the west outside the Application Site	Rare spring passage migrant.	Found in Lo Kei Wan.	Cap. 170 List of Wild Animals under State Priority Conservation: Class II
Black-winged Stilt *Himantopus himantopus*	At channel to the north of Fanling Highway outside the Application Site	Common migrant and winter visitor.	Found in Deep Bay area, Long Valley, Kam Tin.	Cap. 170 Fellowes et al. (2002): RC
Chinese Pond Heron *Ardeola bacchus*	At channel and plantation/village/orchard to the north of Fanling Highway outside the Application Site	Common resident.	Widely distributed in Hong Kong.	Cap.170 Fellowes et al. (2002): PRC (RC) (3)

Species	**Locations**	**Rarity in Hong Kong** [1]	**Distribution in Hong Kong** [1]	**Conservation /Protection status** [2] [3] [4] [5] [6] [7] [8]
Collared Crow *Corvus torquatus*	At channel to the north of Fanling Highway outside the Application Site	Locally common resident	Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek Lap Kok, Shuen Wan, Lam Tsuen.	Cap.170 Fellowes et al. (2002): LC Red list of China's vertebrates: Near Threatened; IUCN Red List of Threatened Species: Vulnerable
Common Greenshank *Tringa nebularia*	At channel to the north of Fanling Highway outside the Application Site	Uncommon but widespread resident.	Widely distributed in woodland throughout Hong Kong	Cap.170 Red list of China's vertebrates: Near Threatened
Great Egret *Ardea alba*	At channel to the north of Fanling Highway outside the Application Site	Common resident, migrant and winter visitor	Widely distributed in Hong Kong.	Cap.170 Fellowes et al. (2002): PRC (RC)
Greater Coucal *Centropus sinensis*	At agricultural land to the north of Fanling Highway outside the Application Site	Common resident.	Widely distributed in Hong Kong.	Cap.170 List of Wild Animals under State Priority Conservation: Class II Red list of China's vertebrates: Vulnerable
Grey Heron *Ardea cinerea*	At channel to the north of Fanling Highway outside the Application Site	Common winter visitor.	Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.	Cap.170 Fellowes et al. (2002): PRC
Little Egret *Egretta garzetta*	At channel and plantation/village/orchard to the north of Fanling Highway outside the Application Site	Common resident.	Widely distributed in coastal area throughout Hong Kong	Cap.170 Fellowes et al. (2002): PRC (RC)
Red-Billed Starling *Spodiopsar sericeus*	At agricultural land to the north of Fanling Highway outside the Application Site	Abundant winter visitor.	Widely distributed in Hong Kong.	Cap.170 Fellowes et al. (2002): GC
Butterfly				
Danaid Eggfly *Hypolimnas misippus*	At developed area to the north of Fanling Highway outside the Application Site	Uncommon	Ngau Ngak Shan, Lung Kwu Tan, Hong Kong Wetland Park, Mount Parker, Cloudy Hill, Lin Ma Hang	Fellowes et al. (2002): LC
Mammal				

Species	**Locations**	**Rarity in Hong Kong** [1]	**Distribution in Hong Kong** [1]	**Conservation /Protection status** [2] [3] [4] [5] [6] [7] [8]
Leopard cat *Prionailurus bengalensis*	At the meander to the west outside the Application Site	Uncommon	Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island.	CITES: Appendix II; List of Wild Animals under State Priority Conservation: Class II; Red List of China's Vertebrates: VU; Cap. 170; Cap. 586

Notes:

1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub
2. Cap. 170 Wild Animals Protection Ordinance
3. Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance
4. Convention on International Trade in Endangered Species of Wild Flora and Fauna. Appendices I, II and III.
5. Fellowes *et al.* (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
    - Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
    - LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern; GC=Global Concern
6. IUCN Red List of Threatened Species. EN = Endangered; VU = Vulnerable
7. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates
8. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation.

Remake:

* Malayan Night Heron is also listed as "Near Threatened" on the Red List of China Vertebrates. However, according to the criteria listed in Section 2.3, "Near Threatened" is not considered as a conservation/ protection status under the current study.

3.2 RESULTS OF FIELD SURVEY

Habitat and Vegetation

3.2.1 There were eight types of habitats identified within the Study Area, namely agricultural land, channel, developed area, meander, plantation/village/orchard, shrubland/grassland, wasteland and mixed woodland. Among these habitats, three habitats, namely developed area, plantation and wasteland were also found within the Application Site (**Figure 4** and **5**). The Application Site was dominated by wasteland (about 91% in terms of area size). Sizes of different habitats are shown in **Table 3.2**.

3.2.2 Agricultural land had scattered distribution within the Study Area. This habitat was under active farming practice, crops such as *Musa acuminata* var. *cavendish* and *Saccharum officinarum* could be commonly found. Besides, fruit trees were also cultivated in this habitat.

3.2.3 Developed area within the Study Area consisted of residential areas, roads and other anthropogenic structures. This habitat is the dominant habitat (about 67% in terms of area size) within the Study Area and was prone to human disturbance. Vegetation in this habitat mainly consisted of plantation/landscape species such as *Schefflera arboricola, Ficus benjamina* and *Bauhinia purpurea* and weedy species such as *Bidens alba*, *Leucaena leucocephala* and *Panicum maximum*.

3.2.4 Scattered patches of plantation/village/orchard associated with developed area were found throughout the Study Area. The village/orchard part was mainly found in the northern part of the Study Area while the rest and majority of this habitat was the plantation part. This habitat was planted with plantation species such as *Melaleuca cajuputi* subsp. *cumingiana, Acacia confusa* and *Casuarina equisetifolia* (the plantation part) and orchard species such as *Dimocarpus longan, Mangifera indica* and *Syzygium jambos* (the village/orchard part). The Existing Planting Area under the Rural Drainage Rehabilitation Scheme for River Beas is regarded as a plantation habitat and mapped under this habitat type, more native tree species, such as *Ehretia acuminata, Ficus microcarpa* and *Ficus virens*, were planted in this area compared with other plantation areas within the Study Area. This habitat was also identified within the Application Site, as discussed in the previous section, there were two small patches of Existing Planting Area under the Rural Drainage Rehabilitation Scheme for River Beas located within the Application Site at the western boundary. Apart from that, a small strip of plantation was also identified near the eastern boundary of the Application Site where some landscape trees were planted (such as *Bauhinia purpurea, Erythrina variegata* and *Melia azedarach*), nevertheless some pioneer self-seeded trees, such as *Leucaena leucocephala* and *Macaranga tanarius* var. *tomentosa*, were also found there.

3.2.5 Three patches of shrubland/grassland habitat were found at the hillside and hilltop to the east and west of the Application Site, they were likely to be formed where trees are difficult to re-colonise due to some unfavourable conditions such as frequent hill fires, poor soil quality or strong wind. Besides, two pieces of shrubland/grassland were also identified in the northern part of the Study Area which were mainly consisted of grasses. Shrubs and grasses were commonly found in this habitat, they include *Pennisetum purpureum, Dicranopteris pedata* and *Melastoma malabathricum.*

3.2.6 Scattered patches of wasteland associated with developed area distributed

throughout the Study Area. These areas were without determined land use but was densely overgrown with weedy plants, such as *Bidens alba, Ipomoea cairica* and *Wedelia trilobata.* Apart from weeds, some pioneer self-seeded trees such as *Leucaena leucocephala* and *Macaranga tanarius* var. *tomentosa* were also occasionally found in this habitat. It is believed to be derived from cleared land that was previously heavily disturbed by human activities.

3.2.7 Isolated mixed woodland stands were identified within the Study Area, and they were highly fragmented and interspersed with developed area and shrubland/grassland. As most of the mixed woodland stands were associated with developed area, sign of human disturbance, such as occurrence of weeds and pioneer tree species, could be observed. Some exotic trees were also observed. The structure of the mixed woodland stands was also simple in general and with low diversity. The canopies generally reached 6 to 12m, and the common trees observed included *Celtis sinensis, Macaranga tanarius* var. *tomentosa* and *Sterculia lanceolata,* some exotic trees were also recorded.

3.2.8 Channels within the Study Area include the channelized Sheung Yue River running from the south to the north of the Study Area and some small channelized watercourses. This habitat was channelized with concrete beds. Vegetation was mainly found at the sloping banks and they are mainly weedy or hydrophilic species such as *Bidens alba, Panicum maximum, Brachiaria mutica* and *Cyperus involucratus*. The section of Sheung Yue River to the north of Fanling Highway, which is located further away from the Application Site and separated by the Fanling Highway, was observed subjected to tidal influence.

3.2.9 Meanders were found along the channelized Sheung Yue River and they are the former meanders that were isolated from the Sheung Yue River during channelisation of the river. Hydrophilic species, such as *Alternanthera sessilism* and *Hydrocotyle sibthorpioides* were commonly found in this habitat.

Table 3.2 Habitats recorded within the Study Area

Habitat	Approximate size (ha)		
	Within Application Site	Within Study Area but outside Application Site	Within Study Area (including Application Site)
Agricultural Land	-	2.56	2.56
Channel	-	4.87	4.87
Developed Area	0.07	82.63	82.70
Meander	-	0.25	0.25
Plantation/village/orchard	0.11	12.54	12.65
Shrubland/grassland	-	3.37	3.37
Wasteland	1.78	4.69	6.47
Mixed woodland	-	9.94	9.94
Total	1.96	120.85	122.81

3.2.10 A total of 210 plant species were recorded within the Study Area (including Application Site), among which 101 and 104 are known to be native and exotic to Hong Kong respectively and the remaining 5 species are of uncertain origin (**Appendix A**). After considering the criteria for evaluating species of conservation importance as discussed in **Section 2.3**, there was no flora species of conservation importance recorded within the Study Area including the Application Site and the Compensatory Planting Areas (details of the Compensatory Planting Areas will be discussed in **Section 5.4**).

Avifauna

3.2.11 Most of the recorded bird species are common and widespread in Hong Kong. Sixty-four (64) avifauna species were recorded within the Study Area in total of which twenty-four (24) species were recorded within the Application Site. Among all of the sixty-four avifauna species recorded, twenty-one (21) species are of conservation importance, but they were all recorded outside the Application Site (**Appendix B**). The section of Sheung Yue River Channel to the north of Fanling Highway was identified as a channel section with relatively higher abundance and diversity of all bird species and bird species of conservation importance as compared to the rest of the channel habitat within the Study Area (**Figure 4**). As the section of Sheung Yue River Channel to the north of Fanling Highway subjects to tidal influence, but no tidal influence was observed for the section to the south of Fanling Highway, this result also echoes the findings of the NENT New Development Areas Environmental Impact Assessment (ARUP 2013). All wild birds are protected under Cap. 170 Wild Animals Protection Ordinance. Owing to the mobility and large home range of birds, bird species of conservation importance are not spatially pinpointed on map. List of bird species of conservation importance recorded within the Study Area is presented in **Table 3.11**. The abundance of each avifauna species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix B**.

3.2.12 Species of conservation importance include Black-crowned Night Heron *Nycticorax nycticorax*, Chinese Pond Heron *Ardeola bacchus*, Eastern Cattle Egret *Bubulcus coromandus*, Grey Heron *Ardea cinerea*, Great Egret *Ardea alba*, Little Egret *Egretta garzetta*, Crested Serpent Eagle *Spilornis cheela*, Besra *Accipiter virgatus*, Black Kite *Milvus migrans*, Eastern Buzzard *Buteo japonicus*, Black-winged Stilt *Himantopus Himantopus*, Kentish Plover *Charadrius alexandrines*, Marsh Sandpiper *Tringa stagnatilis*, Common Greenshank *Tringa nebularia*, Wood Sandpiper *Tringa glareola*, Greater Coucal *Centropus sinensis*, Collared Scops Owl *Otus lettia*, Northern Boobook *Ninox japonica*, White-throated Kingfisher *Halcyon smyrnensis* and Collared Crow *Corvus torquatus*. Although Alexandrine Parakeet *Psittacula eupatridae* is a bird species that protected by Cap. 170, Cap. 586 and being listed in Class II of List of Wild Animals under State Priority Conservation, it is an introduced species in Hong Kong thus it is not considered as a species of conservation importance in the current study.

3.2.13 Among the above mentioned bird species, sixteen (16) of them were recorded within the channel habitat. Black-crowned Night Heron, Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Great Egret, Little Egret, Black Kite, Black-winged Stilt, Greater Coucal and Collared Crow were recorded at both the Sheung Yue River section to the north of Fanling Highway and other parts of the channel habitat; Eastern Buzzard, Kentish Plover, Marsh Sandpiper, Common Greenshank, Wood Sandpiper and White-throated Kingfisher were recorded only at the Sheung Yue River section to the north of Fanling Highway.

Butterfly

3.2.14 Thirty-eight (38) butterfly species were recorded within the Study Area in total of which eleven (11) species were recorded within Application Site. Three (3) butterfly species of conservation importance were recorded within the Study

Area which are the Forget-me-not *Catochrysops strabo*, Metallic Cerulean *Jamides alecto* and Danaid Eggfly *Hypolimnas misippus*. However, no butterfly species of conservation importance was recorded within the Application Site (**Appendix C**). Location of these species are shown in **Figure 4**. List of butterfly species of conservation importance recorded within the Study Area is presented in **Table 3.11**. The abundance of each butterfly species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix C**.

Odonate (Dragonfly & Damselfly)

3.2.15 The recorded dragonfly species are common/abundant and widespread in Hong Kong. Nineteen (19) dragonfly species were recorded within the Study Area (**Appendix D**). Among the dragonfly species recorded, two (2) species are of conservation importance, but they were all recorded outside the Application Site but within the Study Area. Locations of these species are shown in **Figure 4**. List of dragonfly species of conservation importance recorded within the Study Area is presented in **Table 3.11**. The abundance of each dragonfly species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix D**.

3.2.16 Species of conservation importance include Coastal Glider *Macrodiplax cora* and Scarlet Basker *Urothemis signata*.

Firefly

3.2.17 Only one (1) common firefly species was occasionally recorded in agricultural land, channel and developed area within the Study Area but outside the Application Site (**Appendix E**). The recorded firefly species is common/abundant and widespread in Hong Kong without any conservation status, and thus it is not considered as a species of conservation importance. The abundance of the firefly species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix E**.

Herpetofauna (Reptile and Amphibian)

3.2.18 Nine (9) reptile species and ten (10) amphibian species were recorded within the Study Area (**Appendix F** and **G**). One (1) reptile and four (4) amphibian species were recorded within the Application Site. Two (2) reptile species and one (1) amphibian species of conservation importance were recorded within the Study Area but they were recorded away from the Application Site. Locations of these species are shown in **Figure 4**. List of herpetofauna species of conservation importance recorded within the Study Area is presented in **Table 3.11**. The abundance of each herpetofauna species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix F and G**.

3.2.19 Species of conservation importance include Common Rat Snake *Ptyas mucosus*, Four-clawed Gecko *Gehyra mutilata* and Chinese Bullfrog *Hoplobatrachus chinensis*.

Mammal

Infrared Camera Trappings Method and Active Search Survey for non-bat mammals

3.2.20 By using infrared camera trappings together with direct observation through active search survey, eight (8) terrestrial non-bat mammal species were recorded within the Study Area in total, one (1) mammal species was recorded within the Application Site by active search survey which is the Pallas's Squirrel (**Appendix I** and **J**). Among all the eight (8) recorded species, two (2) species are of conservation importance, i.e. Leopard Cat *Prionailurus bengalensis* and Small Asian Mongoose *Herpestes javanicus*, and they are recorded outside the Application Site but within Study Area. Locations of these species (recorded by active search survey) are shown in **Figure 4**. List of terrestrial mammal species of conservation importance recorded within the Study Area is presented in **Table 3.11**. The abundance of each terrestrial mammal species recorded in each habitat within the Study Area is summed throughout the ecological survey period and tabulated in **Appendix I and J**. The habitat usage of the mammals recorded by infrared cameras will be discussed under the Impact Identification and Evaluation Section. Although Pallas's Squirrel *Callosciurus erythraeus* is a mammal species protected by Cap. 170, it is an introduced species (Shek 2006) in Hong Kong thus it is not considered as a species of conservation importance in the current study.

Bat Survey

3.2.21 There is no bat roost recorded within and in the vicinity of the Application Site from relevant available literature (Shek 2004; Shek and Chan 2005 and Chan and Shek 2006). Common potential bat roosting sites include caves, mines, abandoned built structures and underground channels and tunnels (Fauna Conservation Department, KFBG 2006; Shek 2004 and Shek and Chan 2005). The Application Site was, however, dominated by wasteland, without any of those potential bat roosting sites, and no bat roosting sites were directly observed within the Application Site or along the survey transect during the survey period. Some plant species (such as Chinese Fan-palm, bamboo) are also potential roosting sites for certain bat species, however, these plant species were not found within the Application Site during the vegetation survey.

3.2.22 Only one (1) bat species, Japanese Pipistrelle *Pipistrellus abramus*, was observed flying over in developed area and wasteland outside the Application Site but within the Study Area by active search survey method (**Appendix I**).

3.2.23 Using the ultrasonic bat detector along the survey transect within the Study Area, ten (10) bat species were detected, most of the detected bat species are common and widely distributed in Hong Kong, and most of them were also found in urban areas in Hong Kong (Tong 2016), bats are also known for having large activity ranges (i.e. travel long distances every night). Among the bat species detected, seven (7) species are considered of conservation importance, and are presented in **Table 3.11** and **Appendix H**.

Freshwater Aquatic Fauna

3.2.24 A total of ten (10) fish species and five (5) invertebrates species were recorded in the meander and channel within the Study Area and outside the Application Site (**Appendix K**). The most commonly recorded species were Mozambique Tilapia *Oreochromis mossambicus*, Nile Tilapia *Oreochromis niloticus*, Redbelly Tilapia *Tilapia zillii* and Apple Snail *Pomacea canaliculate* which are

all exotic species. All recorded species within the meander and channel are common and widespread in Hong Kong and no species of conservation importance was recorded.

3.2.25 Common Carp, *Cyprinus carpio*, was recorded in the channel outside the Application Site but within the Study Area. This species is listed as "Vulnerable" in the IUCN Red List Status. However, Common Carp is not common in streams but occurs in many reservoirs and cultivated in fishponds as food fish. Recorded individuals are believed to be released into the Channel, thus, it is not considered of conservation importance.

3.3 Evaluation of Habitats and Species of Conservation Importance

3.3.1 The ecological importance of the habitats and wildlife identified within the Study Area during the survey are evaluated in accordance with the TM-EIAO Annex 8 criteria, and presented in **Tables 3.3** to **3.11**. The evaluation of terrestrial baseline ecological resources of the Study Area was based on the literature review, ecological baseline information from present ecological survey, including habitat and vegetation, birds, stream fauna and other wildlife surveys.

3.3.2 The Application Site is mainly composed of wasteland, with a small fraction of developed area and plantation/village/orchard. These habitats were with relatively low flora and fauna diversity. Hence, the overall ecological value of the Application Site is considered low (**Table 3.3**).

3.3.3 The habitats identified outside the Application Site but within the Study Area include agriculture land, channel, developed area, meander, mixed woodland, plantation/village/orchard, shrubland/grassland, and wasteland. The ecological values of agriculture land, developed area, shrubland/grassland, wasteland and most of the plantation/village/orchard are of low or very low ecological values, while channel, meander, mixed woodland and the Existing Planting Area (regarded as a plantation and mapped as plantation/village/orchard) are considered having low to medium ecological value.

3.3.4 In accordance with Table 3, Annex 8 of the TM-EIAO, the ecological value of species was assessed in terms of protection status (e.g., fauna protected under WAPO (except birds), and flora and fauna protected under regional/global legislations/conventions), species distribution (e.g., endemic), and rarity (e.g., rare or restricted) (**Table 3.11**, **Appendix A - K**).

Table 3.3 Evaluation of the Application Site

Criterion	Description
Naturalness	Man-made habitat
Approximate size	1.96 ha
Diversity	Low to medium flora diversity Low fauna diversity
Rarity	No flora or fauna species of conservation importance recorded
Re-creatability	Easy to recreate
Fragmentation	None
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Very Low
Nursery/breeding ground	No significant observation

Criterion	Description
Age	N/A
Abundance/richness of wildlife	Low
Overall ecological value	Low

Table 3.4 Evaluation of agriculture land within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Man-made habitat
Approximate size	2.56 ha
Diversity	Low flora and fauna diversity
Rarity	Fauna species of conservation importance (survey result): Chinese Bullfrog *Hoplobatrachus chinensis* Fauna species of conservation importance (literature review): Greater Coucal *Centropus sinensis*, Red-Billed Starling *Spodiopsar sericeus*
Re-creatability	Easy to recreate
Fragmentation	Fragmented
Ecological linkage	Some patches to the north of Fanling Highway occur within LVHSH Priority Site and/or IBA. Not functionally linked to habitats of conservation importance for the rest of this habitat.
Potential value	Low
Nursery/breeding ground	No significant observation, but may provide potential breeding habitat for dragonfly, reptile and amphibian.
Age	Not applicable
Abundance/richness of wildlife	Low to medium
Overall ecological value	Low

Table 3.5 Evaluation of developed area within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Man-made habitat
Approximate size	82.63 ha
Diversity	Low to medium flora and fauna diversity
Rarity	Fauna species of conservation importance (survey result): Chinese Pond Heron *Ardeola bacchus*, Little Egret *Egretta garzetta*, Crested Serpent Eagle *Spilornis cheela,* Besra *Accipiter virgatus*, Four-clawed Gecko *Gehyra mutilate* Fauna species of conservation importance (literature review): Danaid Eggfly *Hypolimnas misippus*
Re-creatability	Easy to recreate
Fragmentation	None
Ecological linkage	Some parts to the north of Fanling Highway occur within LVHSH Priority Site and/or IBA. Not functionally linked to habitats of conservation importance for the rest of this habitat.

Criterion	Description
Potential value	Low
Nursery/breeding ground	No significant observation
Age	N/A
Abundance/richness of wildlife	Medium
Overall ecological value	Low

Table 3.6 Evaluation of plantation/village/orchard within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Man-made
Approximate size	12.54 ha
Diversity	Medium flora diversity; High fauna diversity
Rarity	Fauna species of conservation importance (survey result): Black-crowned Night Heron *Nycticorax nycticorax*, Chinese Pond Heron *Ardeola bacchus*, Grey Heron *Ardea cinerea,* Great Egret *Ardea alba,* Little Egret *Egretta garzetta,* Greater Coucal, *Centropus sinensis*, Collared Scops Owl *Otus lettia,* Northern Boobook *Ninox japonica*, White-throated Kingfisher *Halcyon smyrnensis*, Collared Crow *Corvus torquatus,* Forget-me-not *Catochrysops strabo*, Danaid Eggfly *Hypolimnas misippus*, Small Asian Mongoose *Herpestes javanicus* Fauna species of conservation importance (literature review): Chinese Pond Heron *Ardeola bacchus,* Little Egret *Egretta garzetta*
Re-creatability	Easy to be recreated but take times to mature
Fragmentation	Fragmented
Ecological linkage	Some patches to the north of Fanling Highway occur within LVHSH Priority Site and/or IBA. Not functionally linked to habitats of conservation importance for the rest of this habitat.
Potential value	Low
Nursery/breeding ground	No significant observation, but may provide potential breeding habitat for bird, dragonfly, reptile and amphibian.
Age	Various
Abundance/richness of wildlife	High
Overall ecological value	The Existing Planting Area: low to medium Other plantation/village/orchard areas: low (Remarks: Plantation/village/orchard in Hong Kong generally shares a “low” overall ecological value as cultivated plant species are commonly found and the wildlife diversity and abundance recorded are relatively low, when comparing to habitats with higher overall ecological value such as mature woodland. Due to the presence of species of conservation importance recorded in the current Study, the overall ecological value of the “Existing Planting Area” is evaluated as “low to medium”.)

Table 3.7 Evaluation of shrubland/grassland within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Fairly natural
Approximate size	3.37 ha

Criterion	Description
Diversity	Very low flora diversity Low fauna diversity
Rarity	Fauna species of conservation importance (survey result): Black Kite *Milvus migrans*
Re-creatability	Can be re-created
Fragmentation	Isolated patches
Ecological linkage	One patch to the north of Fanling Highway occur within LVHSH Priority Site. Patches in the eastern and western part of Study Area linked to mixed woodland.
Potential value	Moderate with active management including thinning and interplant with native species
Nursery/breeding ground	No significant observation
Age	Young
Abundance/richness of wildlife	Low
Overall ecological value	Low

Table 3.8 Evaluation of wasteland within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Man-made
Approximate size	4.69 ha
Diversity	Low flora and fauna diversity
Rarity	No flora or fauna species of conservation importance
Re-creatability	Easy to recreate
Fragmentation	Fragmented
Ecological linkage	Some patches to the north of Fanling Highway occur within LVHSH Priority Site and/or IBA. Not functionally linked to habitats of conservation importance for the rest of this habitat.
Potential value	Low
Nursery/breeding ground	No significant observation
Age	N/A
Abundance/richness of wildlife	Low
Overall ecological value	Low

Table 3.9 Evaluation of mixed woodland within the Study Area but outside the Application Site

Criterion	Description
Naturalness	Semi-natural, with both native trees and exotic fruit/landscape trees
Approximate size	9.94 ha
Diversity	Low to medium flora diversity; Low to medium fauna diversity
Rarity	Fauna species of conservation importance (survey result): Metallic Cerulean *Jamides alecto*, Greater Coucal *Centropus sinensis* and Collared Scops Owl *Otus lettia*
Re-creatability	Re-creatable but take times to mature
Fragmentation	Fragmented, isolated by developed area

Criterion	Description
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Low due to fragmentation and small size
Nursery/breeding ground	No significant observation
Age	N/A
Abundance/richness of wildlife	Low to medium
Overall ecological value	Low to medium

Table 3.10 Evaluation of channel and meander within the Study Area but outside the Application Site

Criterion	Description	
	Channel	**Meander**
Naturalness	Man-made	Semi-natural
Approximate size	4.87 ha	0.25 ha
Diversity	Very low flora diversity High fauna diversity Relatively higher bird diversity recorded at the Sheung Yue River section to the north of Fanling Highway compared with the other channel part within the Study Area.	Very low flora diversity Medium to high fauna diversity
Rarity	Fauna species of conservation importance (survey result): Black-crowned Night Heron *Nycticorax nycticorax*, Chinese Pond Heron *Ardeola bacchus*, Eastern Cattle Egret *Bubulcus coromandus*, Grey Heron *Ardea cinerea*, Great Egret *Ardea alba*, Little Egret *Egretta garzetta*, Black Kite *Milvus migrans*, Eastern Buzzard *Buteo japonicus*, Black-winged Stilt *Himantopus Himantopus*, Kentish Plover *Charadrius alexandrines*, Marsh Sandpiper *Tringa stagnatilis*, Common Greenshank *Tringa nebularia*, Wood Sandpiper *Tringa glareola*, Greater Coucal *Centropus sinensis*, White-throated Kingfisher *Halcyon smyrnensis,* Collared Crow *Corvus torquatus,* Coastal Glider *Macrodiplax cora,* Scarlet Basker *Urothemis signata* Relatively more bird species of conservation recorded at the Sheung Yue River section to the north of Fanling Highway (16 species) compared with the other channel part (10 species) within the Study Area.	Fauna species of conservation importance (survey result): Black-crowned Night Heron *Nycticorax nycticorax*, Chinese Pond Heron *Ardeola bacchus,* Eastern Cattle Egret *Bubulcus coromandus*, Grey Heron *Ardea cinerea,* Great Egret *Ardea alba,* Little Egret *Egretta garzetta,* Greater Coucal *Centropus sinensis,* White-throated Kingfisher *Halcyon smyrnensis,* Scarlet Basker *Urothemis signata,* Common Rat Snake *Ptyas mucosus* Fauna species of conservation importance (literature review): Malayan Night Heron *Gorsachius melanolophus*, Leopard Cat *Prionailurus bengalensis*

Criterion	Description	
	Fauna species of conservation importance (literature review): Black-winged Stilt *Himantopus himantopus*, Chinese Pond Heron *Ardeola bacchus*, Collared Crow *Corvus torquatus*, Common Greenshank *Tringa nebularia,* Great Egret *Ardea alba*, Grey Heron *Ardea cinerea*, Little Egret *Egretta garzetta* All of the fauna species of conservation importance recorded from reviewed literature are located to the north of Fanling Highway.	
Re-creatability	Easy to recreate	Not re-creatable
Fragmentation	Not fragmented	Fragmented from the channel
Ecological linkage	Part of the channel habitat to the north of Fanling Highway occur within LVHSH Priority Site. Not observed for the other channel habitat.	The meander to the north of Fanling Highway occur within LVHSH Priority Site and IBA. Not observed for the other meander.
Potential value	Potentially provide breeding habitats for amphibian, dragonfly and aquatic fauna; Potentially provide feeding ground for waterbird species.	Potentially provide breeding habitats for amphibian, dragonfly and aquatic fauna; Potentially provide feeding ground for waterbird species
Nursery/breeding ground	No significant observation	No significant observation
Age	N/A	N/A
Abundance/richness of wildlife	High (can be varied based on the tidal influences, water level and seasonality) Relatively higher bird abundance recorded at the Sheung Yue River section to the north of Fanling Highway compared with the other channel part within the Study Area.	Low to medium (can be varied based on the tidal influences, water level and seasonality)
Overall ecological value	Low to medium (can be varied based on the tidal influences, water level and seasonality)	Low to medium (can be varied based on the tidal influences, water level and seasonality)

Table 3.11 Evaluation of fauna species of conservation importance

Species Name [1]	Conservation Status [3,4,5,6,7,8,9,10,11]	Rarity and Distribution [1,2,9,12]	Location
Bird (Remark: all wild bird species are protected under Cap. 170 Wild Animals Protection Ordinance in Hong Kong)			
Black-crowned Night Heron *Nycticorax nycticorax*	Fellowes *et al.* (2002): (Local Concern)	Common resident and migrant. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Meander and Plantation/village/orchard)

Species Name [1]	Conservation Status [3,4,5,6,7,8,9,10,11]	Rarity and Distribution [1,2,9,12]	Location
Chinese Pond Heron *Ardeola bacchus*	Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern)	Common resident. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Developed Area, Meander and Plantation/village/orchard)
Eastern Cattle Egret *Bubulcus coromandus*	Fellowes *et al.* (2002): (Local Concern)	Resident and common passage migrant. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), and Meander)
Grey Heron *Ardea cinerea*	Fellowes *et al.* (2002): Potential Regional Concern	Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Meander and Plantation/village/orchard)
Great Egret *Ardea alba*	Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern)	Common resident, migrant and winter visitor. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Meander and Plantation/village/orchard)
Little Egret *Egretta garzetta*	Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern)	Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Developed Area, Meander and Plantation/village/orchard)
Crested Serpent Eagle *Spilornis cheela*	List of Wild Animals under State Priority Conservation: Class II; Fellowes *et al.* (2002): (Local Concern); Appendix 2 of CITES; Cap. 586	Common resident. Widely distributed in shrublands on hillsides throughout Hong Kong.[1]	Study Area (Developed Area)
Besra *Accipiter virgatus*	List of Wild Animals under State Priority Conservation: Class II; Appendix 2 of CITES; Cap. 586	Common resident and migrant. Found in Tai Po Kau, Deep Bay area, Chek Lap Kok, Cheung Chau, Soko Islands.[1]	Study Area (Developed Area)
Black Kite *Milvus migrans*	List of Wild Animals under State Priority Conservation: Class II;	Common resident and winter visitor. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling

Species Name [1]	Conservation Status [3,4,5,6,7,8,9,10,11]	Rarity and Distribution [1,2,9,12]	Location
	Fellowes *et al.* (2002): (Regional Concern); Appendix 2 of CITES; Cap. 586		Highway and other parts of the Channel habitat) and Shrubland/Grassland)
Eastern Buzzard *Buteo japonicus*	List of Wild Animals under State Priority Conservation: Class II; Appendix 2 of CITES; Cap. 586	Common winter visitor. Widely distributed in Hong Kong.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway)
Black-winged Stilt *Himantopus himantopus*	Fellowes *et al.* (2002): Regional Concern	Common migrant and winter visitor. Found in Deep Bay area, Long Valley, Kam Tin.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat)
Kentish Plover *Charadrius alexandrinus*	Fellowes *et al.* (2002): Regional Concern	Abundant winter visitor and scarce migrant. Found in Deep Bay area, Chek Lap Kok, Shuen Wan, Sai Kung, Lantau Island.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway)
Marsh Sandpiper *Tringa stagnatilis*	Fellowes *et al.* (2002): Regional Concern	Abundant winter visitor and migrant. Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Sai Kung.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway)
Common Greenshank *Tringa nebularia*	Fellowes *et al.* (2002): Regional Concern	Abundant passage migrant and winter visitor. Found in Deep Bay area.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway)
Wood Sandpiper *Tringa glareola*	Fellowes *et al.* (2002): Local Concern	Common migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway)
Greater Coucal *Centropus sinensis*	List of Wild Animals under State Priority Conservation: Class II	Common resident. Widely distributed in Hong Kong.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat), Meander, Plantation/village/orchard and Mixed woodland)
Collared Scops Owl *Otus lettia*	List of Wild Animals under State Priority Conservation: Class II; Appendix 2 of CITES; Cap. 586	Common resident. Widely distributed in shrubland throughout Hong Kong.[1] Common and widespread resident in closed-canopy woodland and mature shrubland. [12]	Study Area (Plantation/village/orchard and Mixed woodland)
Northern Boobook *Ninox japonica*	List of Wild Animals under State Priority Conservation: Class II;	Uncommon passage migrant. Found in Stanley, Cheung Chau, Hong Kong University, Zoological and Botanical	Study Area (Plantation/village/orchard)

Species Name [1]	Conservation Status [3,4,5,6,7,8,9,10,11]	Rarity and Distribution [1,2,9,12]	Location
	Appendix 2 of CITES; Cap. 586	Gardens, Mount Nicholson, Magazine Gap Road, Barker Road, Tai Koo Shing, Shek Wu Wai, Cloudy Hill, Tung Chung, Mirs Bay.[1]	
White-throated Kingfisher *Halcyon smyrnensis*	List of Wild Animals under State Priority Conservation: Class II; Fellowes *et al.* (2002): (Local Concern)	Common resident. Widely distributed in coastal areas throughout Hong Kong.[1]	Study Area (Channel (at the Sheung Yue River section to the north of Fanling Highway), Meander and Plantation/village/orchard)
Collared Crow *Corvus torquatus*	IUCN Red List Status: Vulnerable Fellowes *et al.* (2002): Local Concern	Locally common resident. Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek lap Kok, Shuen Wan, Lam Tsuen.[1]	Study Area (Channel (both at the Sheung Yue River section to the north of Fanling Highway and other parts of the Channel habitat) and Plantation/village/orchard)
Butterfly			
Forget-me-not *Catochrysops strabo*	-	Very rare.[2] Pui O, Tai Po Kau, Fung Yuen, Shing Mun, Sha Lo Wan.[1]	Study Area (Plantation/village/orchard)
Metallic Cerulean *Jamides alecto*	-	Very rare.[2] Victoria Peak, Fung Yuen, Chuen Lung, Mui Wo[1]	Study Area (Mixed woodland)
Danaid Eggfly *Hypolimnas misippus*	Fellowes *et al.* (2002): Local Concern	Uncommon.[2] Ngau Ngak Shan, Lung Kwu Tan, Hong Kong Wetland Park, Mount Parker, Cloudy Hill, Lin Ma Hang.[1]	Study Area (Plantation/village/orchard)
Odonate			
Coastal Glider *Macrodiplax cora*	Fellowes *et al.* (2002): Local Concern	Common. Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas.[1]	Study Area (Channel)
Scarlet Basker *Urothemis signata*	Fellowes *et al.* (2002): Local Concern	Common. Common in areas with abandoned fish ponds throughout Hong Kong.[1]	Study Area (Channel and Meander)
Reptile			
Common Rat Snake *Ptyas mucosus*	Cap. 586; Fellowes *et al.* (2002): Potential Regional Concern; Appendix 2 of CITES; Red List of China's Vertebrates: Endangered	Widely distributed throughout Hong Kong.[1]	Study Area (Meander)
Four-clawed Gecko *Gehyra mutilata*	Red List of China's Vertebrates: Vulnerable	Widely but thinly distributed throughout Hong Kong.[1]	Study Area (Developed Area)
Amphibian			
Chinese Bullfrog *Hoplobatrachus chinensis*	Fellowes *et al.* (2002): Potential Reginal Concern; List of Wild Animals	Widely distributed in Lantau Island and New Territories.[1]	Study Area (Agricultural Land)

Species Name [1]	Conservation Status [3,4,5,6,7,8,9,10,11]	Rarity and Distribution [1,2,9,12]	Location
	under State Priority Conservation: Class II; Red List of China's Vertebrates: Endangered		
Mammal (Remark: all wild bat species are protected under Cap. 170 Wild Animals Protection Ordinance in Hong Kong)			
Leopard Cat *Prionailurus bengalensis*	List of Wild Animals under State Priority Conservation: Class II; Red List of China Vertebrates: Vulnerable; CITES: Appendix II; Cap. 170; Cap. 586	Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island.[1]	Camera records
Small Asian Mongoose *Herpestes javanicus*	Red List of China Vertebrates: Vulnerable; Cap. 170	Fairly widely distributed in countryside areas in the New Territories.[1]	Study Area (Plantation/village/orchard) Camera records
Intermediate Horseshoe Bat *Rhinolophus affinis*	Fellowes *et al*. (2002): (Local Concern);	Uncommon. Widely distributed in countryside areas throughout Hong Kong.[1]	Bat detector recordings
Chinese Pipistrelle *Hypsugo pulveratus*	Fellowes *et al*. (2002): (Local Concern);	Rare/Species of Conservation Concern. Only several records in the countryside areas at Ting Kau, Ma On Shan and Lin Ma Hang, and several records of stray individuals inside buildings.[1]	Bat detector recordings
Greater Bent-winged Bat *Miniopterus magnater*	Fellowes *et al*. (2002): Potential Regional Concern;	Common. Fairly wide distribution in HK. Over 1,000 individuals can be found present at the Lin Ma Hang abandoned mine caves in winter.[9] Data deficient.[1]	Bat detector recordings
Horsfield's Myotis *Myotis horsfieldii*	Fellowes *et al.* (2002): Potential Regional Concern;	Rare/Species of Conservation Concern. Found in Shek Kong, Pak Tam Chung, Fung Yuen, Plover Cove, Pat Sin Leng and Shing Mun Country Parks.[1]	Bat detector recordings
Rickett's Big-footed Myotis *Myotis ricketti*	IUCN Red List: Vulnerable; Fellowes *et al*. (2002): (Local Concern);	Common. Fairly widely distributed in countryside areas throughout Hong Kong.[1]	Bat detector recordings
Chinese Noctule *Nyctalus plancyi*	Fellowes *et al*. (2002): Potential Regional Concern;	Common. Fairly widely distributed in countryside areas throughout Hong Kong.[1]	Bat detector recordings
Lesser Bamboo Bat *Tylonycteris fulvida*	Fellowes *et al*. (2002): (Local Concern);	Very common. Fairly widely distributed in countryside areas throughout Hong Kong.[1]	Bat detector recordings

Notes:

1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Chan *et al.* (2011). A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity. 21: 1-12.
3. Convention on International Trade in Endangered Species of Wild Flora and Fauna. Appendices I, II and III.
4. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
5. International Union of Conservation for Nature (2024). The IUCN Red List of Threatened Species.
6. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
7. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation
8. Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
9. Shek (2006). A Field Guide to the Terrestrial Mammals of Hong Kong.
10. The Hong Kong Bird Watching Society. (2022). Field Guide to the Birds of Hong Kong and South China.
11. Wild Animals Protection Ordinance (Cap. 170)
12. HKBWS (2025). The Avifauna of Hong Kong.

Abbreviations:

- Conservation Status in Fellowes *et al.* (2002): RC = Regional Concern; LC = Local Concern; PRC = Potential Regional Concern

4. IMPACT IDENTIFICATION AND EVALUATION

4.1 Assessment Criteria

4.1.1 Ecological impacts of the proposed development were assessed based upon the ecological resources considered at risk from the proposed project. Both negative and positive impacts were taken into account and assessed. Measures were developed to mitigate negative impacts, and residual impacts were predicted assuming implementation of all feasible mitigation measures. Impact assessment and planning of mitigation measures made reference to the Technical Memorandum on EIA Process.

4.1.2 The significance of ecological impacts was evaluated based primarily on the criteria set forth in Table 1, Annex 8 of the TM:

- habitat quality;
- species affected;
- size/abundance of habitats/organisms affected;
- duration of impacts;
- reversibility of impacts;
- magnitude of environmental changes; and
- regional significance.

4.1.3 Direct and indirect impacts are generally ranked as "minor", "moderate" or "severe", although in a few cases a ranking of "insignificant" (less than "minor") may be given. The ranking of a given impact will vary based on the criteria listed above. For example, an impact might be ranked as "minor" if it affected only common species and habitats, or if it affected only small numbers of individuals or small areas, whereas it might be ranked as "severe" if it affected rare species or habitats, large numbers of individuals or large areas. The major factors giving rise to a ranking are explained in the text. As noted in Annex 16 of the TM, a degree of professional judgment is involved in the evaluation of impacts.

4.2 Construction Phase Impacts

Habitat Loss (Direct Impact)

4.2.1 The proposed project would result in permanent loss of about 1.96 ha habitats within the site boundary (**Table 4.1**). No additional works area will be required. Mainly containing wasteland, the Application Site is considered having low ecological value. Hence, the potential impact of direct habitat loss is considered **Minor**. Though mitigation for habitat loss is not required, there are two small areas of the Existing Plantation Area located within the Application Site that will be directly impacted, these plantation areas will be re-provided by compensatory planting outside the Application Site, the details of this will be discussed in **Section 5.4**.

Table 4.1 Estimated habitat loss

Habitat	Approximate size (ha)	Ecological value
Developed Area	0.07	Low in general
Plantation/village/orchard	0.11	
Wasteland	1.78	
Total	1.96	-

Surface Water Sedimentation and Contamination (Indirect Impact)

4.2.2 Potential impacts to nearby aquatic habitats during the construction phase would mainly arise from sedimentation due to surface runoff. The channel and meander near the Application Site is with low to medium ecological value, elevated suspended solids levels caused by site runoff could increase the suspended solids load in the water bodies, and could decrease dissolved oxygen levels. A lower oxygen level would affect stationary species, whilst mobile species would tend to temporarily avoid the area. The result could be a temporary reduction in aquatic life abundance. No freshwater aquatic species of conservation importance were found within the Study Area. Although common food source for waterbirds such as tilapias might be affected, tilapias in the channel are abundant and widely distributed throughout the entire Sheung Yue River. The potential impacts would be transient and short-term. Hence, the potential impact due to construction runoff to aquatic ecology is considered **Minor**. Precautionary measures including good site practice is recommended to safeguard the stream water quality. Detailed mitigation measures for water quality are stated in the Water Quality Impact Assessment.

Construction Noise, Dust and Human Activities (Indirect Impact)

4.2.3 Noise, dust and human activities will increase during construction phase, and might temporarily reduce the abundance and distribution of fauna.

4.2.4 Unmitigated construction operations create significant levels of dust under certain weather conditions mostly due to the wind-blown dust from works area. The dust is deposited on nearby habitats, which can cause vegetation damage and, as a secondary effect, have an impact on fauna such as insects and birds. Impacts from dust deposition will, however, be temporary and reversible, and standard construction best practices as mitigation measures can be implemented to negate harmful impacts. Hence, dust deposition impacts arising from the Project are considered minor.

4.2.5 As some of the nearby areas are already developed, utilization of this type of habitat by fauna is currently very low due to the prevailing high level of disturbance. The potential impacts due to these sources in construction phase is considered **insignificant**.

Construction Light Glare (Indirect Impact)

4.2.6 Construction lightings might potentially produce light glare impacts to the surrounding habitats, if there are any night time construction activities within the Application Site. Even though mammal species of conservation importance were recorded, there will be no night time construction works for the present Project, and there will be only limited security lighting for the construction site. Hence, the light glare impact is considered **insignificant** for the habitats inside and outside the Application Site. Nevertheless, mitigation for construction light glare is still proposed and detailed in the Mitigation Section (**Section 5**).

Potential Impact to Long Valley and Ho Sheung Heung Priority Sites for Enhanced Conservation (LVHSH Priority Site) and Inner Deep Bay and

Shenzhen River Catchment Important Bird Area (IBA)

4.2.7 The nearest boundaries of LVHSH Priority Site and IBA are located far away from the Application Site, direct impact is not anticipated. For potential indirect impact, as the construction disturbance would be localized, and there are existing highly disturbed and developed environment surrounding, including the Fanling Highway, villages and residential areas, the potential disturbance impact arising from the construction phase on LVHSH Priority Site and IBA would be **insignificant**.

4.3 Operational Phase Impacts

Human Disturbance (Indirect Impact)

4.3.1 During the operational phase, there may be indirect disturbance impacts to wildlife in the surrounding habitats due to an increase in human activity caused by residents inside the Application Site. The proposed development is however located in an area currently with high disturbance, and as such the surroundings have already been inhabited by species tolerant of human disturbance. Moreover, residential developments are of low disturbance in nature, and human activities will mainly be indoors. Given that there will be buffer planting between the Application Site and the habitats to the west of relatively higher ecological value (i.e. the Existing Planting Area, the meander and the Sheung Yue River Channel), and there will be no dedicated paths/roads leading to or opening to allow the residents to access directly to these habitats, the potential impact due to human disturbance during operational phase is considered as **Minor**. Nevertheless, considerations for the development layout to further minimize potential indirect impact to the surrounding habitats are still proposed and they will be discussed in the Mitigation Section, i.e. **Section 5**.

Water Quality (Indirect Impact)

4.3.2 There could be potential indirect impacts to the water quality of the surrounding waterbodies from surface run-off and pollution events from the development and their associated infrastructure. This nonpoint pollution, such as stormwater washed off from areas of hard standing, roads and landscape area (which may contain fertilizers and pesticides) may have various impacts to the local aquatic environment. Magnitude of impacts would depend upon the pollution type and quantity of pollutant. Increased stormwater runoff may also lead to increased siltation if there are areas with bare soils.

4.3.3 The proposed development is a residential development. Pollutants on road surface would be very limited, and significant bare grounds will be unlikely. The built-in structures of the drain system within the Application Site such as sand trap could also help isolate and collect sediment and pollutants. Point pollution would not be an issue for the proposed development as the sewerage system will collect all domestic effluent and organic load. It is anticipated that any impacts of water quality changes will be **Insignificant**.

Artificial Light (Indirect Impact)

4.3.4 Artificial light glare will increase during operational phase, and may potentially

affect the behaviour and distribution of nocturnal animals, including bats, birds, fireflies and herpetofauna, in habitats adjacent to the Application Site including the meander habitat. There are existing lightings in vicinity of and within the Application Site, such as the street light, other residential areas and village houses. Fauna sensitive to artificial lightings might have already avoided or adapted these habitats, for example, many bat species have been recorded in urbanized area in Hong Kong (Tong 2016). Hence, the potential impact of artificial lightings in habitats near the Application Site is considered **Minor**. Precautionarily, avoidance of unnecessary external flood light is recommended.

Potential Impact to Long Valley and Ho Sheung Heung Priority Sites for Enhanced Conservation (LVHSH Priority Site) and Inner Deep Bay and Shenzhen River Catchment Important Bird Area (IBA)

4.3.5 No direct impact on LVHSH Priority Site and IBA is also anticipated as these sites are far away from the Application Site. For potential operational indirect impact, as there are existing highly disturbed and developed environment surrounding, including the Fanling Highway, villages and residential areas, the potential operational disturbance impact on LVHSH Priority Site and IBA is also anticipated to be **insignificant**.

4.4 Potential Impacts to Species of Conservation Importance during Construction phase and Operational Phase

4.4.1 No flora species of conservation importance was recorded within neither the Application Site nor the Study Area, thus there will be no direct or indirect impact to any flora species of conservation importance during both construction phase and operational phase.

4.4.2 No fauna species of conservation importance was recorded within the Application Site which consisting largely of wasteland, no direct impact is anticipated for any fauna species of conservation importance during both construction phase and operational phase.

4.4.3 Some species of conservation importance were recorded at the surrounding more natural habitats (i.e. the Existing Planting Area, the meander and the Sheung Yue River Channel) to the west of the Application Site, including Leopard Cat (recorded by camera trapping method outside the Application Site) and Small Asian Mongoose (recorded by camera trapping method and active search method outside the Application Site) in the current Study. In addition, Malayan Night Heron was also found once using the meander to the west outside the Application Site from reviewed literature. However, as Malayan Night Heron was not recorded throughout the current ecological surveys lasting for 12 months with camera traps method, it is considered that the usage of the meander by this species is only occasional. In addition to the survey findings and the reviewed literature, based on the habitat evaluation in **Section 3.3**, the ecological value of the Application Site is low while that of the meander outside the Applications Site is considered as low to medium. The meander would provide more resources, such as foraging ground and shelters to wildlife. Similarly, the mixed woodland, plantation/village/orchard and channel in the Study Area, but unlikely the Application Site, would provide habitats for the recorded wildlife. Nevertheless, indirect impact during construction and operational phases, such as noise, light glare and other human disturbance,

may lead to indirect impact to them. However, these animals occur in an area close to existing developments with existing disturbance, indicating that they have certain degree of tolerance to human disturbance, such as artificial light glare and presence of human. Besides, these species are also known to be showing adaptability/ resilience to human disturbance/ urban areas (such as Chen *et al*. 2023, Hsu 2020, Mahmood *et al*. 2011, Tong 2016). In addition, these species are highly mobile, they could use the woodland and plantation/village/orchard in the vicinity of the Application Site. Besides, there will be mitigation, such as buffer planting (the details will be provided in the Mitigation Section, i.e. **Section 5**), to avoid/minimize indirect impact to the habitats to the west of the Application Site during operational phase. Thus, the overall potential indirect impacts to these fauna species of conservation importance are considered as **Minor**.

4.4.4 From bat conservation perspectives, the occurrence and locations of bat roosts are important for impact evaluation as impacts on bat roosts would have significance to the species. This approach to bat conservation is supported by international publications and research papers, e.g. 鄭錫奇 *et al.* (2010) and Sheffield *et al.* (1992). No bat roost was reported within the Study Area from the reviewed literature. During the survey, no active bat roosting site was found within the Application Site or along the survey transects. Plant species as potential roosting sites such as Chinese Fan-palm and bamboos were not found within the Application Site neither. It is therefore suggested that potential bat roosting sites were unlikely to occur within or near the Application Site. In addition, most of the bat species recorded by ultrasonic bat detector are common and widely distributed in Hong Kong, and most of these species can also be recorded in urban area in Hong Kong (Tong 2016). Though some of the recorded species might use some areas within the Study Area as part of their daily activity ranges, the Application Site is dominated by wasteland and does not provide significant resources for bats (such as insects or fruits) when compared with other habitat types. Therefore, the proposed development would not affect the resources for bat, and the potential direct and indirect impacts during construction and operational phases to bat species of conservation importance are **Insignificant**.

4.4.5 Among the channel habitat within the 500m Study Area, the major one is the Sheung Yue River channel, located to the west of the Application Site and spanning from the south to the north of the Study Area. There was higher number of bird species of conservation importance recorded at the section of Sheung Yue River channel to the north of Fanling Highway (**Figure 4**). It was observed during surveys that the water level of this section of channel regularly dropped following the tidal cycle and the channel bottom was exposed. It is suitable for waterbird foraging. This observation is also supported by the NENT EIA study (ARUP 2013) that many wetland bird species were observed using the tidal section of Sheung Yue River during that EIA study due to provision of foraging opportunities. Besides, there were Grasscrete and vegetation at the riverbed that could provide microhabitat and resting place for birds. As the northern section is further away from the Application Site and separated by the Fanling Highway that disturbance from the Application Site is not likely to affect this section. For the remaining channel habitats including those to the south of Fanling Highway near the Application Site, they were fairly uniform, the water level usually maintained in a higher level that does not favor waterbird foraging, thus fewer bird species of conservation importance were observed. Besides, for the section closer to the Application Site, there is existing plantation separating the channel and the Application Site that could provide screening functions to the channel. Thus, the potential indirect impacts to the channel and

the bird species of conservation importance using it is considered as **Minor**.

4.4.6 For other fauna species of conservation importance, including those recorded from reviewed literature which are further separated by Fanling Highway, were recorded further away from the Application Site, potential direct or indirect impact to them is not likely.

5. MITIGATION MEASURES AND ECOLOGICAL ENHANCEMENT

5.1 Impact Avoidance

5.1.1 The footprints of the proposed development have largely avoided the habitats with relatively higher ecological values, i.e. the meander, the Existing Planting Area and the Sheung Yue River channel. Only small parts of the Existing Planting Area located within the Application Site will be affected inevitably. Besides, construction works will only be restricted within the Application Site boundary.

5.2 Impact Minimization

5.2.1 The meander is considered to be more ecologically sensitive because it is close to the Application Site and with relatively higher ecological value. Besides, Leopard Cat and Malayan Night Heron were also found using the meander from reviewed literature and the current ecological survey also recorded the Leopard Cat, which supporting the findings. However, Malayan Night Heron was not recorded in this extended survey and its use of the meander is considered to be occasional. Considerations have been made on the development layout so as to minimize disturbance to this area. The details of the impact minimization are discussed below.

Tree Buffer Zone

5.2.2 There will be a Tree Buffer Zone with width ranging from 4m to 8m along the western boundary of the Application Site interfacing the Existing Planting Area, including the area around the meander. Compared to the scheme of approved S12A Application (No. Y/NE-KTS/15), it is enhanced in terms of width. An extra row of trees will be planted at appropriate location where feasible. Shrubs will also be planted between trees to enhance screening effect and to further minimize potential disturbance impact from the proposed development. This could serve as a buffer to reduce the operational disturbance from the proposed development to the adjacent habitats

Minimizing disturbance source near the area around the meander

5.2.3 Under the current scheme, the swimming pool, which was originally located next to the area around the meander under the scheme of approved S12A Application (No. Y/NE-KTS/15), has been split into two parts (a swimming pool and a small villa's pool) and moved further to the south and north respectively, to be away from the area near the meander. This could minimize potential disturbance to the area around the meander.

5.2.4 Besides, the setback of residential buildings from Sheung Yue River is increased compared to the scheme of approved S12A Application (No. Y/NE-KTS/15).

Measures for minimizing light glare

<u>Construction phase</u>

5.2.5 During construction phase, there will be no night-time construction works and

thus there will be no external lighting other than the necessary security lighting. The security lighting will be located carefully and its angle will be adjusted to avoid light glare to the nearby habitats. As a good practice, lighting for security purposes would be directed away from the adjacent channel and meander as far as practicable. The security lights should also be kept to appropriate brightness level.

Design of lighting and building façade

5.2.6 The measures below could be adopted if appropriate. Any unnecessary external flood light on buildings / facilities, including the villa's pool, will be avoided. External lightings, other than those for security and safety purposes, will also be avoided. Lighting for security and safety, given their designed purposes, would direct inwards on buildings within the development or facing towards the ground. The outdoor lighting for landscaped areas shall be installed closer to the floor/ground level. Directional lighting / deflectors (fixed to the back of the lighting) shall also be employed for outdoor lighting to avoid spilling into the nearby habitats. Besides, curtains will also be installed to the windows of all the facilities, such as clubhouse, that facing to the meander, to further minimize spilled light glare from the proposed development to the meander as appropriate.

5.2.7 The fire escape staircases of buildings are usually bright and contributing potential light glare. As such, the layouts of the buildings of the proposed development are designed to locate the fire escape staircases to face away from the meander or at the centre of the buildings. In addition, the staircases can be designed to avoid any spill of light by careful location of the light and the selection of colour of the window at staircases.

Other impact minimization

5.2.8 Good site management practices for air quality, noise and water quality to be adopted by the Project will be adequate to minimize any potential indirect ecological impacts to the surrounding areas during both construction and operational phases. The mitigation measures should include:

- Implementation of mitigation measures specified in ProPECC PN 1/94 to control site runoff and drainage at all work sites during construction;
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby waterbodies by rain;
- Good site practice and precautionary measures will also be implemented to avoid the potential impact due to site runoff. Construction effluent, site run-off and sewage should be properly collected and/or treated;
- Regular checking to ensure that the work site boundaries will not be exceeded and that no damage occurs in the surrounding areas;
- Prohibition and prevention of open fires within the work site boundary during construction;
- Implementation of required noise control measures to reduce construction noise; and
- Implementation of dust control measures to minimize dust nuisance to adjacent wildlife habitat.

5.3 Impact Mitigation

5.3.1 The impact to flora and fauna due to habitat loss is considered minor. The flora recorded within the Application Site are mostly cultivated species, ruderal or common species with limited conservation values. The fauna recorded in the Application Site are habitat generalists, and will find alternate habitats nearby very easily. While Application Site is considered having low ecological value in general, no mitigation measures are recommended for the loss.

5.4 Ecological enhancement

Compensatory Planting Areas

5.4.1 Given that the direct impact due to habitat loss within Application Site is considered minor, no mitigation measures are required. For the loss of the two small patches of Existing Planting Area, as a commitment under the previously approved planning application, there will be CPA outside the Application Site in order to compensate for the two patches of Existing Planting Area within Application Site being affected (**Figure 6**). The CPA aims to form a continuous plantation area together with other nearby planting areas as well as the meander, so as to enhance connectivity and integrity. Aligning with the committed practice in the Approved Scheme, the Proposed Scheme will compensate for the affected existing planting areas on 1:1 ratio in terms of area outside the Application Site to form a more integrated belt of planting area along the western Application Site boundary.

5.4.2 In order to re-provide the tree lost within the affected Existing Planting Area and to achieve enhancement of the CPA, the following considerations have been made for producing the planting plan for the CPA:

- Consideration on the tree species that will be lost within Existing Planting Areas due to the development;
- Species with known ecological values;
- Mainly native species;
- Provision of year-round resources for wildlife;
- Higher habitat diversity; and
- Consideration for integrating with the ecosystem nearby.

5.4.3 Apart from tree planting, shrubs will also be planted in the CPA between trees, so that a densely vegetated habitat could be established, this can provide shelter for local fauna. Besides, other management works such as clearance of unwanted vegetation and removal of refuses will also be performed before the planting works.

5.4.4 Details of the ecological enhancement in the CPA are provided in a separate submission “Proposal of Compensatory Planting Areas”. The “Proposal of Compensatory Planting Areas” has been submitted and considered acceptable by AFCD in November 2021. An updated “Proposal of Compensatory Planting Areas” providing additional information such as reference for plant species with

ecological functions, tree survey result of existing planting areas and land for compensatory planting area, compensatory planting plan and proposed arrangement of maintenance and management, etc. has also been submitted to AFCD and AFCD had no major comments on the proposal in July 2024.

Ecological enhancement at the Tree Buffer Zone

5.4.5 Opportunities will be explored to enhance the bio-diversity of the proposed Tree Buffer Zone, besides, since the proposed Tree Buffer Zone will be located at the western boundary of the Application Site that linking to the proposed CPAs, opportunities will also be explored for integrating the planting in Tree Buffer Zone with the CPAs.

5.4.6 It is suggested that plants with different forms, including tree, shrub and herb should be planted at the Tree Buffer Zone, so that more microhabitats could be formed and the habitat complexity could also be increased. Besides, considerations should also be given to plant more native species and species with known ecological values. In addition, considerations should also be given to select the species that will also be planted in the CPAs, this could enhance the integration with the CPAs.

5.4.7 The details of the planting in the Tree Buffer Zone could be referred from the Landscape Master Plan. The planting in the Tree Buffer Zone is also subject to further refinement and market availability upon detailed design stage.

6. RESIDUAL IMPACTS

6.1.1 It is anticipated that the residual impact is acceptable should the impact minimization measures be implemented and in place.

7. SUMMARY AND CONCLUSION

7.1.1 In order to support a new Section 16 planning application for the proposed development at various lots in DD92 and the adjoining Government land, Kwu Tung South, an ecological impact assessment is conducted to find out the ecological baseline conditions of the Application Site and the vicinity, to assess the potential ecological impacts arising from the Project and to propose appropriate mitigation measures if required.

7.1.2 Ecological field surveys (covering both dry and wet seasons) were conducted from November 2022 to April 2023, and from May 2024 to October 2024 (12 months in total), to obtain the ecological baseline information of the Application Site and the 500m Study Area. The ecological baseline survey included surveys of habitat and vegetation, bird, butterfly, odonate (dragonfly), herpetofauna (reptile and amphibian), terrestrial mammal, firefly and freshwater aquatic fauna.

7.1.3 The ecological field surveys identified eight habitats within the Study Area, however, all the identified habitats are considered of either low or low to medium ecological values. No flora species of conservation importance was recorded within the Study Area including the Application Site and the Compensatory Planting Areas. The ecological field surveys identified species of conservation importance, however, none of them were recorded within the Application Site. **The Application Site is considered of low ecological value, as it was dominated by wasteland.** No roosting activity/roosting site of the surveyed fauna was observed within the Application Site. Besides, potential bat roosting sites such as caves, mines, abandoned built structures, underground channels and tunnels and related plant species such as Chinese Fan-palm and bamboos were also absent from the Application Site. Subject to tidal influence that providing forging opportunities for waterbirds, there were higher bird diversity, bird abundance and higher number of bird species of conservation importance recorded at the section of Sheung Yue River channel to the north of Fanling Highway which is further away from the Application Site and being separated by the Fanling Highway.

7.1.4 The proposed project would result in loss of about 1.96 ha of habitats which mainly consisted of wasteland with small areas of developed area and plantation/village/orchard, they are considered having low ecological value in general. The proposed development would cause minor ecological impacts to habitats and species of conservation importance. Impact avoidance and minimization measures are proposed. With implementation of the proposed mitigation measures, no residual impacts are anticipated. Besides, ecological enhancement, including the Compensatory Planting Areas planting and the ecological considerations of landscape planting within the Application Site are also proposed.

8. REFERENCES

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FIGURES

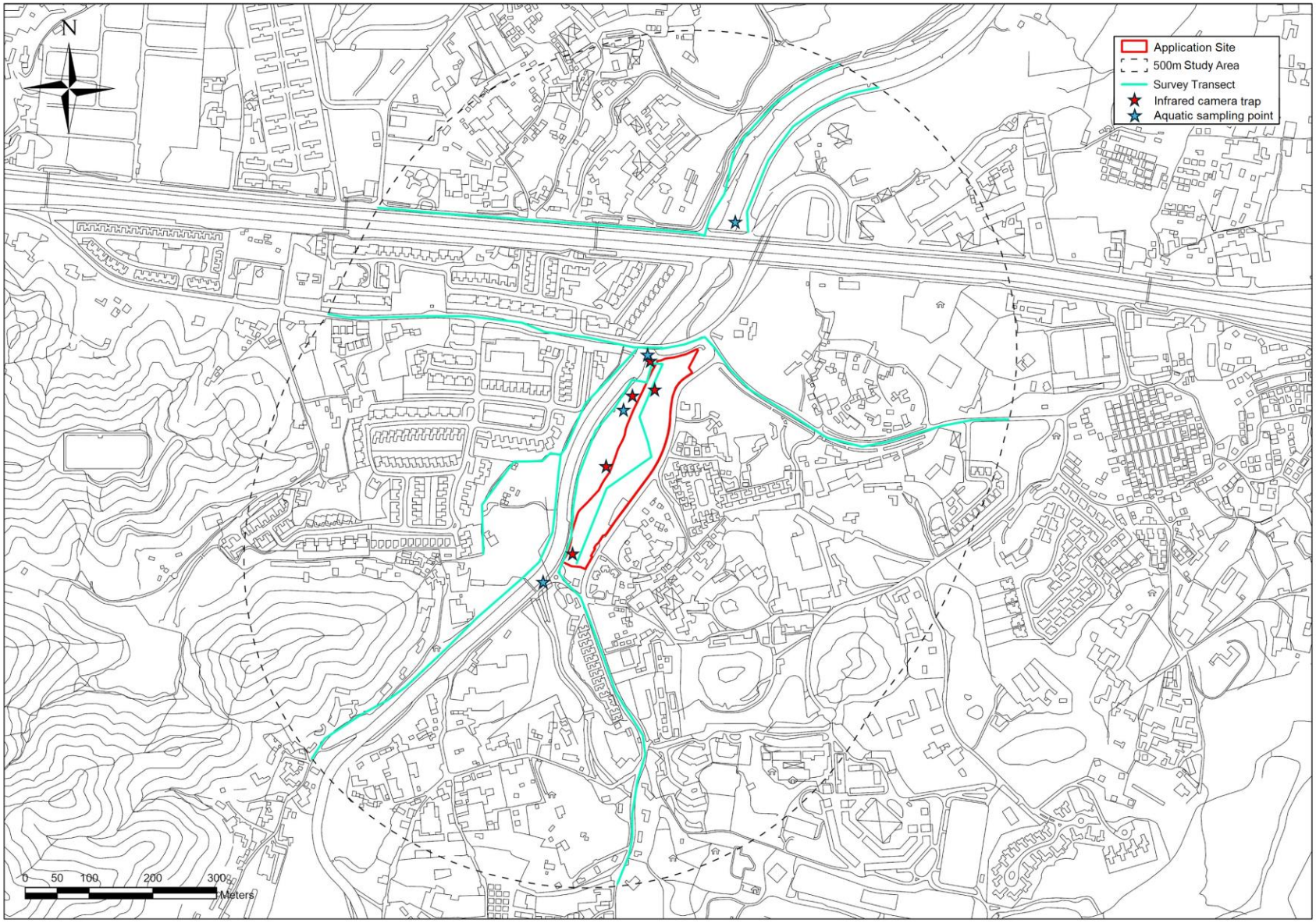

Figure 1 Application Site, Study Area, transect, aquatic sampling points and location of infrared cameras

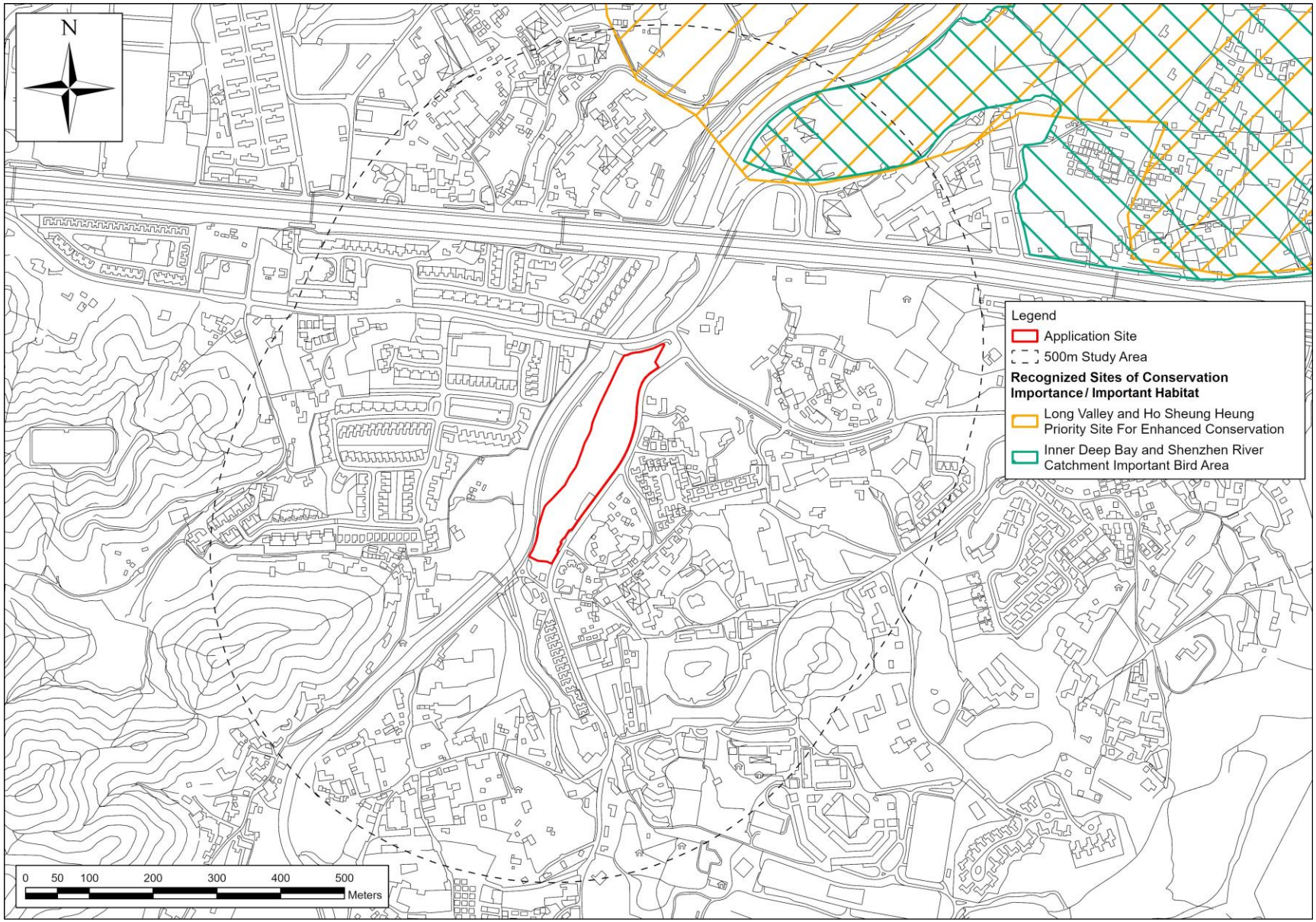

Figure 2 Recognized Site of Conservation Importance / Important Habitat in the vicinity of the Application Site

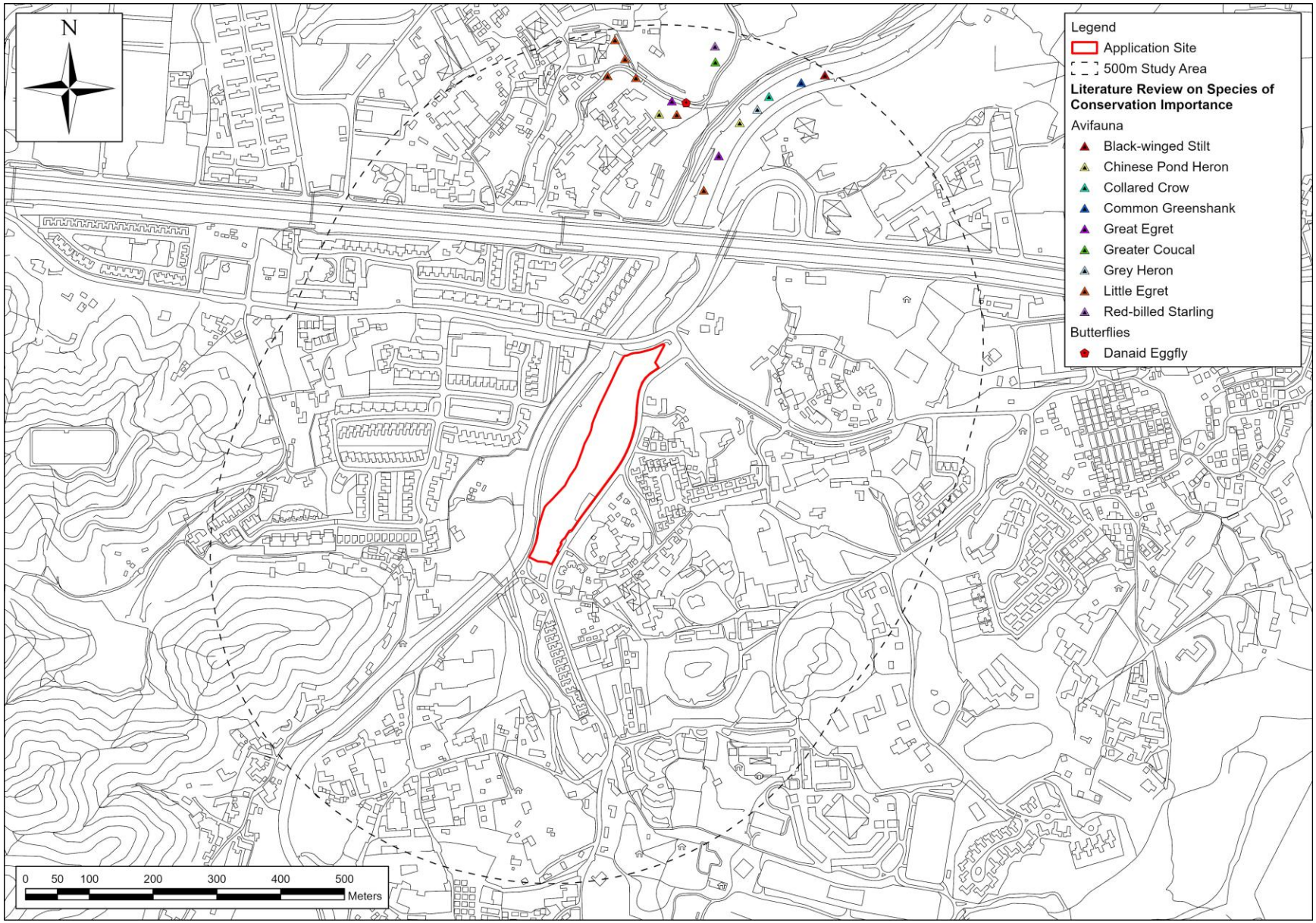

Figure 3 Species of conservation importance recorded from reviewed literature

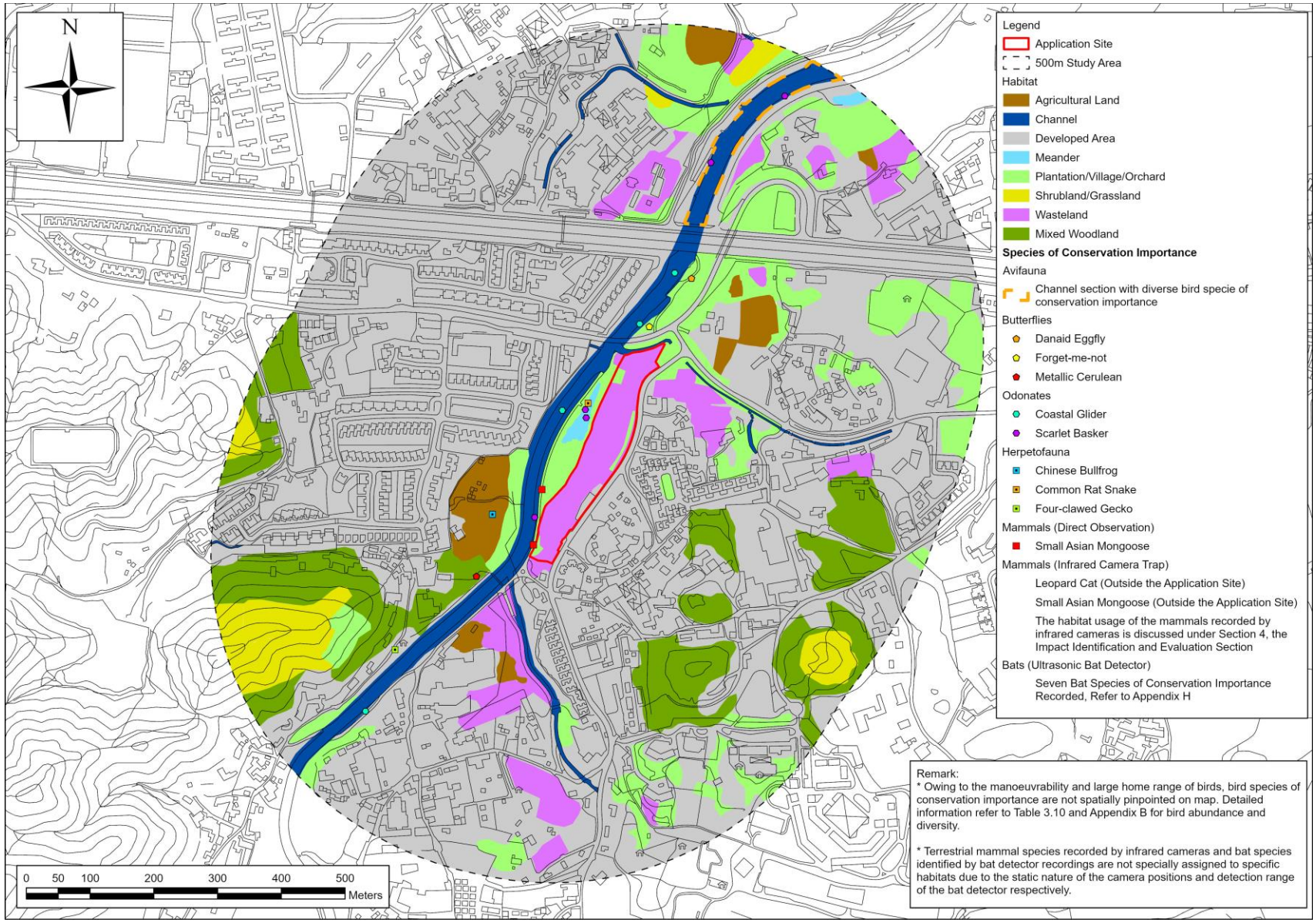

Figure 4 Habitat map and locations of species of conservation importance

Agriculture Land

Developed Area

Plantation/village/orchard

Shrubland/Grassland

Mixed woodland

Meander

Figure 5 Photos of habitats

Channel

Application Site (Wasteland)

Figure 5 Photos of habitats (cont.)

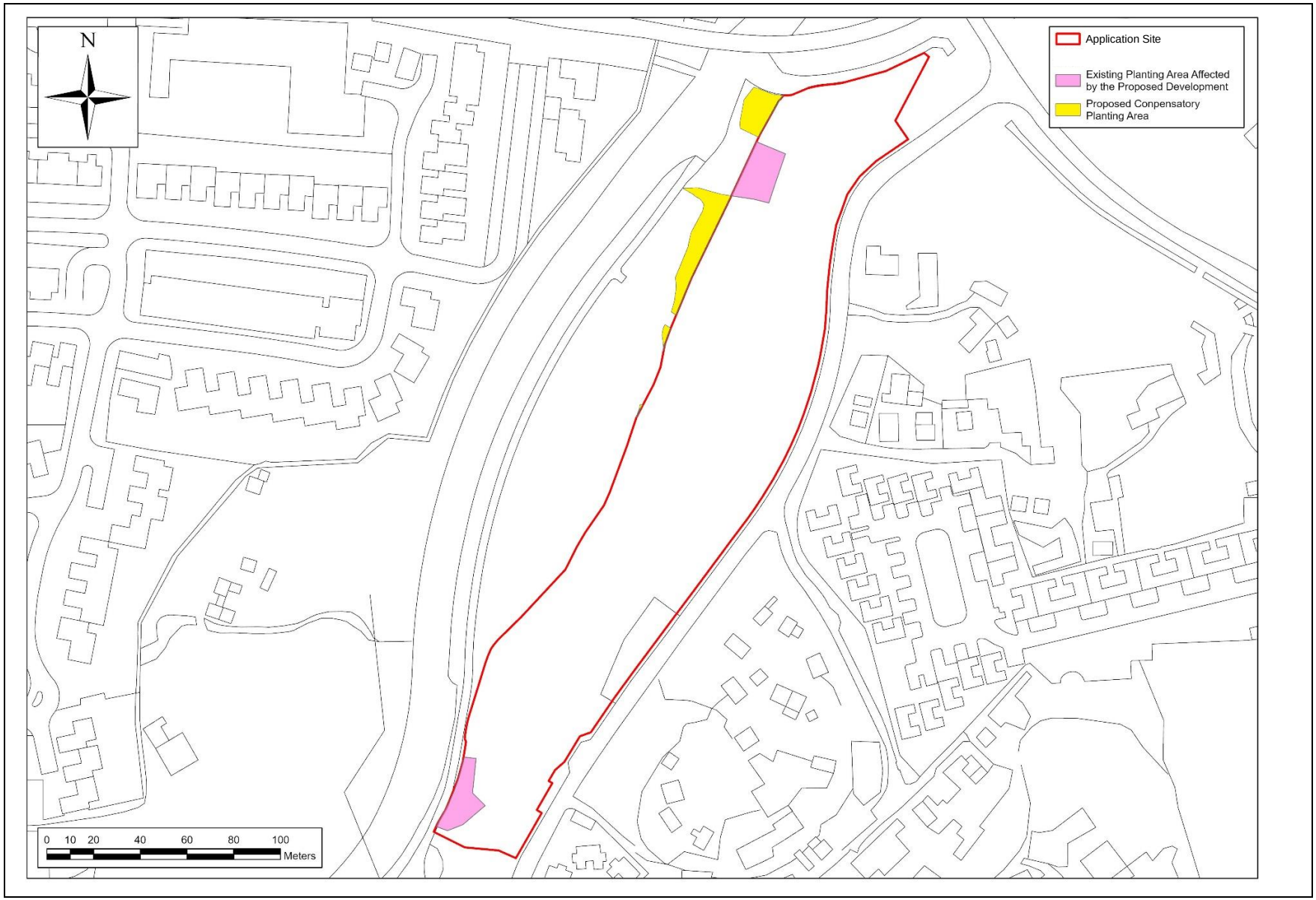

Figure 6 Location of the proposed Compensatory Planting Areas

APPENDICES

Appendix A Plant species recorded within the Study Area

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
1	*Acacia confusa*	台灣相思	MIMOSACEAE	Tree	Exotic	-									C			
2	*Achyranthes aspera*	土牛膝	AMARANTHACEAE	Herb	Native	Common				S			S		S			
3	*Acmella uliginosa*	沼生金鈕扣	ASTERACEAE	Herb	-	-											S	
4	*Ageratum conyzoides*	藿香薊	ASTERACEAE	Herb	Exotic	Common					O							
5	*Albizia lebbeck*	大葉合歡	MIMOSACEAE	Tree	Exotic	-											S	
6	*Aleurites moluccana*	石栗	EUPHORBIACEAE	Tree	Exotic	-				S			O					
7	*Alocasia macrorrhizos*	海芋	ARACEAE	Herb	Native	Very common		S	O	C		O	O	O	C	S	O	C
8	*Aloe vera*	蘆薈	ALOEACEAE	Herb	Exotic	-							S					
9	*Alternanthera philoxeroides*	空心莧	AMARANTHACEAE	Herb	Exotic	Common						S						
10	*Alternanthera sessilis*	蝦鉗菜	AMARANTHACEAE	Herb	native	Common								C				
11	*Amaranthus viridis*	綠莧	AMARANTHACEAE	Herb	native	Very common					S		O		S		C	
12	*Anredera cordifolia*	落葵薯	BASELLACEAE	Climber	Exotic	Restricted							S					
13	*Antidesma bunius*	五月茶	EUPHORBIACEAE	Tree	Native	Common				S								
14	*Aporusa dioica*	銀柴	EUPHORBIACEAE	Tree	Native	Very common												C
*15	*Aquilaria sinensis*	土沉香	THYMELAEACEAE	Tree	Native	Common	IUCN Red List of Threatened Species (2024): Vulnerable [2] Appendix II of CITES [3] Threatened Species List of China's Higher Plants: Vulnerable [4] China Plant Red Data Book: Vulnerable [5] Included in Illustrations of Rare & Endangered Plant in Guangdong Province [6] Listed in Rare and Precious Plants of Hong Kong [7]				S							

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
							Cap. 586 [8] State Protection (Category II) [9]											
16	*Araucaria columnaris*	柱狀南洋杉	ARAUCARIACEAE	Tree	Exotic	-							S					
17	*Archontophoenix alexandrae*	假檳榔	ARECACEAE	Tree	Exotic	-							S					
18	*Artocarpus heterophyllus*	菠蘿蜜	MORACEAE	Tree	Exotic	-					S							S
19	*Asystasia micrantha*	小花十萬錯	ACANTHACEAE	Herb	Exotic	-		O	C	S			C		O		O	S
20	*Axonopus compressus*	地毯草	POACEAE	Herb	Exotic	Common									S			
21	*Bambusa multiplex*	孝順竹	POACEAE	Bamboo	Exotic	-									S			
22	*Bambusa* sp	竹屬	POACEAE	Herb	-	-							S		S			O
23	*Bauhinia purpurea*	紅花羊蹄甲	CAESALPINIACEAE	Tree	Exotic	-			S				C					
24	*Bauhinia variegata*	宮粉羊蹄甲	CAESALPINIACEAE	Tree	Exotic	-			S									
25	*Bauhinia* x *blakeana*	洋紫荊	CAESALPINIACEAE	Tree	Native	-							S					
26	*Begonia cucullata var. hookeri*	四季秋海棠	BEGONIACEAE	Herb	Exotic	-					S							
27	*Benincasa hispida*	冬瓜	CUCURBITACEAE	Climber	Exotic	-					O							
28	*Bidens alba*	白花鬼針草	ASTERACEAE	Herb	Exotic	Very common		C		S	O	C	C		O	O	C	S
29	*Bischofia javanica*	秋楓	EUPHORBIACEAE	Tree	Native	Common			S						S			O
30	*Boehmeria nivea*	苧麻	URTICACEAE	Shrub	Exotic	Restricted				S								
31	*Boehmeria nivea var. tenacissima*	青葉苧麻	URTICACEAE	Shrub	Native	-							S					
32	*Bombax ceiba*	木棉	BOMBACACEAE	Tree	Exotic	-				S		S	S		S			S
33	*Bothriochloa bladhii*	臭根子	POACEAE	Herb	Native	Very common				C								

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
		草																
34	*Bougainvillea spectabilis*	葉子花	NYCTAGINACEAE	Climber	Exotic	-							S		O			
35	*Brachiaria mutica*	巴拉草	POACEAE	Herb	Exotic	Common						C						
36	*Bridelia tomentosa*	土蜜樹	EUPHORBIACEAE	Shrub	Native	Very common			S	S					O	S		C
37	*Calliandra haematocephala*	朱纓花	MIMOSACEAE	Shrub	Exotic	-							C		S			
38	*Callipteris esculenta*	菜蕨	ATHYRIACEAE	Herb	Native	Common									S			
*39	*Camellia sp*	山茶屬	THEACEAE	Shrub	-	-	Cap.96A[10]			S					S			
40	*Canarium album*	橄欖	BURSERACEAE	Tree	Exotic	Restricted									S			
*41	*Canarium pimela*	烏欖	BURSERACEAE	Tree	Exotic	Rare			S									
42	*Carica papaya*	番木瓜	CARICACEAE	Tree	Exotic	-				S			S		S			
*43	*Casuarina equisetifolia*	木麻黃	CASUARINACEAE	Tree	Exotic	Rare									C			
44	*Catharanthus roseus*	長春花	APOCYNACEAE	Shrub	Exotic	-							S					
45	*Cayratia japonica*	烏蘞莓	VITACEAE	Climber	Native	-				S			S				S	
46	*Celtis sinensis*	朴樹	ULMACEAE	Tree	Native	Common			S	S			S		O			C
47	*Cenchrus echinatus*	蒺藜草	POACEAE	Herb	Exotic	Common				S								
48	*Centella asiatica*	積雪草	APIACEAE (UMBELLIFERAE)	Herb	Native	Very common								C				
49	*Centotheca lappacea*	假淡竹葉	POACEAE	Herb	Native	Common									S			
50	*Cinnamomum burmannii*	陰香	LAURACEAE	Tree	Native	-			S						S			
51	*Cinnamomum camphora*	樟	LAURACEAE	Tree	Native	Common							S		S			S
52	*Clausena lansium*	黃皮	RUTACEAE	Tree	Exotic	-							S					O
53	*Cleistocalyx nervosum*	水翁	MYRTACEAE	Tree	Native	Common				S					S			
54	*Cleome rutidosperma*	皺子白花菜	CAPPARACEAE	Herb	Exotic	Restricted					S							
*55	*Coccinia grandis*	紅瓜	CUCURBITACEAE	Climber	Native	Very rare				S								

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
56	*Cocculus orbiculatus*	木防己	MENISPERMACEAE	Climber	Native	Common				S					S			
57	*Cocos nucifera*	椰子	ARECACEAE	Tree	Exotic	-									S			
58	*Colocasia esculenta*	芋	ARACEAE	Herb	Exotic	-						S		S				
59	*Commelina diffusa*	節節草	COMMELINACEAE	Herb	Native	Common				S		C			S			
60	*Conyza canadensis*	小蓬草，小白酒草	ASTERACEAE	Herb	Exotic	Very common					S				S			
61	*Cordia dichotoma*	破布木	BORAGINACEAE	Tree	Native	Restricted			S									
62	*Cordyline fruticosa*	朱蕉	AGAVACEAE	Shrub	Exotic	-							O					
63	*Cuscuta campestris*	田野菟絲子	CUSCUTACEAE	Herb	Native	-				S		O						
64	*Cyclosorus latipinnus*	寬羽毛蕨	THELYPTERIDACEAE	Herb	Native	Common								C				
65	*Cyclosorus parasiticus*	華南毛蕨	THELYPTERIDACEAE	Herb	Native	Very common			O		S				O			
66	*Cyperus involucratus*	風車草	CYPERACEAE	Herb	Exotic	Restricted						O		O				
67	*Daemonorops jenkinsiana*	黃藤	ARECACEAE	Climber	Native	Very common									S			
68	*Delonix regia*	鳳凰木	CAESALPINIACEAE	Tree	Exotic	-			S									
69	*Desmodium tortuosum*	南美山螞蝗	FABACEAE (PAPILIONACEAE)	Herb	Exotic	Common				O								
70	*Desmos chinensis*	假鷹爪	ANNONACEAE	Shrub	Native	Common									S			C
71	*Dicranopteris pedata*	芒萁	GLEICHENIACEAE	Herb	native	Very common										C		
*72	*Dimocarpus longan*	龍眼	SAPINDACEAE	Tree	Exotic	Restricted	Threatened Species List of China's Higher Plants: Vulnerable [4] China Plant Red Data Book: Vulnerable [5] State Protection (Category II) [9]		S		C		C		O		S	O

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
73	*Dioscorea bulbifera*	黃獨	DIOSCOREACEAE	Climber	Native	Common									S			S
74	*Dracaena fragrans*	巴西鐵樹	AGAVACEAE	Shrub	Exotic	-							O					S
75	*Dracaena sanderiana*	辛氏龍樹	AGAVACEAE	Shrub	Exotic	-							S					
76	*Dracontomelon duperreanum*	人面子	ANACARDIACEAE	Tree	Exotic	-									S			
77	*Duchesnea indica*	蛇莓	ROSACEAE	Herb	Native	Restricted								S	S			
*78	*Ehretia acuminata*	厚殼樹	BORAGINACEAE	Tree	Native	Very rare			O						S			
79	*Eleusine indica*	牛筋草	POACEAE	Herb	Native	Very common							C					
80	*Eragrostis tenella*	鯽魚草	POACEAE	Herb	Native	Very common			S						O			O
81	*Eriobotrya japonica*	枇杷	ROSACEAE	Tree	Exotic	-					S							
82	*Erythrina variegata*	刺桐	FABACEAE (PAPILIONACEAE)	Tree	Exotic	-			S									
83	*Eucalyptus saligna*	柳葉桉	MYRTACEAE	Tree	Exotic	-							C			S		
84	*Euphorbia heterophylla*	白苞猩猩草	EUPHORBIACEAE	Herb	Exotic	Restricted				C								
85	*Euphorbia hirta*	飛揚草	EUPHORBIACEAE	Herb	Exotic	Very common				S	S							
86	*Ficus benjamina*	垂葉榕	MORACEAE	Tree	Exotic	-							S		C			
87	*Ficus elastica*	印度榕	MORACEAE	Tree	Exotic	-							S		S			
88	*Ficus elastica 'Variegata'*	錦葉印度榕	MORACEAE	Tree	Exotic	-							S					
89	*Ficus hirta*	粗葉榕	MORACEAE	Shrub	Native	Common												O
90	*Ficus hispida*	對葉榕	MORACEAE	Shrub	Native	Very common		S	S	S				S	O	S	O	S
91	*Ficus microcarpa*	榕樹	MORACEAE	Tree	Native	Common		S	O	S			O		O		S	
92	*Ficus pumila*	薜荔	MORACEAE	Climber	Native	Very common					S				S			
93	*Ficus variegata* var. *chlorocarpa*	青果榕	MORACEAE	Tree	Native	Common				S								O
94	*Ficus virens* var. *sublanceolata*	黃葛樹	MORACEAE	Tree	Native	Common									C			

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
95	*Flueggea virosa*	白飯樹	EUPHORBIACEAE	Shrub	Native	Common				S			S					
96	*Glochidion lanceolarium*	艾膠算盤子	EUPHORBIACEAE	Tree	Native	Common			S									
*97	*Glyptostrobus pensilis*	水松	TAXODIACEAE	Tree	Exotic	Very rare	IUCN Red List of Threatened Species (2024): Critically Endangered [2] China Plant Red Data Book (Recorded, No status indicated) [5] State Protection (Category I) [9]								S				
98	*Hedychium coronarium*	薑花	ZINGIBERACEAE	Herb	Exotic	-								S	S			
99	*Heterosmilax japonica*	肖菝葜	SMILACACEAE	Climber	Native	Common									S			O
100	*Hibiscus tiliaceus*	黃槿	MALVACEAE	Tree	Native	Very common									O		S	S
101	*Hydrocotyle sibthorpioides*	天胡荽	APIACEAE (UMBELLIFERAE)	Herb	Native	Common								C				
102	*Hydrocotyle verticillata*	銅錢草	APIACEAE (UMBELLIFERAE)	Herb	Exotic	-						O		C	S			
103	*Hylocereus undatus*	量天尺	CACTACEAE	Herb	Exotic	-					O		S					
104	*Ilex rotunda*	鐵冬青	AQUIFOLIACEAE	Tree	Exotic	Common			S	S			S		S			
105	*Imperata cylindrica*	大白茅	POACEAE	Herb	Native	Very common							O				S	
106	*Ipomoea cairica*	五爪金龍	CONVOLVULACEAE	Climber	Exotic	Very common		C		S					O		C	
107	*Ipomoea nil*	牽牛	CONVOLVULACEAE	Climber	Exotic	Common				S			S					
108	*Ipomoea obscura*	小心葉薯，紫心牽牛	CONVOLVULACEAE	Climber	Native	Common									S		S	
109	*Ipomoea triloba*	三裂葉薯，三裂葉牽牛	CONVOLVULACEAE	Herb	Native	-			S	S			O				S	
110	*Juniperus chinensis* cv. *Kaizuca*	龍柏	CUPRESSACEAE	Tree	Exotic	-					S		S					

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
111	*Khaya senegalensis*	非洲楝	MELIACEAE	Tree	Exotic	-									S			
112	*Kyllinga polyphylla*	水蜈蚣	CYPERACEAE	Herb	Exotic	Common			C			C			S			
113	*Lantana camara*	馬纓丹	VERBENACEAE	Shrub	Exotic	Very common				O			O		S		O	S
114	*Leersia hexandra*	李氏禾	POACEAE	Herb	Native	Common						O						
115	*Leucaena leucocephala*	銀合歡	MIMOSACEAE	Tree	Exotic	Common		C	O	O		S	C	S	C		C	S
116	*Ligustrum sinense*	山指甲	OLEACEAE	Tree	Native	Common			S						C			O
117	*Lindernia crustacea*	母草	SCROPHULARIACEAE	Herb	Native	Restricted					S							
*118	*Litchi chinensis*	荔枝	SAPINDACEAE	Tree	Exotic	Restricted	Threatened Species List of China's Higher Plants: Endangered [4] China Plant Red Data Book: Vulnerable [5] State Protection (Category II) [9]			S	C		S					S
119	*Litsea cubeba*	木薑子	LAURACEAE	Shrub	Native	Common									S			
120	*Litsea glutinosa*	潺槁樹	LAURACEAE	Tree	Native	Very common			S				S		S			S
121	*Litsea monopetala*	假柿木薑子	LAURACEAE	Tree	Native	Restricted			S	S					S			
122	*Livistona chinensis*	蒲葵	ARECACEAE	Tree	Exotic	-									S			
123	*Ludwigia octovalvis*	毛草龍	ONAGRACEAE	Herb	Native	Common						O						
124	*Ludwigia perennis*	細花丁香蓼	ONAGRACEAE	Herb	Native	Restricted						S						
125	*Lygodium japonicum*	海金沙	LYGODIACEAE	Herb	Native	Very common									S			C
126	*Macaranga tanarius var. tomentosa*	血桐	EUPHORBIACEAE	Tree	Native	Common		S	O	S	S		O		C	O	S	C
127	*Maesa perlarius*	鯽魚膽	MYRSINACEAE	Shrub	Native	Common									S			
128	*Malvastrum coromandelianum*	賽葵	MALVACEAE	Shrub	Native	Common		O										
129	*Mangifera indica*	芒果	ANACARDIACEAE	Tree	Exotic	-				S	O				S			

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
130	*Manihot esculenta*	木薯	EUPHORBIACEAE	Shrub	Exotic	-							S					
131	*Manilkara zapota*	人心果	SAPOTACEAE	Tree	Exotic	-					S							
132	*Melaleuca cajuputi subsp. cumingiana*	白千層	MYRTACEAE	Tree	Exotic	-			S				S		C			
133	*Melastoma malabathricum*	野牡丹	MELASTOMATACEAE	Shrub	Native	Common										C		
134	*Melastoma sanguineum*	毛蒽	MELASTOMATACEAE	Shrub	Native	Common										O		
135	*Melia azedarach*	苦楝	MELIACEAE	Tree	Exotic	Common			S						S			
*136	*Michelia macclurei*	醉香含笑	MAGNOLIACEAE	Tree	Exotic	-	Cap.96A[10]								S			
*137	*Michelia* x *alba*	白蘭	MAGNOLIACEAE	Tree	Exotic	-	Cap.96A[10]						S					
138	*Microcos nervosa*	破布葉	TILIACEAE	Shrub	Native	Common			S						S			
139	*Microstegium ciliatum*	剛莠竹	POACEAE	Herb	Native	Very common				O					S			
140	*Mikania micrantha*	薇甘菊	ASTERACEAE	Herb	Exotic	Very common		O	S	O		O	O	S	O		C	S
141	*Mimosa pudica*	含羞草	MIMOSACEAE	Herb	Exotic	Very common				S								
142	*Mirabilis jalapa*	紫茉莉	NYCTAGINACEAE	Herb	Exotic	-							S					
143	*Miscanthus floridulus*	五節芒	POACEAE	Herb	Native	Common				O			S					
144	*Morinda parvifolia*	雞眼藤	RUBIACEAE	Climber	Native	Very common							S					S
145	*Morus alba*	桑	MORACEAE	Tree	Native	Common				S					S		S	
146	*Murraya paniculata*	九里香	RUTACEAE	Tree	Exotic	-				S			C		S			O
147	*Musa acuminata* cv. *Cavendishii*	香蕉	MUSACEAE	Herb	Exotic	-					C		S					
148	*Musa* x *paradisiaca*	大蕉	MUSACEAE	Herb	Exotic	-					C		O					S
*149	*Mytilaria laosensis*	殼菜果	HAMMELIDACEAE	Tree	Exotic	-	Threatened Species List of China's Higher Plants (Vulnerable)[4]								S			
150	*Nerium oleander*	夾竹桃	APOCYNACEAE	Shrub	Exotic	-							S					
151	*Oplismenus compositus*	竹葉草	POACEAE	Herb	Native	Very common		S	S	S				S	C			C

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
152	*Oxalis corniculata*	酢漿草	OXALIDACEAE	Herb	Native	Very common									O			
153	*Oxalis debilis subsp. corymbosa*	紅花酢漿草	OXALIDACEAE	Herb	Exotic	Common				S			O		O		O	
154	*Paederia scandens*	雞矢藤	RUBIACEAE	Climber	Native	Very common							O		S		O	
155	*Panicum maximum*	大黍	POACEAE	Herb	Exotic	Common		C	C	C		C	C		C	S	C	O
156	*Paspalum conjugatum*	兩耳草	POACEAE	Herb	Native	Common									S			
157	*Paspalum scrobiculatum var. orbiculare*	圓果雀稗	POACEAE	Herb	Native	Very common						S						
158	*Passiflora edulis*	雞蛋果	PASSIFLORACEAE	Climber	Exotic	-					S							
159	*Passiflora foetida*	龍珠果	PASSIFLORACEAE	Climber	Exotic	Very common		S		O								S
160	*Passiflora suberosa*	南美西番蓮	PASSIFLORACEAE	Climber	Exotic	Common				S					S			
161	*Pennisetum purpureum*	象草	POACEAE	Herb	Exotic	Very common				C					S	C	O	
162	*Persicaria barbata*	毛蓼	POLYGONACEAE	Herb	Native	Common						O						
163	*Persicaria chinensis*	火炭母	POLYGONACEAE	Herb	Native	Common							S	O	S			
164	*Phoenix roebelenii*	江邊刺葵	ARECACEAE	Tree	Exotic	-							S					
165	*Phyllanthus reticulatus*	小果葉下珠	EUPHORBIACEAE	Shrub	Native	Common				S			S		S			O
166	*Phyllanthus tenellus*	纖梗葉下珠	EUPHORBIACEAE	Herb	-	-		S										
167	*Phyllanthus urinaria*	葉下珠	EUPHORBIACEAE	Herb	Native	Common							**S**		**S**			
168	*Physalis angulata*	苦蘵	SOLANACEAE	Herb	Native	Restricted			S								O	
169	*Pistia stratiotes*	大薸	ARACEAE	Herb	Native	Common						S						
170	*Plumeria rubra*	雞蛋花	APOCYNACEAE	Tree	Exotic	-							S					
171	*Pontederia cordata*	梭魚草	PONTEDERIACEAE	Herb	Exotic	-								S				
172	*Portulaca oleracea*	馬齒莧	PORTULACACEAE	Herb	Native	Very common				S								

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
173	*Portulaca pilosa*	毛馬齒莧	PORTULACACEAE	Herb	Native	-				S								
174	*Pouzolzia zeylanica*	霧水葛	URTICACEAE	Herb	Native	Common							S					
175	*Psidium guajava*	番石榴	MYRTACEAE	Tree	Exotic	Common							S					
176	*Psychotria asiatica*	九節	RUBIACEAE	Tree	Native	Very common			S						S			C
177	*Pteris ensiformis*	劍葉鳳尾蕨	PTERIDACEAE	Herb	Native	Common									S			O
178	*Pteris vittata*	蜈蚣草	PTERIDACEAE	Herb	Native	Very common							C					
179	*Pueraria lobata var. montana*	葛麻姆	FABACEAE (PAPILIONACEAE)	Climber	Native	Common		O		C		O			C		S	
180	*Pueraria phaseoloides*	三裂葉野葛	FABACEAE (PAPILIONACEAE)	Climber	Native	Very common												S
181	*Pycreus pumilus*	矮扁莎	CYPERACEAE	Herb	Native	Restricted											S	
182	*Rhynchosia volubilis*	鹿藿	FABACEAE (PAPILIONACEAE)	Climber	Native	Restricted									S			
183	*Saccharum officinarum*	甘蔗	POACEAE	Herb	Exotic	-					C							
184	*Sageretia thea*	雀梅藤	RHAMNACEAE	Shrub	Native	Very common									S			
185	*Schefflera arboricola*	鵝掌藤	ARALIACEAE	Climber	Exotic	-							C					
186	*Schefflera heptaphylla*	鵝掌柴	ARALIACEAE	Tree	Native	Very common												S
187	*Scleria ciliaris*	緣毛珍珠茅	CYPERACEAE	Herb	Native	Very common												C
188	*Sesbania cannabina*	田菁	FABACEAE (PAPILIONACEAE)	Herb	Exotic	Common											O	
189	*Sida rhombifolia*	白背黃花稔	MALVACEAE	Shrub	Native	Common							O					
190	*Solanum americanum*	少花龍葵	SOLANACEAE	Herb	Exotic	-		C										
191	*Solanum torvum*	水茄	SOLANACEAE	Shrub	Exotic	Common						S			S			
192	*Spermacoce remota*	光葉豐花草	RUBIACEAE	Herb	-	-							O		S			

No.	Scientific name[1]	Chinese name[1]	Family[1]	Growth form	Origin[1]	Rarity in Hong Kong[11]	Protection/Conservation status[2,3,4,5,7,8,9,10]	Application Site			Within Study Area, outside Application Site							
								DA	PL	WA	AL	CH	DA	ME	PL	SG	WA	WO
193	*Stephania longa*	蕪箕篤	MENISPERMACEAE	Climber	Native	Common			O				S		O			
194	*Sterculia lanceolata*	假蘋婆	STERCULIACEAE	Tree	Native	Very common			S	S					S			C
195	*Syngonium podophyllum*	合果芋	ARACEAE	Herb	Exotic	-		C	S		S				O		S	O
196	*Syzygium jambos*	蒲桃	MYRTACEAE	Tree	Exotic	Common			S		S		S		S			C
197	*Syzygium samarangense*	洋蒲桃	MYRTACEAE	Tree	Exotic	-				S								
198	*Talinum paniculatum*	土人參	PORTULACACEAE	Herb	Exotic	Very rare							O					
199	*Talinum triangulare*	稜軸土人參	PORTULACACEAE	Herb	Exotic	-							S					
*200	*Terminalia catappa*	欖仁樹	COMBRETACEAE	Tree	Exotic	Very rare									S			
201	*Terminalia mantaly* 'Tricolor'	花葉欖仁	COMBRETACEAE	Tree	Exotic	-							S					
202	*Tetracera asiatica*	錫葉藤	DILLENIACEAE	Climber	Native	Very common												S
203	*Tradescantia spathacea*	紫背萬年青	COMMELINACEAE	Herb	Exotic	-							O					
204	*Tridax procumbens*	羽芒菊	ASTERACEAE	Herb	Exotic	Very common							C					
205	*Urena lobata*	肖梵天花	MALVACEAE	Herb	Native	Common							S					
206	*Uvaria macrophylla*	紫玉盤	ANNONACEAE	Climber	Native	Common												O
207	*Vernonia cinerea*	夜香牛	ASTERACEAE	Herb	Native	Very common					S							
208	*Wedelia trilobata*	三裂葉蟛蜞菊	ASTERACEAE	Herb	Exotic	Common			C					C	C		C	
209	*Youngia japonica*	黃鵪菜	ASTERACEAE	Herb	Native	Very common			S									
210	*Zanthoxylum nitidum*	兩面針	RUTACEAE	Climber	Native	Very common			O		S				S			
							Total number of species	17	42	55	29	22	78	17	98	11	30	47

Notes:

1. AFCD (2021). Hong Kong Herbarium.
2. IUCN (2024). IUCN Red List Version 2024-2.
3. Convention on International Trade in Endangered Species of Wild Flora and Fauna (2022). Appendices I, II and III.
4. Qin *et al*. (2017). Threatened Species List of China's Higher Plants.
5. Fu & Chin (1992). China Plant Red Data Book – Rare and Endangered Plants.
6. Wu & Hu (1988). Illustration of Rare & endangered plant in Guangdong Province.
7. Hu *et al*. (2003). Rare and Precious Plants of Hong Kong.
8. Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance
9. State Forestry Administration & Ministry of Agriculture (2021). List of Wild Plants under State Protection (Part 1).
10. Cap. 96A Forestry Regulations under Cap. 96 Forests and Countryside Ordinance
11. Corlett *et al*. (2000). Hong Kong Vascular Plants: Distribution and Status.

* indicates that the species is not regarded as a species of conservation importance because of the following reasons:

- *Canarium pimela, Casuarina equisetifolia, Dimocarpus longan, Litchi chinensis, Mytilaria laosensis, Talinum paniculatum* and *Terminalia catappa are* exotic to Hong Kong and most individuals are planted, and thus not considered of conservation importance, despite being considered rare/very rare by Corlett *et al*. (2000), listed as vulnerable/endangered in Threatened Species List of China's Higher Plants, listed as vulnerable in China Plant Red Data Book and/or listed under Category II in the List of Wild Plants under State Protection (Part 1).

- *Magnoliaceae* species and *Camellia* species are protected under Cap. 96A Forests and Countryside Ordinance. In the current study, individuals of *Camellia* sp., *Michelia macclurei* and *Michelia* x *alba* (belonging to Magnoliaceae) were recorded. However, the recorded individuals are likely planted, for *Michelia x alba,* this species seldom produce seed and self-seeded; for *Camellia* sp. the recorded habitat and locality do not match that of any native Camellia species; while *Michelia macclurei* is commonly planted for landscape purpose in Hong Kong. In addition, *Michelia x alba* and *Michelia macclurei* are also exotic to Hong Kong.

- *Aquilaria sinensis* and *Ehretia acuminata* are native to Hong Kong. *Aquilaria sinensis* is included in the book “Rare and Precious Plants of Hong Kong” (Hu et al. 2003), listed in Appendix II of CITES and protected under Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance in Hong Kong. Moreover, it is included in China Plant Red Data Book (Fu and Chin 1992) and Illustration of Rare & Endangered plant in Guangdong Province (Wu and Hu 1988), and wild individuals are listed in Category II of the List of Wild Plants under State Protection (State Forestry Administration & Ministry of Agriculture 1999). It is also categorized as “Vulnerable” in China Red Data Book (Fu and Chin 1992), the Threatened Species List of China's Higher Plants (Qin et al. 2017) and the IUCN Red List (IUCN 2024). *Ehretia acuminata* is a very rare species according to Corlett *et al.* (2000). However, all recorded individuals of these species are cultivated, thus, they are not considered as species of conservation importance.

- *Glyptostrobus pensilis* is a Class 1 protected species in China, and also regarded as globally Critically Endangered species by IUCN. It is also included in China Red Data Book and considered as very rare in Hong Kong by Corlett *et al.* (2000). However, *Glyptostrobus pensilis* is exotic to Hong Kong according to Hong Kong Herbarium, and the recorded individuals are likely to be planted, thus it is not regarded as species of conservation importance.

- *Coccinia grandis* is considered “very rare” by Corlett et al. (2000), however, this species is considered as an escaped cultivar species, thus it is not regarded as species of conservation importance in the present Study.

Abbreviations:

- Habitats: AL = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland
- Relative abundance: C = Common; O = Occasional; S = Scarce

Appendix B Avifauna recorded within the Study Area

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Black-crowned Night Heron	***Nycticorax nycticorax***	**Common resident and migrant. Widely distributed in Hong Kong. [1]**	**Fellowes *et al.* (2002): (Local Concern) Cap. 170**					**2**		**4**	**2**			
Chinese Pond Heron	***Ardeola bacchus***	**Common resident. Widely distributed in Hong Kong. [1]**	**Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern) Cap. 170**					**4**	**1**	**2**	**2**			
Eastern Cattle Egret	***Bubulcus coromandus***	**Resident and common passage migrant. Widely distributed in Hong Kong. [1]**	**Fellowes *et al.* (2002): (Local Concern) Cap. 170**					**2**		**1**				
Grey Heron	***Ardea cinerea***	**Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar. [1]**	**Fellowes *et al.* (2002): Potential Regional Concern Cap. 170**					**13**		**7**	**5**			
Great Egret	***Ardea alba***	**Common resident, migrant and winter visitor. Widely distributed in Hong Kong. [1]**	**Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern) Cap. 170**					**6**		**2**	**2**			
Little Egret	***Egretta garzetta***	**Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong. [1]**	**Fellowes *et al.* (2002): Potential Regional Concern (Regional Concern) Cap. 170**					**28**	**2**	**3**	**4**			
Crested Serpent Eagle	***Spilornis cheela***	**Common resident. Widely distributed in shrublands on hillsides throughout Hong Kong. [1]**	**Fellowes *et al.* (2002): (Local Concern); List of Wild Animals under State Priority Conservation: Class II;**						**1**					

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
			CITES: Appendix II; Cap. 586 Cap. 170											
Besra	***Accipiter virgatus***	**Common resident and migrant. Found in Tai Po Kau, Deep Bay area, Chek Lap Kok, Cheung Chau, Soko Islands. [1]**	**List of Wild Animals under State Priority Conservation: Class II; CITES: Appendix II Cap. 586 Cap. 170**						**1**					
Black Kite	***Milvus migrans***	**Common resident and winter visitor. Widely distributed in Hong Kong. [1]**	**List of Wild Animals under State Priority Conservation: Class II; Fellowes *et al.* (2002): (Regional Concern); CITES: Appendix II; Cap. 586 Cap. 170**					**2**				**3**		
Eastern Buzzard	***Buteo japonicus***	**Common winter visitor. Widely distributed in Hong Kong. [1]**	**List of Wild Animals under State Priority Conservation: Class II; CITES: Appendix II; Cap. 586 Cap. 170**					**1**						
*White-breasted Waterhen	*Amaurornis phoenicurus*	Common resident. Widely distributed in wetland throughout Hong Kong. [1]	Cap. 170				1	7		2	4	2		
Black-winged Stilt	***Himantopus himantopus***	**Common migrant and wintor visitor. Found in Deep Bay area, Long Valley, Kam Tin. [1]**	**Fellowes *et al.* (2002): Regional Concern Cap. 170**					**13**						

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Kentish Plover	**Charadrius alexandrinus**	**Abundant winter visitor and scarce migrant. Found in Deep Bay area, Chek Lap Kok, Shuen Wan, Sai Kung, Lantau Island. [1]**	**Fellowes *et al*. (2002): RC Cap. 170**					**2**						
*Eurasian Woodcock	*Scolopax rusticola*	Uncommon autumn passage migrant and winter visitor. Found in Cloudy Hill, Tai Po Kau, Shek Kong. [1]	Cap. 170			1					2		1	
Marsh Sandpiper	***Tringa stagnatilis***	**Abundant winter visitor and migrant. Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Sai Kung. [1]**	**Fellowes *et al*. (2002): Regional Concern Cap. 170**					**1**						
Common Greenshank	***Tringa nebularia***	**Abundant passage migrant and winter visitor. Found in Deep Bay area. [1]**	**Fellowes *et al*. (2002): Regional Concern Cap. 170**					**4**						
*Green Sandpiper	*Tringa ochropus*	Common migrant and winter visitor. Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Shek Kong, Ho Chung. [1]	Cap. 170					6		2				
Wood Sandpiper	***Tringa glareola***	**Common migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong. [1]**	**Fellowes *et al*. (2002): Local Concern Cap. 170**					**1**						
*Common Sandpiper	*Actitis hypoleucos*	Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong. [1]	Cap. 170					7		1				
*Domestic	*Columba livia*	Locally common resident.	Cap. 170	4				7	11					

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Pigeon		Widely distributed in urban area throughout Hong Kong. [1]												
*Oriental Turtle Dove	*Streptopelia orientalis*	Common winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170								2			1
*Eurasian Collared Dove	*Streptopelia decaocto*	Locally common resident. Found in Mai Po, Tsim Bei Tsui and Fung Lok Wai. [1]	Cap. 170					2						
*Spotted Dove	*Spilopelia chinensis*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170	6		31	8	16	33		15	6	9	9
Greater Coucal	***Centropus sinensis***	**Common resident. Widely distributed in Hong Kong. [1]**	**List of Wild Animals under State Priority Conservation: Class II Cap. 170**					**3**		**2**	**1**			**2**
*Asian Koel	*Eudynamys scolopaceus*	Common resident. Widely distributed in Hong Kong. [1]	Cap. 170		1				1		5			
*Large Hawk-Cuckoo	*Hierococcyx sparverioides*	Locally common spring and summer visitor. Widely distributed in woodland throughout in Hong Kong. [1]	Cap. 170								3			
Collared Scops Owl	***Otus lettia***	**Common resident. Widely distributed in shrubland throughout Hong Kong. [1]** **Common and widespread resident in closed-canopy woodland and mature shrubland. [10]**	**List of Wild Animals under State Priority Conservation: Class II; CITES: Appendix II; Cap. 586 Cap. 170**								**1**			**1**

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Northern Boobook	***Ninox japonica***	**Uncommon passage migrant. Found in Stanley, Cheung Chau, Hong Kong University, Zoological and Botanical Gardens, Mount Nicholson, Magazine Gap Road, Barker Road, Tai Koo Shing, Shek Wu Wai, Cloudy Hill, Tung Chung, Mirs Bay. [1]**	**List of Wild Animals under State Priority Conservation: Class II; CITES: Appendix II; Cap. 586 Cap. 170**								**1**			
*Savanna Nightjar	*Caprimulgus affinis*	Uncommon resident. Widely distributed in Hong Kong. [1]	Cap. 170								1			
White-throated Kingfisher	***Halcyon smyrnensis***	**Common resident. Widely distributed in coastal areas throughout Hong Kong. [1]**	**List of Wild Animals under State Priority Conservation: Class II; Fellowes *et al*. (2002): (Local Concern) Cap. 170**					**3**		**1**	**1**			
*Common Kingfisher	*Alcedo atthis*	Common passage migrant and winter visitor. Widely distributed in wetland habitat throughout Hong Kong. [1]	Cap. 170					2						
^Alexandrine Parakeet	*Psittacula eupatria*	Locally common resident. Found in Kowloon Park. [1]	List of Wild Animals under State Priority Conservation: Class II; Cap. 586 Cap. 170				3		3					
*Black Drongo	*Dicrurus macrocercus*	Common summer visitor. Widely distributed in open	Cap. 170					2						2

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
		area throughout Hong Kong. [1]												
*Hair-crested Drongo	*Dicrurus hottentottus*	Common migrant and winter visitor, and locally common resident. Widely distributed in wooded area throughout Hong Kong. [1]	Cap. 170				10				8			6
*Red-billed Blue Magpie	*Urocissa erythrorynch a*	Common resident. Widely distributed in woodland edges throught Hong Kong. [1]	Cap. 170			1	2		2		5			3
Collared Crow	***Corvus torquatus***	**Locally common resident. Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek lap Kok, Shuen Wan, Lam Tsuen. [1]**	**Fellowes *et al*. (2002): Local Concern; IUCN Red List Status: Vulnerable Cap. 170**					**4**			**2**			
*Cinereous Tit	*Parus cinereus*	Common resident. Widely distributed in Hong Kong. [1]	Cap. 170		2				2		6			4
*Red-whiskered Bulbul	*Pycnonotus jocosus*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170		8	7	17		20	6	35	10	15	20
*Chinese Bulbul	*Pycnonotus sinensis*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170			3			6		8			9
*Dusky Warbler	*Phylloscopus fuscatus*	Abundant winter visitor and migrant. Widely distributed in shrubland and waterside vegetation throughout Hong Kong. [1]	Cap. 170				2	4		2	4	1		
*Pallas's Leaf Warbler	*Phylloscopus proregulus*	Common winter visitor and migrant. Found in woodland throughout Hong Kong. [1]	Cap. 170		3						10			

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
*Yellow-bellied Prinia	*Prinia flaviventris*	Common resident. Widely distributed in Hong Kong. [1]	Cap. 170			3		3		1	10	2		2
*Common Tailorbird	*Orthotomus sutorius*	Common resident. Widely distributed in Hong Kong. [1]	Cap. 170		1						9	2		4
*Masked Laughingthrush	*Pterorhinus perspicillatus*	Abundant resident. Widely distributed in shrubland throughout Hong Kong. [1]	Cap. 170		6	5			3		16	4		11
*Greater Necklaced Laughingthrush	*Garrulax pectoralis*	Locally common resident. Widely distributed in shrubland and woodland throughout Hong Kong. [1]	Cap. 170		2				3		5		3	
*Japanese White-eye	*Zosterops simplex*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170		4	11	3	5	8		35	4		13
*Crested Myna	*Acridotheres cristatellus*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170		2		2	4	8		8			3
*Black-collared Starling	*Gracupica nigricollis*	Common resident. Widely distributed in Hong Kong. [1]	Cap. 170						8		11			3
*White's Thrush	*Zoothera aurea*	Uncommon winter visitor and migrant. Widely distributed in woodland throughout Hong Kong. [1]	Cap. 170			1					2		1	
*Grey-backed Thrush	*Turdus hortulorum*	Common winter visitor and migrant. Widely distributed in woodland throughout Hong Kong. [1]	Cap. 170			2					4		1	1
*Chinese Blackbird	*Turdus mandarinus*	Common winter visitor and migrant. Widely distributed in Hong Kong. [1]	Cap. 170								4		1	
*Oriental Magpie-Robin	*Copsychus saularis*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170	1		4		6	12		9	1	4	

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
*Blue Whistling Thrush	*Myophonus caeruleus*	Common resident. Widely distributed in shrubland and woodland throughout Hong Kong. [1]	Cap. 170						1					2
*Mugimaki Flycatcher	*Ficedula mugimaki*	Uncommon autumn migrant and scarce winter visitor and spring migrant. Widely distributed in Hong Kong. [1]	Cap. 170									2		
*Red-throated Flycatcher	*Ficedula albicilla*	Common migrant and winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170			1				1				
*Daurian Redstart	*Phoenicurus auroreus*	Common winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170			1		1			4	1		2
*Scarlet-backed Flowerpecker	*Dicaeum cruentatum*	Common resident. Widely distributed in wooded area throughout Hong Kong. [1]	Cap. 170								1			
*Fork-tailed Sunbird	*Aethopyga christinae*	Common resident and winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170					1			1			1
*Eurasian Tree Sparrow	*Passer montanus*	Abundant resident. Widely distributed in Hong Kong. [1]	Cap. 170			4			6		10	3		
*Eastern Yellow Wagtail	*Motacilla tschutschensis*	Common passage migrant and winter visitor. Widely distributed in agricultural fields and marsh edges throughout Hong Kong. [1]	Cap. 170					1						
*Grey Wagtail	*Motacilla cinerea*	Common passage migrant and winter visitor. Widely distributed in hill streams throughout Hong	Cap. 170			1		6	2	2				

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 10]	Conservation Status [1,2,3,4,5,6,7,8,9]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
		Kong. [1]												
*White Wagtail	*Motacilla alba*	Resident, common passage migrant and winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170	3			2	12	4	4	2		3	
*Richard's Pipit	*Anthus richardi*	Common passage migrant, winter visitor and locally common resident. Widely distributed in Hong Kong. [1]	Cap. 170					4	2					
*Olive-backed Pipit	*Anthus godlewskii*	Common passage migrant and winter visitor. Widely distributed in Hong Kong. [1]	Cap. 170			10	3	5			13		3	

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Convention on International Trade in Endangered Species of Wild Flora and Fauna. Appendices I, II and III.
3. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
4. International Union of Conservation for Nature (2024). The IUCN Red List of Threatened Species.
5. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
6. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation
7. Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
8. The Hong Kong Bird Watching Society. (2022). Field Guide to the Birds of Hong Kong and South China.
9. Wild Animals Protection Ordinance (Cap. 170)
10. HKBWS (2025). The Avifauna of Hong Kong.

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

* All the wild birds in Hong Kong are protected by Cap. 170. Birds species with * indicates that they are not regarded as species of conservation importance despite being protected by Cap. 170, as they are common and/or without other local conservation status.
^ Although Alexandrine Parakeet *Psittacula eupatridae* is a bird species that protected by Cap. 170, Cap. 586 and being listed in Class II of List of Wild Animals under State Priority Conservation, it is an introduced species in Hong Kong thus it is not considered as a species of conservation importance in the current study

Abbreviations:
- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix C Butterfly species recorded within the Study Area

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1,2]	Conservation Status [1,3]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Formosan Swift	*Borbo cinnara*	Common.[2] Widely distributed throughout Hong Kong.[1]	-								2	1		
Common Hedge Blue	*Acytolepis puspa*	Common.[2] Widely distributed throughout Hong Kong[1]	-				1				1			
Forget-me-not	***Catochrysops strabo***	**Very rare.[2] Pui O, Tai Po Kau, Fung Yuen, Shing Mun, Sha Lo Wan[1]**	**-**								**1**			
Metallic Cerulean	**Jamides alecto**	**Very rare.[2] Victoria Peak, Fung Yuen, Chuen Lung, Mui Wo[1]**	**-**											**1**
Dark Cerulean	Jamides bochus	Common.[2] Widely distributed throughout Hong Kong.[1]	-								1	1		2
Pale Grass Blue	*Pseudozizeeria maha*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-						2			4	3	
Plain Tiger	*Danaus chrysippus*	Uncommon.[2] Lung Kwu Tan, Tong Fuk, Tai Ho, Tung Chung, Pak Tam Chung[1]	-					1			2			
Common Indian Crow	*Euploea core*	Common.[2] Widely distributed throughout Hong Kong[1]	-	1		2			1		3	2		1
Blue-spotted Crow	*Euploea midamus*	Very common.[2] Widely distributed throughout Hong Kong[1]	-		2				1		3			
Ceylon Blue Glassy Tiger	*Ideopsis similis*	Very common.[2] Widely distributed throughout Hong Kong[1]	-	2		1			2		3	2	1	2
Angled Castor	*Ariadne ariadne*	Common.[2] Widely distributed throughout Hong Kong[1]	-			2			2		2	3		
Common Mapwing	*Cyrestis thyodamas*	Common.[2] Widely distributed throughout Hong Kong.[1]	-						1		4			2
Great Egg-fly	*Hypolimnas bolina*	Common.[2] Widely distributed throughout Hong Kong[1]	-						1		4	2		
Danaid Eggfly	***Hypolimnas misippus***	**Uncommon.[2] Ngau Ngak Shan, Lung Kwu Tan, Hong Kong Wetland Park, Mount Parker,**	**Fellowes *et al*. (2002):**								**1**			

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1,2]	Conservation Status [1,3]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
		Cloudy Hill, Lin Ma Hang[1]	**Local Concern**											
Chocolate Pansy	*Junonia iphita*	Common.[2] Widely distributed throughout Hong Kong[1]	-								2			
Common Archduke	*Lexias pardalis*	Suspected species.[2] Widely distributed throughout Hong Kong.[1]	-								2			1
Common Sailer	*Neptis hylas*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-								2	1		
Short-banded Sailer	*Phaedyma columella*	Common.[2] Widely distributed throughout Hong Kong.[1]	-									1		1
Large Faun	*Faunis eumeus*	Common.[2] Widely distributed throughout Hong Kong.[1]	-								5	1		1
Banded Tree Brown	*Lethe confusa*	Common.[2] Widely distributed throughout Hong Kong.[1]	-								1			3
Bamboo Tree Brown	*Lethe europa*	Uncommon.[2] Widely distributed throughout Hong Kong.[1]	-											1
Dark Evening Brown	*Melanitis phedima*	Uncommon.[2] Widely distributed throughout Hong Kong.[1]	-								3			
Dark Brand Bush Brown	*Mycalesis mineus*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-		2	5	2	2	4		6	2		
South China Bush Brown	Mycalesis zonata	Common.[2] Widely distributed throughout Hong Kong.[1]	-						1		3			2
Common Five-ring	*Ypthima baldus*	Very Common.[2] Widely distributed throughout Hong Kong.[1]	-						2		6			3
Common Mime	*Chilasa clytia*	Common.[2] Widely distributed throughout Hong Kong[1]	-								2			
Common Bluebottle	*Graphium sarpedon*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-					1	1		2			
Chinese Peacock	*Papilio bianor*	Common.[2] Widely distributed throughout Hong Kong[1]	-								2			
Red Helen	*Papilio helenus*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-								2	1		
Great	*Papilio*	Very Common.[2] Widely distributed	-								3	1		

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1,2]	Conservation Status [1,3]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Mormon	*memnon*	throughout Hong Kong[1]												
Paris Peacock	*Papilio paris*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-		1			2			2			
Common Mormon	*Papilio polytes*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-		2	2		2	3		3		1	1
Spangle	*Papilio protenor*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-		1				2		2			1
Lemon Emigrant	*Catopsilia pomona*	Common.[2] Widely distributed throughout Hong Kong[1]	-		2						5	2		2
Red-base Jezebel	*Delias pasithoe*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-								1			1
Common Grass Yellow	*Eurema hecabe*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-	1		8	3		6		13	4		8
Great Orange Tip	*Hebomoia glaucippe*	Common.[2] Widely distributed throughout Hong Kong[1]	-						1		3			2
Indian Cabbage White	*Pieris canidia*	Very Common.[2] Widely distributed throughout Hong Kong[1]	-	4	3	20	18	21	21	4	30	4		4

Notes:

1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Chan *et al.* (2011). A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity. 21: 1-12.
3. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

Abbreviations:

- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix D Odonate (Dragonfly) species recorded within the Study Area

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Lesser Emperor	*Anax parthenope*	Common. Often found in lowland ponds and sluggish rivers. Widely distributed throughout Hong Kong.	-					1						
Orange-tailed Sprite	*Ceriagrion auranticum*	Abundant. Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.	-				2	2	2	1				
Common Bluetail	*Ischnura senegalensis*	Abundant. Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.	-					3	1					
Common Flangetail	*Ictinogomphus pertinax*	Common. Widely distributed in ponds and still water throughout Hong Kong.	-					2		1				
Blue Dasher	*Brachydiplax chalybea*	Common. Widely distributed in marshes and weedy ponds throughout Hong Kong.	-					3						
Asian Amberwing	*Brachythemis contaminata*	Abundant. Widely distributed in weedy ponds and sluggish streams.	-					2		3				
Coastal Glider	***Macrodiplax cora***	**Common. Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas.**	**Fellowes *et al.* (2002): Local Concern**					**12**						
Russet Percher	*Neurothemis fulvia*	Common. Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.	-					2	1	3				
Green Skimmer	*Orthetrum sabina sabina*	Abundant. Widely distributed in all wetland habitats throughout Hong Kong.	-	1				3	1	1				2
Wandering Glider	*Pantala flavescens*	Abundant. Widely distributed all over Hong Kong.	-	3		4		85	21	15			5	
Pied	*Pseudothemi*	Common. Widely distributed in	-					5		7				

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Skimmer	*s zonata*	woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.												
Variegated Flutterer	*Rhyothemis variegata arria*	Common. Widely distributed in marshes, ponds and tanks throughout Hong Kong.	-					10		2				
Evening Skimmer	*Tholymis tillarga*	Common. Widely distributed in marshes, weedy ponds and tanks throughout Hong Kong.	-							5				
Crimson Dropwing	*Trithemis aurora*	Abundant. Found in marshes, ponds, streams, andor even ornamental ponds in urban areas. Widely distributed throughout Hong Kong.	-				1	4	2	1				
Scarlet Basker	***Urothemis signata***	**Common. Common in areas with abandoned fish ponds throughout Hong Kong.**	**Fellowes *et al*. (2002): Local Concern**					**2**		**1**				
Dingy Dusk-darter	*Zyxomma petiolatum*	Common. Widely distributed in thick undergrowth, tree foliage and shady spots near water courses throughout Hong Kong.	-							3				
Regal Pond Cruiser	*Epophthalmia elegans*	Common. Always patrols along the edge of large ponds with a regular path. Widely distributed in reservoirs and large ponds throughout Hong Kong.	-					1						
Yellow Featherlegs	*Copera marginipes*	Abundant. Widely distributded in lowland streams, ditches, and weedy margins of pond throughout Hong Kong.	-					3		5				
Black Threadtail	*Prodasineura autumnalis*	Abundant. Often perches on the plants near streams. Widely distributed in streams throughout Hong Kong.	-				3		2	2				

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

Abbreviations:
- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix E Firefly species recorded within the Study Area

Common Name [1,2]	Scientific Name [1,2]	Rarity and Distribution in Hong Kong [1,2]	Conservation status [1,2]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Rimmed Window Firefly	*Pyrocoelia analis*	Widespread. Commonly seen in countryside, farmlands, abandoned farmlands, fish ponds, wetlands, occasionally even in the city, but less commonly seen in woodland areas.	-				2	3	1					

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Yiu, V. (2024). Hong Kong Fireflies. Retrieved from: http://fireflies.hk.

Abbreviations:
- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix F Reptile species recorded within the Study Area

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2,3,4,5,6,7]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Changeable Lizard	*Calotes versicolor*	Widely distributed throughout Hong Kong.	-								2	1		1
Chinese Stripe-necked Turtle	*Mauremys sinensis*	Exotic. Widely distributed and commonly found in reservoirs or ponds in urban parks.	IUCN Red List: Critically Endangered; CITES: Appendix III; List of Wild Animals under State Priority Conservation: Class II; Red List of China's Vertebrates: Endangered							1				
Red-eared Slider	*Trachemys scripta*	Widely distributed and commonly found in reservoirs or ponds in urban parks.	-					5		2				
Common Rat Snake	***Ptyas mucosus***	**Widely distributed throughout Hong Kong.**	**Cap. 586; Fellowes *et al.* (2002): Potential Reginal Concern; CITES: Appendix II; Red List of China's Vertebrates: Endangered**							**1**				
Four-clawed Gecko	***Gehyra mutilata***	**Widely but thinly distributed throughout Hong Kong.**	**Red List of China's Vertebrates: Vulnerable**						**3**					
Chinese Gecko	*Gekko chinensis*	Widely distributed throughout Hong Kong.	-						2		3			5
Bowring's Gecko	*Hemidactylus bowringii*	Distributed throughout Hong Kong.	-	1				2	10				3	
Long-tailed	*Eutropis*	Widely distributed	-				1							1

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2,3,4,5,6,7]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Skink	*longicaudata*	throughout Hong Kong.												
Reeve's Smooth skink	*Scincella reevesii*	Widely distributed in woodlands throughout Hong Kong.	-								2			

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Convention on International Trade in Endangered Species of Wild Flora and Fauna. Appendices I, II and III.
3. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
4. International Union of Conservation for Nature (2024). The IUCN Red List of Threatened Species.
5. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
6. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation
7. Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

Abbreviations:
- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix G Amphibian species recorded within the Study Area

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2,3,4]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Asian Common Toad	*Duttaphrynus melanostictus*	Widely distributed in Hong Kong.	-	1	2	1		4	7		3	2	3	1
Spotted Narrow-mouthed Frog	*Kalophrynus interlineatus*	Widely distributed from low to moderate altitudes in northern and central New Territories.	-								4			
Asiatic Painted Frog	*Kaloula pulchra*	Widely distributed in Hong Kong.	-		1		3	4	5		3			2
Ornate Pigmy Frog	*Microhyla fissipes*	Widely distributed in Hong Kong.	-				12		3		6			
Marbled Pigmy Frog	*Microhyla pulchra*	Widely distributed in Hong Kong.	-				5							
Paddy Frog	*Fejervarya limnocharis*	Widely distributed in Hong Kong.	-				7	3		5			4	
Chinese Bullfrog	**Hoplobatrachus chinensis**	**Widely distributed in Lantau Island and New Territories.**	**Fellowes *et al.* (2002): Potential Reginal Concern; List of Wild Animals under State Priority Conservation: Class II; Red List of China's Vertebrates: Endangered**				**1**							
Gunther's Frog	*Hylarana guentheri*	Widely distributed throughout Hong Kong.	-				3	11	2	4	1		1	
Brown Tree Frog	*Polypedates megacephalus*	Widely distributed throughout Hong Kong.	-	1			6	2	3	1	3			2
Greenhouse frog	*Eleutherodactylus planirostris*	Widely distributed throughout Hong Kong.	Exotic		5		11		15		16			

Notes:

1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Fellowes et al. (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
3. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
4. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

Abbreviations:

- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix H Bat species recorded within the Study Area using Ultrasonic Bat Detector

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1 4]	Conservation status [1,2,3,4,5]
Intermediate Horseshoe Bat	***Rhinolophus affinis***	**Uncommon. Widely distributed in countryside areas throughout Hong Kong. [1]**	**Fellowes *et al*. (2002): (LC) Cap. 170**
*Chinese Horseshoe Bat	*Rhinolophus sinicus*	Very common. Widely distributed in countryside areas throughout Hong Kong. [1]	Cap. 170
Chinese Pipistrelle	***Hypsugo pulveratus***	**Rare/Species of Conservation Concern. Only several records in the countryside areas at Ting Kau, Ma On Shan and Lin Ma Hang, and several records of stray individuals inside buildings. [1]**	**Fellowes *et al*. (2002): (LC) Cap. 170**
Greater Bent-winged Bat	***Miniopterus magnater***	**Common. Fairly wide distribution in HK. Over 1,000 individuals can be found present at the Lin Ma Hang abandoned mine caves in winter. [4] Data Deficient [1]**	**Fellowes *et al*. (2002): PRC Cap. 170**
Horsfield's Myotis	***Myotis horsfieldii***	**Rare/Species of Conservation Concern. Found in Shek Kong, Pak Tam Chung, Fung Yuen, Plover Cove, Pat Sin Leng and Shing Mun Country Parks. [1]**	**Fellowes et al. (2002): PRC Cap. 170**
Rickett's Big-footed Myotis	***Myotis ricketti***	**Common. Fairly widely distributed in countryside areas throughout Hong Kong. [1]**	**IUCN Red List: Vulnerable; Fellowes *et al.* (2002): (LC) Cap. 170**
Chinese Noctule	***Nyctalus plancyi***	**Common. Fairly widely distributed in countryside areas throughout Hong Kong. [1]**	**Fellowes *et al*. (2002): PRC Cap. 170**
*Japanese Pipistrelle	*Pipistrellus abramus*	Very common. Widely distributed throughout Hong Kong. [1]	Cap. 170
*Least Pipistrelle	*Pipistrellus tenuis*	Uncommon. Ten-something records found in Nam Chung, Sheung Wo Hang, Lin Ma Hang, Plover Cove Country Park, Yuen Long, Shek Pik, Deep Water Bay, Ho Pui and Ho Chung. [1]	Cap. 170
Lesser Bamboo Bat	***Tylonycteris pachypus***	**Very common. Fairly widely distributed in countryside areas throughout Hong Kong. [1]**	**Fellowes *et al*. (2002): (LC) Cap. 170**

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Fellowes *et al.* (2002). Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong.
   - For conservation status listed by Fellowes et al. (2002), letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
3. International Union of Conservation for Nature (2024). The IUCN Red List of Threatened Species.
4. Shek (2006). A Field Guide to the Terrestrial Mammals of Hong Kong.

5. Wild Animals Protection Ordinance (Cap. 170)

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

*All the bat species in Hong Kong are protected by Cap. 170. Bat species with * indicates that they are not regarded as species of conservation importance despite being protected by Cap. 170, as they are common and/or without other local conservation status.

Abbreviations:
- Protection or conservation status: LC = Local Concern; PRC = Potential Regional Concern

Appendix I Mammal species recorded within the Study Area by Active Search Survey

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2,3]	Application Site			Within Study Area but outside the Application Site							
				DA	PL	WA	AG	CH	DA	ME	PL	SG	WA	WO
Domestic Ox	*Bos taurus*	Widely distributed in forested areas throughout Hong Kong, except northwest N.T. and Hong Kong Island.	-				1							
Domestic Dog	*Canis lupus familiaris*	Widely distributed in urban and countryside areas throughout Hong Kong.	-						4		3		3	
Domestic Cat	*Felis catus*	Widely distributed in urban and forested areas throughout Hong Kong.	-					1	16		2		2	
Small Asian Mongoose	***Herpestes javanicus***	**Fairly widely distributed in countryside areas in the New Territories.**	**Cap. 170; Red List of China's Vertebrate: Vulnerable**								**1**			
^Pallas's Squirrel	*Callosciurus erythraeus*	Fairly widely distributed, with the styani subspecies found in the New Territories (e.g. Tai Lam, Shing Mun and Tai Po Kau), and the thai subspecies found on the Hong Kong Island (e.g. Tai Tam and Pok Fu Lam).	Cap. 170		4						6			8
*Japanese Pipistrelle	*Pipistrellus abramus*	Widely distributed throughout Hong Kong.	Cap. 170						2				2	

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
3. Wild Animals Protection Ordinance (Cap. 170)

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

[#] All the bat species in Hong Kong are protected by Cap. 170. Bat species with * indicates that they are not regarded as species of conservation importance despite being protected by Cap. 170, as they are common and/or without other local conservation status.
^ Pallas's Squirrel is an introduced species thus it is not considered as a species of conservation importance

Abbreviations:
- Habitats: AG = Agricultural Land; CH = Channel; DA = Developed Area; ME = Meander; PL = Plantation/village/orchard; SG = Shrubland/Grassland; WA = Wasteland; WO = Mixed woodland

Appendix J Mammal species recorded within the Study Area using Infrared Camera Trapping Method

Common Name [1]	Scientific Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation status [1,2,3,4,5,6]
Leopard Cat	***Prionailurus bengalensis***	**Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island.**	**Cap. 170; Cap. 586; CITES: Appendix II; List of Wild Animals under State Priority Conservation: Class II; Red List of China's Vertebrate: Vulnerable**
Domestic Dog	*Canis lupus familiaris*	Widely distributed in urban and countryside areas throughout Hong Kong.	-
Domestic Cat	*Felis catus*	Widely distributed in urban and forested areas throughout Hong Kong.	-
Small Asian Mongoose	***Herpestes javanicus***	**Fairly widely distributed in countryside areas in the New Territories.**	**Cap. 170; Red List of China's Vertebrate: Vulnerable**
Unknown Rodent Species	-	**-**	**-**
Pallas's Squirrel*	*Callosciurus erythraeus*	Fairly widely distributed, with the styani subspecies found in the New Territories (e.g. Tai Lam, Shing Mun and Tai Po Kau), and the thai subspecies found on the Hong Kong Island (e.g. Tai Tam and Pok Fu Lam).	Cap. 170
Eurasian Wild Pig	*Sus scrofa*	Very widely distributed in countryside areas throughout Hong Kong.	**-**

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. Convention on International Trade in Endangered Species of Wild Flora and Fauna. Appendices I, II and III.
3. Jiang, Z. G., Jiang, J. P., Wang, Y. Z., Zhang, E., Zhang, Y. Y., Li, L. L., ... & Dong, L. (2016). Red list of China's vertebrates.
4. National Forestry and Grassland Administration and the Ministry of Agricultural and Rural Affairs. (2023). List of Wild Animals under State Priority Conservation
5. Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
6. Wild Animals Protection Ordinance (Cap. 170)

- **Species in bold are considered of conservation importance. Only the protection and/or conservation status of species fulfilling the criteria of being considered of conservation importance according to Note 3 of Annex 16 of EIAO-TM will be supplemented.**

* Pallas's Squirrel is an introduced species thus it is not considered as a species of conservation importance

Appendix K Freshwater aquatic fauna recorded within the Study Area

Scientific Name [1]	Common Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation Status [1,2]	Within Study Area but outside the Application Site	
				ME	CH
				Relative Abundance	
Fish					
Channa maculata	Blotched snakehead	Uncommon in the wild. Records from a few streams in North District, Tuen Mun, on Hong Kong and Lantau Island. It is a relatively important food fish and cultivated in some fish farms. The fish is also available in local fish market.	-		++
Channa striata	Snakehead murrel	Uncommon in the wild and is an introduced species. Records from a few streams in North District and on Lantau Island.	-	+	+
Clarias gariepinus	North African catfish	Exotic.	-	+	++
Cyprinus carpio	Common Carp	Not common in streams but occurs in many reservoirs and cultivated in fishponds as food fish.	IUCN Red List Status: Vulnerable*		+
Gambusia affinis	Mosquito fish	Introduced as a mosquito-control agent, widespread in local freshwater bodies	-	+	+
Misgurnus anguillicaudatus	Oriental Weatherfish	Records from streams and marshes throughout Hong Kong.	-	+	
Oreochromis mossambicus	Mozambique Tilapia	Widespread in brackish waters, freshwater ponds, ditches, rivers and reservoirs. The fish is also cultivated in some local fish farms.	-	+++	+++
Oreochromis niloticus	Nile Tilapia	A widespread species occurring in most local streams, rivers and reservoirs. The fish is also cultivated in some fish farms.	-	+++	+++

Scientific Name [1]	Common Name [1]	Rarity and Distribution in Hong Kong [1]	Conservation Status [1,2]	Within Study Area but outside the Application Site	
				ME	CH
				Relative Abundance	
Pterocryptis anomala	-	North District, Tai Po, Tsuen Wan, Sai Kung, and on Lantau Island.	-	+	
Tilapia zillii	Redbelly Tilapia	Records from streams, rivers and estuaries throughout Hong Kong.	-	++	+++
Invertebrate					
Caridina cantonensis	Canton Bee Shrimp	-	-	++	+
Enithares sp.	-	-	-	+	+
Macrobrachium sp.	-	-	-	+	+
Pomacea canaliculata	Apple Snail	-	-	++	+++
Ptilomera tigrina	-	-	-	+	+

Notes:
1. Agriculture, Fisheries and Conservation Department (2022). Species Database of the Hong Kong Biodiversity Information Hub.
2. International Union of Conservation for Nature (2024). The IUCN Red List of Threatened Species.

Abbreviations:
- Habitats: CH = Channel; ME = Meander
- Relative abundance: + = Sparse; ++ = Occasional; +++ = Common

* Common Carp, *Cyprinus carpio*, is listed as “Vulnerable” in the IUCN Red List Status. However, Common Carp is not common in streams but occurs in many reservoirs and cultivated in fishponds as food fish. The recorded individuals are believed to be released into the Channel, thus, it is not considered of conservation importance