Planning Application for Proposed Comprehensive Development Scheme to include Wetland Restoration Proposal and Proposed Filling of Ponds/Land and Excavation of Land in "OU(CDWRA)" Zone at Various Lots in D.D. 104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories

Ecological Impact Assessment

1. INTRODUCTION

1.1.1 The Application Site **(Figure 1)** has a total area of about 5.1ha, which is located to the north of Kam Pok Road East and about 130m to the east of an existing drainage channel (namely Ngau Tam Mei Drainage Channel). There are some abandoned ponds located within and adjacent to the Application Site.

1.1.2 The Application Site is zoned as "Other Specified Uses" annotated "Comprehensive Development to Include Wetland Restoration Area" ("OU(CDWRA)") under the OZP (S/YL-NSW/8). This zone is intended to provide incentive for the restoration of existing degraded wetlands and fish ponds through comprehensive residential and/or recreational development scheme that includes a Wetland Restoration Area. Hence, a Wetland Restoration Proposal is also submitted under the same application, to fulfil the planning intention through the provision of a wetland restoration area.

1.1.3 Currently the Application Site contains abandoned ponds and paved or vacant land area. The Application Site is outside the Wetland Conservation Area (WCA) but about 70% of the area falls within the Wetland Buffer Area (WBA).

1.1.4 This Ecological Impact Assessment (EcoIA) for the proposed project (hereafter the "Project") aims to provide essential and updated ecological information in association with the Application Site, of which the ecological baseline condition are used to perform an adequate impact assessment and develop a mitigation plan to fulfill the S16 Application requirements, and to provide ecological conservation input for the planning and design of the Project so as to be in line with the planning intention of the area.

1.1.5 A 12-month ecological survey was carried out to collect the information within the Study Area of the previous application, of which the location and area size of the Application Site are the same as that in the Application. The surveys were carried out for collecting the ecological information of the habitat, flora, and fauna. Particular focuses, including the dry season flight path of waterbird, were put on the avifauna habituated in the vicinity of Study Area and also the Application Site due to the presence of wetland habitats. Verification surveys were carried out in dry season (from December 2022 to January 2023) to verify the ecological baseline information collected in the previous ecological survey, to provide updated information for the current application. The results of the verification surveys and the adequate impact assessment are also included in this EcoIA report.

2. RELEVANT LEGISLATION AND GUIDELINES

2.1.1 The HKSAR ordinances and regulations relevant to this EcoIA include the following:

- Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislation, the Forestry Regulations (Cap. 96A);
- Town Planning Ordinance (Cap. 131);
- Wild Animals Protection Ordinance (WAPO, Cap. 170);
- Environmental Impact Assessment Ordinance (Cap. 499) and the associated Technical Memoranda, and
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)

2.1.2 Ecological assessment also makes reference to the following guidelines and standards as well as international conventions:

- Hong Kong Planning Standards and Guidelines (HKPSG) Chapter 10, "Conservation";
- Town Planning Board Planning Guidelines No. 12C (TPB PG-NO. 12C) – Application for Developments Within Deep Bay Area;

- Ecological Baseline Survey For Ecological Assessment (EIAO Guidance Note No. 7/2010);
- Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys (EIAO Guidance Note No. 10/2010);
- PELB Technical Circular 1/97 / Works Branch Technical Circular 4/97, "Guidelines for Implementing the Policy on Off-site Ecological Mitigation Measures";
- ETWB Technical Circular (Works) No. 5/2005, "Protection of natural streams/rivers from adverse impacts arising from construction works";
- Relevant wildlife protection laws of the PRC;
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the "Ramsar Convention"), which requires parties to conserve and make wise use of wetland areas, particularly those supporting waterfowl populations;
- United Nations Convention on Biological Diversity, which requires parties to regulate or manage biological resources important for the conservation of biological diversity, to promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species; and
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

2.1.3 In accordance with Table 3, Annex 8 in the TM-EIAO, the ecological value of species was assessed in terms of protection status, distribution and rarity. Flora or fauna species protected by the following laws/regulations, listed under the following conventions and/or endemic to Hong Kong were considered to be species of conservation importance. However, this excludes exotic weeds, escaped cultivars or captive species, vagrants and introduced species which have lower ecological value. Species which are classified by IUCN as Least Concern (LC), Near Threatened (NT), Data Deficient (DD), or Not Evaluated (NE), and not covered by any other laws/regulations/conventions are not considered of conservation importance in the present study.

- Forestry Regulations (Cap. 96A) which are subsidiary legislation of the Forests and Countryside Ordinance (Cap. 96);

- Wild Animals Protection Ordinance (Cap. 170) (except birds as all wild birds are protected under the ordinance but their conservation importance is not equal)
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586);
- Category I or II protected species in mainland China;
- Threatened Species List of China's Higher Plants (Qin *et al*. 2017);
- Red List of China's Vertebrates. (Jiang *et al*. 2016).
- The International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species;
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- Plant species considered 'Rare' or 'Very Rare' listed by Corlett *et al*. (2000) or Yip *et al*. (2010) where applicable; and
- Fauna species considered of concern in Fellowes *et al*. (2002).

3. KEY ECOLOGICAL RESOURCES/ISSUES

3.1.1 Key ecological resources identified include the following:

- Wetland Conservation Area (WCA) and Wetland Buffer Area (WBA);
- Recognized sites of conservation importance, including Mai Po and Inner Deep Bay Ramsar Site, Mai Po Nature Reserve, Mai Po Village SSSI and Mai Po Marshes SSSI;
- Wetlands including active and abandoned ponds, and main drainage channels;
- Roosting, breeding and feeding sites for wetland birds; and
- Any other habitats identified as having special conservation interests

from reviewed literature or this study.

4. SURVEY METHODOLOGY

4.1.1 The Study Area for the purpose of terrestrial and aquatic ecological impact assessment includes all areas within 500m distance from the Application Site boundary **(Figure 1)**.

4.1.2 Relevant literature including previous ecological assessment reports and Hong Kong biodiversity database were reviewed. The field survey programme, with focus primarily on the Application Site and secondarily on

the Study Area, covered a 12-month period from June 2019 to May 2020, fulfilling the requirements stipulated in TPB PG-NO. 12C (i.e. covering not less than 12 months and covering both wet and dry seasons), to record ecological data within the Study Area and establish the ecological profile for incorporation into the assessment. In addition to day-time surveys, night-time surveys were also conducted to record nocturnal fauna including birds, herpetofauna and mammals.

4.1.3 Verification surveys were token place to obtain the ecological information of the Study Area and the Application Site in dry season from December 2022 to January 2023, including the ecological condition and the faunal species of the Application Site. Particular attention was paid to any faunal species of conservation importance and also the avifauna habituated in wetland habitats within the Application Site, that are most likely to be impacted by the proposed development generally. Survey methodology of each item is described in the following sections.

4.2 *HABITAT AND VEGETATION*

4.2.1 Habitats within the Study Area were mapped based on aerial photos and ground truthing. Walk-over surveys were conducted at representative areas in each habitat type. Vascular plant species in each habitat type were identified (with the aid of binoculars when necessary) and their relative abundance were recorded, with special attention to rare and protected species. Color photographs were taken of all habitats encountered on site and of ecological features of special importance. Habitat map within the Study Area was produced at the required scale using GIS software. Nomenclature of vascular plant species follows Hong Kong Herbarium (2019), whilst their rarity in Hong Kong follows Corlett *et al*. (2000) and Yip *et al*. (2010) where applicable.

4.3 *AVIFAUNA*

4.3.1 Birds within the Study Area were surveyed quantitatively in each month using transect count method. All birds seen or heard were identified and their abundance recorded. Signs of breeding (e.g. nests, recently fledged juveniles) were also recorded. As some birds (e.g., owls, nightjars) are nocturnal, night surveys were conducted. Nocturnal birds were identified by active searching using spot-light and by their calls. Ornithological nomenclature in this report followed the latest version of List of Hong Kong Birds by Hong Kong Bird Watching Society (HKBWS).

4.4 *DRY SEASON FLIGHT PATH SURVEY*

4.4.1 The site is far away from any known egretry (about 2.3km from Shan Pui River Egretry, about 2.8km from Mai Po Village Egretry and about 2.4km from Tung Shing Lane Egretry (which was abandoned in 2021 breeding season). Previous study showed that the breeding egrets from Mai Po Village Egretry flew towards Mai Po, Tam Kon Chau or other nearby wetlands to forage (ENVIRON Hong Kong Limited. 2013), while the breeding egrets from Tung Shing Lane Egretry flew towards downstream section of Kam Tin River Drainage Channel and Nam Sang Wai (AEC 2017). Hence, flight path survey only focused on the overwintering birds (i.e. dry season) instead of breeding ardeids in wet season. Flight path surveys were conducted four times in dry season between January 2020 and February 2020, which were undertaken continuously for 1.5 hours by surveyors inside the Application site. The flight paths of the major species of conservation importance over the Application Site were observed (included waterbirds, bird of prey, shorebirds, starlings). The heights and directions of flying birds observed were also recorded. Verification surveys of the dry season flight path were also taken placed from December 2022 to January 2023, to confirm if there is any major flight path crosses over the Application Site (included waterbirds, bird of prey, shorebirds, starlings).

4.5 *OTHER TERRESTRIAL FAUNA*

4.5.1 Mammals within the Study Area were surveyed qualitatively. All sightings, tracks, and signs of mammals found were recorded. As some mammal species (e.g., bats) are nocturnal, night surveys were conducted. Nocturnal mammals were searched using spot-light. Nomenclature of mammal followed Shek (2006).

4.5.2 Herpetofauna within the Study Area were surveyed qualitatively. All reptiles and amphibians sighted were recorded. As herpetofauna are mostly nocturnal, night surveys were carried out. Potential microhabitats of herpetofauna such as wall, fallen logs, litter, channel/nullah, fishpond margins, underneath of stones or other materials, artificial container (e.g., pots) were searched during surveys to locate cryptic or secretive herpetofauna species. Amphibians were also identified by their calls during night surveys. Nomenclature of amphibian followed Chan *et al*. (2005) and reptile followed Karsen *et al*. (1998).

4.5.3 Dragonflies and butterflies within the Study Area were surveyed quantitatively using the transect method. Dragonflies and butterflies observed were identified and recorded. Individuals needed to be identified in close distance were netted. Dragonflies and butterflies encountered outside survey transects but within the Study Area were also recorded in order to produce a complete species list. Nomenclature of dragonfly followed Tam *et al*. (2011) and nomenclature of butterfly followed Chan *et al*. (2011).

4.6 *AQUATIC FAUNA*

4.6.1 Aquatic fauna (such as freshwater fish and invertebrates) within the Study Area were studied once in dry season and once in wet season by direct observation only as the majority of water bodies are fishponds which are all private property. Direct observations were also made at other aquatic habitats within the Study Area.

4.6.2 Location of terrestrial fauna survey transects and sampling points of aquatic fauna survey are shown in **Figure 2**. Survey schedule between June 2019 and May 2020, and the verification for avifauna from December 2022 to January 2023 is shown in **Table 1**.

Table 1 Ecological Survey Programme

Month	2019							2020					2022	2023
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Dec	Jan
Habitat and Vegetation	√				√	√	√							√
Bird	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Bird : Dry season flight Path Survey								√	√					√
Mammal	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Herpetofauna	√	√	√	√	√	√	√	√	√	√	√	√	√	√
*Night Survey for Terrestrial Fauna				√					√			√		√
Butterfly & Dragonfly	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Aquatic fauna				√					√					√

* for mammal, bird and herpetofauna

5. RESULTS OF LITERATURE REVIEW

5.1 *RECOGNIZED SITES OF CONSERVATION IMPORTANCE / LAND ZONINGS*

5.1.1 About 70 % of the Application Site falls within the Wetland Buffer Area (WBA) **(Figure 1).** The planning intention of WBA is to protect the ecological integrity of the fishponds and wetlands within the Wetland Conservation Area (WCA) and to prevent development that would have a negative off-site impact on the ecological value of those fishponds. The Application Site is about 176m from the boundary of WCA.

5.1.2 WCA comprises of the existing and contiguous, active or abandoned fishponds in the Deep Bay Area. The planning intention of WCA is to conserve the ecological value of the fishpond which form an integral part of

the wetland ecosystem in the Deep Bay Area. A buffer area of about 500m along the landward boundary of the WCA is designated as WBA. The planning intention of WBA is to protect the ecological integrity of the fishponds and wetlands within the Wetland Conservation Area (WCA) and to prevent development that would have a negative off-site impact on the ecological value of those fishponds.

5.1.3 Regarding development application, new development within the WCA will not be allowed unless it is required to support the conservation of the ecological value of the area or the development is essential infrastructural project with overriding public interest, while development or redevelopment in the WBA would require an ecological impact assessment to demonstrate there would not be negative impacts on the ecological value of the WCA, with or without mitigation measures.

5.1.4 Other recognised sites of conservation importance in Northwest New Territories included the Mai Po Inner Deep Bay Ramsar Site, Mai Po Nature Reserve, Mai Po Marshes SSSI, Mai Po Village SSSI and Mai Po Village Egretry.

5.1.5 About 1,500ha of wetland in the Mai Po and Inner Deep Bay region was designated as a Ramsar Site on 4 September 1995. The wetland habitats in the Ramsar Site included intertidal mudflats, mangroves, tidal shrimp ponds (gei wais), fishponds and reedbeds. The site serves as an important over-wintering and refuelling station site for the migratory waterbirds.

5.1.6 Mai Po Nature Reserve comprises gei wais, fishponds and extensive area of mangroves and mudflat. This reserve provides important habitats for waterbirds and other wildlife (e.g., Eurasian Otter).

5.1.7 Mai Po Marshes SSSI was designated in 1976. It holds an important area of dwarf mangrove as well as the largest reedbeds and (semi-) tidal open water habitats derived from gei wai shrimp ponds. The productive seral community and man-made gei wai provide important foraging sites for both resident and migratory birds as well as supporting diverse fauna and flora.

The SSSI is located entirely within the Ramsar Site. This SSSI is located approximately 1.42 km from the Application Site.

5.1.8 The Mai Po Village SSSI is a piece of fung shui woodland of size about 5.3ha behind the Mai Po Village, and is about 2.84km from the boundary of the Application Site. This woodland provides nesting habitats for a number of ardeid species. It has been noted that before 2013, the nesting colony has extended to the area outside the Mai Po Village SSSI.

5.1.9 Nesting population of ardeids in Hong Kong was annually surveyed by The Hong Kong Bird Watching Society since 1998. The nesting ardeid populations at Mai Po Village Egretry between 2014 and 2021 (i.e. available information in the recent 7 years) are shown in **Table 2**. Five ardeid species have been recorded nesting in the Mai Po Village egretry since 1998. Except 2015 with one nest of Eastern Cattle Egret, only Little Egret and Chinese Pond Heron nested in this egretry between 2014 and 2021.

5.1.10 Tung Shing Lane Egretry was first reported in 2001. It is located at several trees on fishpond bunds and near village houses in Tung Shing Lane village. The TSL Egretry was the third largest egretry in 2018 census, with 84 nests which accounted for 7.8% of the total number of the nests in Hong Kong in that year (Anon 2019). However, hard pruning of trees within the nesting area in previous years was noted in the egretry in May 2019, while Typhoon Mangkhut resulted in thinning of vegetation in the same egretry (Anon 2020). According to the census data provided by HKBWS the number of ardeid nests in TSL Egretry decreased by 22.6% from 2018 to 2019 (Anon 2020). Two ardeid species were recorded nesting in this egretry between 2015 and 2020, including Little Egret and Chinese Pond Heron. This egretry however was abandoned in 2021.

Table 2a Nesting Populations of Ardeid in Mai Po Village Egretry between 2015 and 2020 (data from Anon. 2015, 2016, 2017, 2018, 2020a and 2020b, Wong and Kwok 2002, Wong 2002, Wong and Woo 2003)

Year	Little Egret	Chinese Pond Heron	Eastern Cattle Egret	Total nests (% of total in Hong Kong)
2015	104	131	1	236 (16.6%)
2016	72	130	-	202 (16.2%)
2017	99	140	-	239 (19.2%)
2018	99	123	-	222 (20.5%)
2019	91	68	-	159 (9.7%)
2020	70	43	-	113 (5.8%)
2021	54	8	-	62 (3.4%)

*There were historical records of nesting of Cattle Egret and Great Egret before 2014

Table 2b Nesting Populations of Ardeid from Tung Shing Lane Egretry between 2015 and 2020 (data extracted from Anon. 2015, 2016, 2017, 2018, 2020a and 2020b.)

Year	Little Egret	Chinese Pond Heron	Total nests (% of total in HK)
2015	30	47	77 (5.4%)
2016	20	41	61 (4.9%)
2017	21	61	82 (6.6%)
2018	49	35	84 (7.8%)
2019	27	38	65 (4.0%)
2020	16	20	36 (1.9%)

5.1.11 Foraging ecology of Little Egret and Chinese Pond Heron nesting in Mai Po Village Egretry was studied previously (Wong 2002, Young 1998, City University of Hong Kong. 2001). Fishpond was the most frequently used habitat by both species. Drained fishponds are particularly attractive to Little Egret (Young 1998). The average distances flown by Little Egret and Chinese Pond Heron were 2.1km and 1.6km respectively (Wong 2002, Young 1998). Foraging ecology of Little Egret and Chinese Pond Heron in Mai Po Village Egretry was also studied in 2011 during the EIA study of "Proposed Residential Cum Passive Recreation Development within "Recreation" Zone and "Residential (Group C)" Zone at Various Lots in DD 104, Yuen Long, N.T." (ENVIRON Hong Kong Limited. 2013). Most breeding birds of these two species took off from the Mai Po Village Egretry flew towards Mai Po, Tam Kon Chau or other nearby wetlands to forage.

Hence, the utilization of the fishponds within/near the Application Site by breeding ardeids as foraging habitats is expected to be low given their location and the abandoned status.

5.2 *REVIEW OF PREVIOUS STUDIES*

5.2.1 A study on the evaluation of measure in prevention of predation of Great Cormorant on commercial fishponds was previously conducted by AFCD between December 2006 and February 2007 (Anon. 2008) covered some of the ponds near the present Application Site, general utilization by waterbirds was also described in the study. Abundance of ardeids on these ponds was found very low (*ibid*.), probably due to the high disturbance level from the surrounding container sites at that time.

5.2.2 Ecological surveys were conducted from July 2011 to June 2012 for a previous S16 application (A/YL-NSW/216) covering the majority of the present Application Site (excluding the fishpond area). The study area was slightly smaller than the Study Area of the present Project. Seven types of habitats were identified, including Urbanised/Disturbed, Wasteland, Plantation, fishpond (active & abandoned), Flood Storage Pond, Drainage channel and Nullah. No plant species of conservation importance was recorded. Japanese Pipistrelle *Pipistrellus abramus* is the mammal species of conservation importance. Bird species of conservation importance included Little Grebe *Tachybaptus ruficollis*, Great Cormorant *Phalacrocorax carbo*, Grey Heron *Ardea cinerea*, Great Egret *Egretta alba*, Little Egret *Egretta garzetta*, Chinese Pond Heron *Ardeola bacchus*, Black-crowned Night Heron *Nyctcorax nycticorax*, Yellow Bittern *Ixobrychus sinensis*, Eurasian Wigeon *Anas penelope*, Common Teal *Anas crecca*, Northern Shoveler *Anas clypeata*, Black Kite *Milvus migrans*, Peregrine Falcon *Peregrinus falco*, Pheasant-tailed Jacana *Hydrophasianus chirurgus*, Black-winged Stilt *Himantopus himanopus*, Pied Avocet *Recurvirostra avosetta*, Pacific Golden Plover *Pluvialis dominica*, Little Ringed Plover

Charadrius dubius, Spotted Redshank *Tringa erthropus*, Marsh Sandpiper *T. stagnatilis*, Common Greenshank *T. nebularia*, Wood Sandpiper *T. glareola*, Pied Kingfisher *Ceryle rudis*, Greater Coucal *Centropus sinensis*, Red-billed Starling *Spodiopsar sericeus*, White-shouldered Starling *Sturnia sinensis* and Collared Crow *Corvus torquatus*, These bird species of conservation importance (mostly ardeids in terms of abundance) were mostly recorded in fishponds and channel/nullah. Other recorded fauna species of conservation importance included Scarlet Basker *Urothemis signata* and Coastal Glider *Macrodiplax cora*. These two dragonfly species were present in low numbers in fishponds and channel/nullah outside the Application Site.

5.2.3 The Study Area of the present Project also overlapped / near other previous EIA/EcoIA studies including:

- "Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 2";
- "Construction of Cycle Tracks and the Associated Supporting Facilities From Sha Po Tsuen to Shek Sheung River";
- "Proposed Residential cum Passive Recreational Development within "Recreation" ("REC") Zone and "Residential (Group C)" Zone at Various Lots in DD 104, Yuen Long, N.T." (hereafter REC Site EIA);
- "Residential Development within R(D) Zone at Various Lots in DD104, Yuen Long, N.T." (hereafter R(D) Site EcoIA);
- "Comprehensive Development and Wetland Protection near Yau Mei San Tsuen" (hereafter Yau Mei Site EIA); and
- Proposed Low-rise and Low-density Residential Development at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T. (hereafter East Kam Pok Site EIA)
- S16 Planning Applications for Proposed Residential Development cum Wetland Restoration Area in Lots 3719 SC RP and 3681 in

DD104, Kam Pok Road, Yuen Long, NT (hereafter West Pok Wai Site EcoIA)

5.2.4 There was no significant observation in the Study Area of the Project from the EIA studies of "Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 2" (EIA-094/2004) and "Construction of Cycle Tracks and the Associated Supporting Facilities From Sha Po Tsuen to Shek Sheung River" (EIA-159/2008).

5.2.5 Twelve waterbird species of conservation importance, including Little Grebe *Tachybaptus ruficollis*, Yellow Bittern *Ixobrychus sinensis*, Eastern Cattle Egret *Bubulcus coromandus*, Great Egret *Ardea alba*, Little Egret *Egretta garzetta*, Chinese Pond Heron *Ardeola bacchus*, Black-crowned Night Heron *Nycticorax nycticorax*, Grey Heron *Ardea cinerea*, Purple Heron *Ardea purpurea*, Great Cormorant *Phalacrocorax carbo*, Black-winged Stilt *Himantopus himantopus*, Pied Kingfisher *Ceryle rudis* were recorded at the fishponds to the northeast of the Application Site during the East Kam Pok Site EIA (Ramboll 2017) and the west Pok Wai EcoIA (to support Planning Applications for Proposed Residential Development in Lot YL3719SC in DD104 Kam Pok Road). These species were present in low abundance. Little Grebe *Tachybaptus ruficollis*, Yellow Bittern *Ixobrychus sinensis*, Chinese Pond Heron *Ardeola bacchus*, Black-crowned Night Heron *Nycticorax nycticorax*, Great Egret *Ardea alba*, Little Egret *Egretta garzetta*, Great Cormorant *Phalacrocorax carbo* were recorded in the fishponds within the Application Site in Planning Applications for Proposed Residential Development in Lot YL3719SC in DD104 Kam Pok Road. Other bird species of conservation importance included Black Kite *Milvus migrans*, Eastern Buzzard *Buteo japonicus*, Peregrine Falcon *Falco peregrinus*, Greater Coucal *Centropus sinensis*, Collared Crow *Corvus torquatus*, Red-billed Starling *Spodiopsar sericeus*.

5.2.6 Flight paths of birds were conducted in the latter four EIA/EcoIA studies. The flight path surveys mainly focused on large waterbirds, which are

considered of lower flight maneuverability and hence would be more vulnerable to barrier to flight. According to the observations, there is a major flight corridor of large waterbirds above the Ngau Tam Mei Main Drainage Channel. Flight heights were described in the East Kam Pok Site EIA and R(D) Site EcoIA. The waterbirds observed in the R(D) Site EcoIA (mostly Great Cormorant) were mostly flying at heights at heights of 24m above ground (AEC 2014, Ramboll 2017). In the East Kam Pok Site EIA, large waterbird species were flying at heights ranged between 15m and 34m above ground, with a mean of 22m.

5.2.7 Part of the Ngau Tam Mei Drainage Channel within the Study Area of the current study was studied in the RD Site EIA and East Kam Pok Site EIA. Upstream section of the Ngau Tam Mei Drainage Channel outside the Study Area of the current study was studied in the R(D) Site EcoIA and Yau Mei Site EIA. High counts of ardeids (e.g., Great Egret, Little Egret) were recorded at the Ngau Tam Mei Drainage Channel during the R(D) Site EcoIA, REC Site EIA and East Kam Pok Site EIA. The endangered bird species, Black-faced Spoonbills were also recorded during the REC Site EIA and East Kam Pok Site EIA.

6. RESULTS OF FIELD SURVEYS

6.1 *HABITAT AND VEGETATION*

6.1.1 Eleven types of habitats were identified within the Study Area, namely abandoned pond, active agricultural land, active pond, developed area, drainage channel, flood storage pond, meander, nullah, plantation, wasteland and woodland **(Figure 3).** Representative photos of the habitats are presented in **Figure 4**. Plant species and their relative abundance within each habitat are listed in **Appendix 1**. The Application Site encompasses developed areas and abandoned ponds of varying sizes adjoining each other, with Kam Pok Road East bordering its south and Man Yuen Chuen

sitting to its west. The ecological condition of the habitat and vegetation of the Study Area was found comparable to that of the previous application.

Abandoned Pond

6.1.2 Clusters of abandoned ponds with varying sizes scattered within the Study Area and were mostly fragmented from each other **(Figure 3)** and drained. The floristic diversity of the abandoned ponds was generally low.

6.1.3 Some abandoned ponds were drained with limited water level. *Cyclosorus interruptus*, *Ipomoea aquatica* and *Mikania micrantha*, which are competitively advantageous over native species in colonizing and establishing after the ponds were drained, readily colonized these abandoned ponds.

6.1.4 Some of the abandoned ponds were still left with water at a water level similar to that of active ponds. The bunds of these abandoned ponds were grown with fruit tree species typically associated with villages in Hong Kong, such as *Dimocarpus longan* and *Litchi chinensis*.

6.1.5 The conditions of the abandoned ponds within the Application Site were generally similar to the ones within the Study Area. However, signs of pond bund renovation, pond reprofiling, vegetation management and fisheries activities were observed recently.

Active Agricultural Land

6.1.6 Active agricultural land associated with village settlements was identified to the east of San Tam Road within the Study Area **(Figure 3).** Crop and fruit tree species (e.g. *Dimocarpus longan*, *Musa x paradisiaca* and *Prunus persica*) were cultivated. *Prunus persica* was abundantly cultivated in December 2019.

Active Pond

6.1.7 Active ponds operated by villagers were all outside the Application Site but within the Study Area **(Figure 3).** Along the bunds of the active ponds, a few fruit trees *Artocarpus heterophyllus* and *Musa* x *paradisiaca* were cultivated and vegetative cover composed of grasses and exotic weeds was formed. The active ponds observed were in groups.

Developed Area

6.1.8 Developed areas within the Study Area comprise residential properties (Fairview Park to the northwest), villages, roads, highways, nurseries with paved concrete ground, public utilities and open storage grounds **(Figure 3).** Major villages within the Study Area include Wing Kei Tsuen to the southwest of the Study Area and part of Mo Fan Heung to the southeast of the Study Area. Fruit trees *Dimocarpus longan* and *Litchi chinensis* were planted next to villages by villagers. Nurseries monodominantly cultivated with *Prunus persica* were observed to the east of San Tam Road within the Study Area. Subject to clearance, the margin of agricultural land was disturbed and colonized by exotic weeds like *Bidens alba*.

Drainage Channel

6.1.9 A channelized and diverted route of Kam Tin River flows from southwest to the northwest of the Study Area **(Figure 3).** Tributaries in the middle and lower courses of Kam Tin River were channelized in the 1990s. The widened and straightened nature of the diverted route increase the capacity of discharging rainwater and thereby alleviate flood risk. Its bed and bank of were lined with grasscrete and a series of in-channel ponds were built along it. Water levels were maintained by a dam at the confluence with the major section of Kam Tin River outside the Study Area. Paved environment resulted in low floristic diversity.

Flood Storage Pond

6.1.10 A flood storage pond is present at Pok Wai Flood Water Pumping Station **(Figure 3)** for controlling the quantity and quality of stormwater runoff, and thereby discharge stored upstream runoff to downstream at a limited flow rate. The bunds of the flood storage pond was readily colonized by exotic weeds in the likes of *Bidens alba*, *Lantana camara*, *Leucaena leucocephala* and *Panicum maximum*.

Meander

6.1.11 A meander flowing along the southwest of the Study Area was connected to the aforementioned channelized section of Kam Tin River **(Figure 3).** This meander is at the tail end of the pre-existing Kam Tin River and already exists prior to the major diversion and channelization of Kam Tin River in the 1990s.

Nullah

6.1.12 Nullahs were abundant within the Study Area **(Figure 3).** They were generally narrow, concrete-paved and straightened to divert water flow from Kam Tin River. Only limited usage of this habitat by fauna was observed.

Plantation

6.1.13 Plantation belts dominated by exotic tree species were in close vicinity of developed area within the Study Area **(Figure 3),** some of which were established on engineered slopes. The canopy was dominated by exotic, fast-growing tree species *Acacia confusa, Eucalyptus citriodora, Eucalyptus robusta, Eucalyptus tereticornis, Leucaena leucocephala and Melaleuca cajuputi subsp. cumingiana* were abundant. Ornamental and landscape species (e.g. *Calliandra haematocephala*) were occasionally planted in the understorey of the plantation stands to provide screening effect and enhance ornamental value. Weeds were heavily recruited in the

understorey and especially the edges of such stands, including Lantana camara and Panicum maximum.

Wasteland

6.1.14 Wasteland either dominated by ruderal vegetation or hardscape after massive vegetation clearance were found to the west of the Study Area **(Figure 3)**. Ruderal species typical of those in primary stages of vegetative succession and colonizing areas of bare or disturbed ground, were abundant. Vegetation species typically found within this degraded habitat were mostly exotic weed species, including *Bidens alba*, *Brachiaria mutica*, *Wedelia trilobata* and *Leucaena leucocephala*.

Woodland

6.1.15 A woodland hillslope to the east of San Tam Road and along the southeastern boundary of the Study Area **(Figure 3)** is mainly composed of native species, especially those of typical of lowland secondary forests in Hong Kong. The canopy was dominated by *Aporusa dioica*, *Ficus hispida* and *Litsea glutinosa*. The understorey of the woodland was regenerated with native shrub (particularly *Psychotria asiatica*) and climber species (e.g. *Desmos chinensis* and *Uvaria macrophylla*). Along woodland edge and where light gaps were present, *Microstegium ciliatum* rapidly formed monodominant patches and exotic weedy climber species *Bidens alba* and *Mikania micrantha* were abundant.

6.1.16 A full list of vascular flora species recorded and the relative abundance within each habitat is provided in **Appendix 1**. Of the 190 vascular plant species recorded within the Study Area during the survey period, 83 and 103 of them are native and exotic to Hong Kong respectively and the remaining four vascular plant species are of uncertain origin.

6.1.17 Though *Coccinia grandis* was considered very rare by Corlett *et al*. (2000), it is a food crop species that may be dispersed from villages nearby. Therefore, it is not regarded as a species of conservation importance.

Besides, *Lagerstroemia speciosa, Casurarina equisetifolia* and *Typha angustifolia* are listed under Cap. 96A Forestry Regulations under Forests and Countryside Ordinance and/or regarded as rare by Corlett *et al*. (2000) respectively. However, all species are exotic to Hong Kong and therefore they are not regarded as species of conservation importance. No vascular plant species of conservation importance was recorded within both Application Site and Study Area.

Table 3. Habitat types within the 500m Study Area Boundary

Habitat type	Size (ha)	
	Study Area	Application Site
Developed Area	87.57	0.2
Plantation	2.98	-
Active Agricultural Land	4.84	-
Abandoned Pond	11.41	4.9
Active Pond	7.56	-
Flood Storage Pond	1.03	-
Drainage Channel	4.97 (1.12 km)	-
Nullah	1.95 (3.22 km)	-
Meander	0.43 (0.21 Km)	-
Wasteland	4.36	-
Woodland	3.6	-
Total	**123.35**	**5.1**

6.2 *AVIFAUNA*

6.2.1 Most of the Study Area is covered by developed area, which is subjected to very high level of human disturbance and with little vegetation cover. Other habitats within the Study Area (e.g., plantation, fishpond) are fragmented and small in size. Fauna recorded in the Study Area were mostly disturbance tolerant species.

6.2.2 Sixty-nine species of bird were recorded within the Study Area during the previous survey **(Appendix 2a)**. Among the 69 bird species, 29 species are considered of conservation importance **(Table 13).** These included Little Grebe *Tachybaptus ruficollis,* Black-faced Spoonbill *Platalea minor,* Yellow

Bittern *Ixobrychus sinensis*, Black-crowned Night Heron *Nycticorax nycticorax*, Chinese Pond Heron *Ardeola bacchus*, Eastern Cattle Egret *Bubulcus coromandus*, Grey Heron *Ardea cinereal*, Great Egret *Ardea alba*, Intermediate Egret *Egretta intermedia*, Little Egret *Egretta garzetta*, Great Cormorant *Phalacrocorax carbo*, Black Kite *Milvus migrans,* Eastern Buzzard *Buteo japonicus*, Black-winged Stilt *Himantopus himantopus*, Pied Avocet *Recurvirostra avosetta*, Spotted Redshank *Tringa erythropus*, Common Redshank *Tringa tetanus*, Marsh Sandpiper *Tringa stagnatilis,* Common Greenshank *Tringa nebularia,* Wood Sandpiper *Tringa glareola,* Greater Coucal *Centropus sinensis*, White-throated Kingfisher *Halcyon smyrnensis,* Pied Kingfisher *Ceryle rudis,* Collared Crow *Corvus torquatus,* Zitting Cisticola *Cisticola juncidis,* Red-billed Starling *Spodiopsar sericeus*, White-cheeked Starling *Spodiopsar cineraceu* and White-shouldered Starling *Sturnia sinensis.*

6.2.3 Among the bird species of conservation importance recorded within the Study Area, 13 species were recorded within the Application Site. These included Little Grebe, Yellow Bittern, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret, Great Cormorant, Black Kite, Eastern Buzzard, Greater Coucal, White-throated Kingfisher, Collared Crow and White-cheeked Starling. All these species were present in low abundance / recorded in low frequency. No breeding and nesting behavior were observed in the Application Site. Details of observations, protection status, distribution and commonness of these species are shown in **Table 13.**

6.2.4 Similar survey results were recorded during the verification surveys conducted between December 2022 and January 2023. 31 species were recorded within the Study Area including the Application Site, of which 12 species are considered of conservation importance (**Appendix 2b**). Only 4 new species were found during the verification survey, namely Marllard

Anas platyrhynchos, Purple Heron *Ardea purpurea*, Chinese Blackbird *Turdus mandarinus* and Eurasian Siskin *Spinus spinus*. 2 of the newly found species were recorded within the Application Site, which are Mallard and Purple Heron. Both of them are considered Regional Concern by Fellowes (2002).

6.2.5 11 avifaunal species were recorded within the Application Site during the verification surveys, 8 of the species are considered of conservation importance, which are namely Little Grebe *Tachybaptus ruficollis*, Mallard *Anas platyrhynchos*, Purple Heron *Ardea purpurea*, Great Egret *Ardea alba*, Great Cormorant *Phalacrocorax carbo*, Greater Coucal *Centropus sinensis*, Pied Kingfisher *Ceryle rudis* and Collared Crow *Corvus torquatus*. Details of these species are shown in **Table 13**.

Dry season flight Path Survey

6.2.6 Results of the winter bird flight path surveys conducted in the dry season between January and February 2020 show that no major flight path was observed over the Application Site. A total of 17 flight lines was recorded during the survey. Only 4 species including Grey Heron, Great Egret, Little Egret and Great Cormorant, with 17 flight lines were recorded flew over the Application Site. The flight height of these species ranged between 15m and 25m above ground.

6.2.7 The results of the verification surveys of the dry season flight path in December 2022 and January 2023 show that there was no major flight was observed over the Application Site.

6.3 *OTHER TERRESTRIAL FAUNA*

6.3.1 The ecological condition of other terrestrial faun within the Study Area and the Application Site were found comparable to that of the previous application.

Mammal

6.3.2 Three species of non-volant mammal were recorded within the Study Area **(Appendix 3).** All are considered of low conservation importance. Within the Application Site, the only non-volant mammal was domestic dog.

6.3.3 Japanese Pipistrelles were sighted within the Application Site and Study Area. Another species Short-nosed Fruit Bat *Cynopterus sphinx* were found in plantation in the Study Area (**Appendix 3)**. Details of observations, protection status, distribution and commonness of these species are shown in **Table 13.**

Herpetofauna

6.3.4 Four species of amphibian were recorded within the Application Site and Study Area **(Appendix 4).** These included Asian Common Toad *Bufo melanostictus*, Brown Tree Frog *Polypedates megacephalus*, Paddy Frog *Fejervarya limnocharis* and Gunther's Frog *Rana guentheri* are widespread and common in Hong Kong, and considered of low conservation importance (Chan et al. 2005).

6.3.5 Five species of reptile were recorded within the Study Area **(Appendix 5)**, Of which, two species were considered of conservation importance. These included Common Rat Snake *Ptyas mucosus* and Many-banded Krait *Bungarus multicinctus*. Many-banded Krait was found inside the Application Site. Details of observations, protection status, distribution and commonness of these species are shown in **Table 13.**

Butterfly and dragonfly

6.3.6 A total of 36 species of butterfly were recorded within the Study Area **(Appendix 6).** Only one species Grass Demon *Udaspes folus* was considered of conservation importance and recorded outside Application Site in Study Area. Twenty-two species of butterfly were recorded inside Application Site.

6.3.7 For the other species of Butterfly, most are common or very common in Hong Kong (Chan et al. 2011) except Yellow Orange Tip. Details of observations, protection status, distribution and commonness of these species are shown in **Table 13.**

6.3.8 Eleven species of dragonfly were recorded within Application Site and Study Area **(Appendix 7)**. All are common or abundant in Hong Kong. Only one species Scarlet Basker *Urothemis signata* was considered of conservation importance and recorded within Application Site in Study Area. Details of observations, protection status, distribution and commonness of these species are shown in **Table 13.**

6.4 *AQUATIC FAUNA*

6.4.1 A total of 5 species of aquatic fauna were recorded within the Study Area. All the 5 species are common in Hong Kong, no species conservation importance was recorded. The aquatic fauna found within the Study Area are listed in **Appendix 8.** The ecological condition of the aquatic fauna of the Study Area was found comparable to that of the previous application.

7. EVALUATION OF HABITATS AND SPECIES

7.1.1 The ecological importance of the habitats within the Study Area was evaluated in accordance with the criteria stipulated in Annex 8 of TM-EIAO **(Tables 4 – 11).** The ecological importance of the Application Site was evaluated in **Table 12.**

7.1.2 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 legislation/conventions), species distribution (e.g. endemic), and rarity (e.g. rare or restricted). No flora of conservation importance was recorded within the Study Area, while the list and evaluation of faunal species of conservation importance recorded within

the Study Area, according to the TM-EIAO, are given in **Table 13**. The fauna species of conservation importance recorded from present ecological surveys included two mammal species, twenty-nine bird species, two reptile species, two butterfly and one dragonfly species.

Table 4 Evaluation of Developed Area (excluding Application Site) within the Study Area

Criterion	Description
Naturalness	Man-made habitat
Size	87.57ha
Diversity	Low flora diversity. Low diversity of butterfly and bird, very low diversity of dragonfly
Rarity	None for flora Fauna species of conservation importance: Grey Heron, Little Egret, Black Kite, Eastern Buzzard, Common Kestrel, Collared Crow and Japanese Pipistrelle
Re-creatability	Easy to recreate
Fragmentation	N/A
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Low
Nursery/breeding ground	No significant record. Minimal due to high level of disturbance
Age	N/A
Abundance/richness of wildlife	Low for butterfly and bird, very low for dragonfly
Overall ecological value	Very Low

Table 5 Evaluation of Plantation within the Study Area

Criterion	Description
Naturalness	Man-made (planted)
Size	A total of 2.98ha
Diversity	Low flora diversity

Criterion	Description
	Low diversity of butterfly and bird; Very low diversity of dragonfly
Rarity	None for flora Fauna species of conservation importance: Collared Crow, Yellow Orange Tip and Short-nosed Fruit Bat
Re-creatability	Easy to recreate
Fragmentation	Formed thin belts along the roads
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Low due to small footprint, regular maintenance and subjected to high level of disturbance from traffic
Nursery/breeding ground	No significant records. Value as breeding habitat for terrestrial fauna is low due to sparse canopy and exotic tree species composition, and subjected to high level of disturbance
Age	Young
Abundance/richness of wildlife	Low of butterfly and bird; Very low of dragonfly
Overall ecological value	Low

Table 6 Evaluation of Active Agricultural Land within the Study Area

Criterion	Description
Naturalness	Man-made habitat
Size	4.84ha
Diversity	Very low flora diversity Low diversity of bird and butterfly; Very Low diversity of dragonfly
Rarity	None for flora None for Fauna
Re-creatability	Easy to recreate
Fragmentation	Fragmented by developed area
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Limited due to human disturbance
Nursery/breeding ground	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance
Age	N/A

Criterion	Description
Abundance/richness of wildlife	Low diversity of bird and butterfly; Very Low diversity of dragonfly
Overall ecological value	Low

Table 7 Evaluation of Active Pond and Abandoned Pond (excluding Application Site) within the Study Area

Criterion	Description	
	Active Pond	**Abandoned Pond**
Naturalness	Man-made habitat	Man-made habitat
Size	7.56ha	6.51ha
Diversity	Low flora diversity Low to medium diversity for bird, low for butterfly and very low for dragonfly	Low flora diversity Low to medium diversity for bird, low for butterfly and very low for dragonfly
Rarity	None for flora. Fauna species of conservation importance: Little Grebe, Black-crowned Night Heron, Eastern Cattle Egret, Chinese Pond Heron, Grey Heron, Great Egret, Intermediate Egret, Little Egret, Great Cormorant, Black Kite, Peregrine Falcon, White-throated Kingfisher, Pied Kingfisher, Collared Crow, Greater Coucal, Collared Crow, Zitting Cisticola, Red-billed Starling and White-shouldered Starling	None for flora. Fauna species of conservation importance: Little Grebe, Yellow Bittern, Black-crowned Night Heron, Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Great Egret, Little Egret, Great Cormorant, Black Kite, Greater Coucal, Collared Crow, Red-billed Starling, Grass Demon and Japanese Pipistrelle
Re-creatability	Easy to recreate	Easy to recreate
Fragmentation	Linked to the other wetland habitats	The abandoned fishpond around the Application Site is isolated from other wetland habitats, but exist as a fairly large patch. Those at the

Criterion	Description	
	Active Pond	Abandoned Pond
		southwest corner are linked to the other wetland habitats (e.g., Kam Tin River)
Ecological linkage	All fall within WCA	Some fall within WBA.
Potential value	The edge of water surface near the pond bunds might provide feeding habitat for waterbirds and the bund might be utilised by waterbirds as roosting habitat subject to pond bund management. Might provide more feeding habitat for waders if drained down during winter	The edge of water surface near the pond bunds might provide feeding habitat for waterbirds
Nursery/breeding ground	No significant record. Minimal as nursey/breeding ground for amphibian and/or dragonfly due to human activities and presence of cultured fish	No significant record. Potentially provide breeding habitats for amphibian and dragonfly
Age	N/A	N/A
Abundance/richness of wildlife	Low to medium abundance of bird, low abundance of butterfly and dragonfly.	Low abundance of birds, butterfly and dragonfly.
Overall ecological value	Medium	Low to medium

Table 8 Evaluation of Flood Storage Pond within the Study Area

Criterion	Description
Naturalness	Man-made habitat
Size	1.03ha
Diversity	Very low flora diversity Low diversity of bird, Very low diversity of butterfly and dragonfly
Rarity	None for flora. Fauna species of conservation importance: Grey Heron, Great Egret, Little Egret and Wood Sandpiper

Criterion	Description
Re-creatability	Easy to recreate
Fragmentation	Fragmented by developed area
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Might provide feeding habitat for wintering waterfowls if drained down during winter
Nursery/breeding ground	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance
Age	N/A
Abundance/richness of wildlife	Low for bird, very low of butterfly and dragonfly
Overall ecological value	Low

Table 9 Evaluation of Drainage Channel, Nullah and Meander within the Study Area

Criterion	Description		
	Ngau Tam Mei Drainage Channel	Nullah	Meander
Naturalness	Man-made, with natural bank and bottom	Those nullahs at the southwest corner of Study Area with natural bank and bottom The other nullah in the Study Area are man-made, with concrete bank and bottom	Natural in origin, some of them subject to tidal flow from Ngau Tam Mei Drainage Channel
Size	4.97ha (1.12km)	1.95ha (3.22km)	0.43ha (0.21km)
Diversity	Very low flora diversity. Medium diversity of bird, very low diversity of dragonfly and butterfly	Very low flora diversity Low diversity of bird, Very low butterfly and dragonfly	Very low flora diversity Low diversity of bird, butterfly and dragonfly
Rarity	None for flora	None for flora	None for flora

Criterion	Description		
	Ngau Tam Mei Drainage Channel	**Nullah**	**Meander**
	Fauna species of conservation importance: Black-faced Spoonbill, Yellow Bittern, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret, Great Cormorant, Black Kite, Black-winged Stilt, Pied Avocet, Spotted Redshank, Common Redshank, Marsh Sandpiper, Common Greenshank, Wood Sandpiper, Greater Coucal, White-throated Kingfisher, Pied Kingfisher, Collared Crow, Red-billed Starling and Common Rat Snake	Fauna species of conservation importance: Chinese Pond Heron, Grey Heron, Great Egret and Little Egret	Fauna species of conservation importance: Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Little Egret and Great Cormorant
Re-creatability	Easy to recreate	Easy to recreate	Difficult to re-create. Tidal influence from Ngau Tam Mei Drainage Channel will require to be reconstructed
Fragmentation	Connected to the Kam Tin River Channel.	Those nullahs at the southwest corner of Study Area exist as a single patch The other nullahs in the Study Area are	Connected to the Ngau Tam Mei Drainage Channel.

Criterion	Description		
	Ngau Tam Mei Drainage Channel	Nullah	Meander
		fragmented by developed areas	
Ecological linkage	Hydrological linked to Inner Deep Bay	Hydrological linked to Inner Deep Bay	Hydrological linked to Inner Deep Bay and Subject to tidal influence from Ngau Tam Mei Drainage Channel
Potential value	Low, but provided feeding and roosting habitat for waterbirds	Those nullahs at the southwest corner of Study Area are of low potential value due to larger size and relatively undisturbed, though with poor water quality The other nullahs in the Study Area are very low	Low to medium, but provided feeding and roosting habitat for waterbirds
Nursery/breeding ground	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance and low habitat complexity	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance and low habitat complexity	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance and low habitat complexity
Age	N/A	N/A	N/A
Abundance/richness of wildlife	Low aquatic fauna abundance. Low to Medium for bird, low for butterfly and very low for dragonfly	Very low aquatic fauna abundance Very low for bird, butterfly and dragonfly	very low for bird, butterfly and dragonfly
Overall ecological value	Medium	Very low	Low

Table 10 Evaluation of Wasteland within the Study Area

Criterion	Description
Naturalness	Man-made habitat, mostly left abandoned
Size	4.36 ha
Diversity	Very low flora diversity Low diversity of bird, very low of butterfly and dragonfly
Rarity	None for flora. Fauna species of conservation importance: Eastern Cattle Egret, Black Kite, Greater Coucal, Collared Crow and Japanese Pipistrelle
Re-creatability	Easy to recreate
Fragmentation	Fragmented by developed area
Ecological linkage	Not functionally linked to habitats of conservation importance
Potential value	Limited due to human disturbance
Nursery/breeding ground	No significant record. Minimal as nursey/breeding ground due to subjected to high level of disturbance
Age	N/A
Abundance/richness of wildlife	Low for bird, very low of butterfly and dragonfly
Overall ecological value	Very Low

Table 11 Evaluation of Woodland within the Study Area

Criterion	Description
Naturalness	Natural and undergoing natural succession
Size	3.6 ha
Diversity	Low to medium of flora diversity Low diversity of bird, very low of butterfly and dragonfly
Rarity	None for flora and Fauna
Re-creatability	Readily re-created but trees need time to mature
Fragmentation	Fragmented by developed area
Ecological linkage	Linkages with existing semi-natural upland habitats.

Criterion	Description
Potential value	Potential to become more mature woodland in the absence of clearance and disturbance.
Nursery/breeding ground	No significant record, but can provide breeding habitats for mammals, birds, reptiles and butterflies
Age	Medium (around 30 years) based on tree size, woodland structure and species composition.
Abundance/richness of wildlife	Low for bird and butterfly, very low of dragonfly
Overall ecological value	Low

Table 12 Evaluation of Application Site

Criterion	Description	
	Developed Area	Abandoned Pond
Naturalness	Man-made habitat	Man-made habitat
Size	0.2ha	4.9ha
Diversity	Low flora diversity Limited diversity for butterfly, bird and dragonfly	Low flora diversity Low to Medium diversity for bird, low diversity for butterfly and dragonfly
Rarity	None for flora and fauna.	None for flora. Fauna species of conservation importance (16 species in total) included Little Grebe, Yellow Bittern, Chinese Pond Heron, Great Egret, Grey Heron, Little Egret, Great Cormorant, Black Kite, Eastern Buzzard, Greater Coucal, White-throated Kingfisher, Collared Crow, White-cheeked Starling, Scarlet Basker, Many-banded Krait and Japanese Pipistrelle; Mallard and Purple Heron were recorded during verification surveys

Criterion	Description	
	Developed Area	**Abandoned Pond**
Re-creatability	Easy to recreate	Easy to recreate
Fragmentation	N/A	The abandoned ponds in the Application Site linked with ponds outside the Application Site and formed a larger cluster of wetland.
Ecological linkage	Not functionally linked to habitats of conservation importance	70% abandoned pond falls within WBA. Limited linkages with adjacent habitats.
Potential value	Low	Ecological value as habitats for wetland dependent fauna (including waterbirds) would increase with appropriate management measures
Nursery/breeding ground	No significant record. Minimal due to high level of disturbance	No significant record. Might provide breeding habitat for butterfly, dragonfly and amphibian
Age	N/A	NA
Abundance/richness of wildlife	Limited abundance for butterfly, bird and dragonfly	Low to medium abundance of bird (but only low abundance of bird species of conservation importance), low abundance of butterfly and dragonfly.
Overall ecological value	Very Low	Low to medium

Table 13 Evaluation of faunal species of conservation importance within the Study Area

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Bird (*all wild birds are protected under Cap.170 and thus not listed individually)							
Little Grebe *Tachybaptus ruficollis*				LC	Found in Deep Bay area.	Common resident.	Study Area : Pond & Abandoned Pond ; Application Site : Abandoned Pond

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Mallard *Anas platyrhynchos*				RC	Found in Deep Bay area, Tai Lam Chung, Hok Tau Reservoirs, Tolo Harbour, Nam Chung, Long Valley, Kam Tin	Uncommon winter visitor	Application Site: Abandoned Pond
Black-faced Spoonbill *Platalea minor*		Class 2 Protected Animal of China	IUCN & China Red Data Book: Endangered	PGC	Found in Deep Bay area.	Common winter visitor.	Study Area : Drainage Channel
Yellow Bittern *Ixobrychus sinensis*				(LC)	Found in Deep Bay area, Chek Keng, Tai Long Wan.	Uncommon summer visitor and passage migrant.	Study Area : Abandoned Pond & Drainage Channel ; Application Site : Abandoned Pond
Black-crowned Night Heron *Nycticorax nycticorax*				(LC)	Widely distributed in Hong Kong.	Common resident and winter visitor.	Study Area : Pond & Abandoned Pond
Chinese Pond Heron *Ardeola bacchus*				PRC,(RC)	Widely distributed in Hong Kong.	Common resident.	Study Area : Pond, Abandoned Pond, Meander, Nullah & Drainage Channel ; Application Site : Abandoned Pond
Eastern Cattle Egret *Bubulcus coromandus*				(LC)	Widely distributed in Hong Kong.	Resident and common passage migrant.	Study Area : Pond, Abandoned Pond, Meander & Wasteland
Grey Heron *Ardea cinerea*				PRC	Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.	Common winter visitor.	Study Area : Pond, Abandoned Pond, Meander, Drainage Channel, Nullah, flood storage pond ; Application Site : Abandoned Pond

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Purple Heron *Ardea purpurea*				RC	Found in Deep Bay area	Uncommon passage migrant	Application Site: Abandoned Pond
Great Egret *Ardea alba*				PRC,(RC)	Widely distributed in Hong Kong.	Common resident and winter visitor.	Study Area : Pond, Abandoned Pond, Drainage Channel, Nullah & flood storage pond ; Application Site : Abandoned Pond
Intermediate Egret *Egretta intermedia*				RC	Found in Deep Bay area, Tai Long Wan, Starling Inlet, Tai O, Cape D'Aguilar.	Common passage migrant.	Study Area : Pond
Little Egret *Egretta garzetta*				PRC,(RC)	Widely distributed in coastal area throughout Hong Kong.	Common resident.	Study Area: Pond, Abandoned Pond, Meander, Drainage Channel, Nullah, flood storage pond and developed area; Application Site: Abandoned Pond
Great Cormorant *Phalacrocorax carbo*				PRC	Widely distributed in coastal areas throughout Hong Kong.	Common winter visitor.	Study Area: Pond, Abandoned Pond, Meander Drainage Channel and Nullah, ; Application Site: Abandoned Pond
Black Kite *Milvus migrans*	Cap. 586 (Appendix 2 of CITES)			(RC)	Widely distributed in Hong Kong.	Common resident and winter visitor.	Study Area : Pond, Drainage Channel, Wasteland & Developed Area ; Application Site : Abandoned Pond
Eastern Buzzard *Buteo japonicus*	Cap. 586 (Appendix 2 of CITES)				Widely distributed in Hong Kong.	Common winter visitor.	Application Site : Abandoned Pond
Black-winged Stilt *Himantopus himantopus*				RC	Found in Deep Bay area, Long Valley, Kam Tin.	Common passage migrant.	Study Area :Drainage Channel
Pied Avocet *Recurvirostra avosetta*				RC	Found in Deep Bay area.	Abundant winter visitor.	Study Area :Drainage Channel

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Spotted Redshank *Tringa erythropus*				RC	Found in Deep Bay area.	Abundant in winter and spring.	Study Area :Drainage Channel
Common Redshank *Tringa totanus*				RC	Found in Deep Bay area.	Common passage migrant.	Study Area: Drainage Channel
Marsh Sandpiper *Tringa stagnatilis*				RC	Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Sai Kung.	Common winter visitor and passage migrant.	Study Area :Drainage Channel
Common Greenshank *Tringa nebularia*				RC	Found in Deep Bay area.	Abundant passage migrant and winter visitor.	Study Area : Drainage Channel
Wood Sandpiper *Tringa glareola*				LC	Widely distributed in wetland area throughout Hong Kong.	Common passage migrant and winter visitor.	Study Area: Drainage Channel and flood storage pond
Greater Coucal *Centropus sinensis*		Class 2 Protected Animal of China	China Red Data Book Status: (Vulnerable)		Widely distributed in Hong Kong.	Common resident.	Study Area: Pond, Abandoned Pond, Drainage Channel, Meander & Wasteland; Application Site: Abandoned Pond
White-throated Kingfisher *Halcyon smyrnensis*				(LC)	Widely distributed in coastal areas throughout Hong Kong	Common resident.	Study Area: Pond & Drainage Channel Application Site: Abandoned Pond
Pied Kingfisher *Ceryle rudis*				(LC)	Widely distributed in lakes and ponds throughout Hong Kong.	Uncommon resident.	Study Area: Drainage Channel and Nullah
Common Kestrel *Falco tinnunculus*	Cap. 586 (Appendix 2 of CITES	Class 2 Protected Animal of China			Widely distributed in Hong Kong	Common autumn migrant and winter visitor.	Study Area : Developed Area

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Collared Crow *Corvus torquatus*			IUCN : Vulnerable	LC	Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek lap Kok, Shuen Wan, Lam Tsuen.	Uncommon resident.	Study Area: Pond, Abandoned Pond, Drainage Channel, Plantation, wasteland & Developed Area; Application Site: Abandoned Pond
Zitting Cisticola *Cisticola juncidis*				LC	Widely distributed in grassland throughout Hong Kong.	Common passage migrant and winter visitor.	Study Area : Pond
Red-billed Starling *Spodiopsar sericeus*				GC	Widely distributed in Hong Kong	Common winter visitor.	Study Area: Pond, Abandoned Pond, Developed Area and Drainage Channel
White-cheeked Starling *Spodiopsar cineraceus*				PRC	Found in Deep Bay area, Kam Tin, Long Valley.	Common winter visitor.	Study Area: Developed Area; Application Site: Abandoned Pond
White-shouldered Starling *Sturnia sinensis*				(LC)	Found in Kam Tin, Deep Bay area, Po Toi Island, Long Valley, Victoria Park, Ho Chung, Ma Tso Lung, Mui Wo, Lam Tsuen Valley.	Common passage migrant.	Study Area: Pond,
Butterfly							
Grass Demon *Udaspes folus*					Widely distributed in agricultural field throughout Hong Kong	Rare.	Study Area : Abandoned Pond
Yellow Orange Tip *Ixias pyrene*					Widely distributed throughout Hong Kong	Uncommon.	Study Area :Plantation
Dragonfly							

Common name & Scientific name	Protection status / Concern Level				Distribution [5]	Rarity [5]	Locations / Habitats
	Local laws	Regional laws [1]	IUCN [2]/ China Red List [3]	Fellowes et al. 2002[4]			
Scarlet Basker *Urothemis signata*					Common in areas containing abandoned fish ponds throughout Hong Kong	Common.	Application Site : Abandoned Pond
Retile							
Common Rat Snake *Ptyas mucosus*	Cap. 586 (Appendix 2 of CITES)		China Red Data Book Status: (Endangered)	PRC	Widely distributed throughout Hong Kong.	-	Study Area : Drainage Channel
Many-banded Krait *Bungarus multicinctus*			China Red Data Book Status: (Vulnerable)	PRC	Widely distributed in New Territories, Hong Kong Island and Lantau Island.	-	Application Site : Abandoned Pond
Mammal							
Short-nosed Fruit Bat *Cynopterus sphinx*	Cap. 170		China Red Data Book Status: (Indeterminate)		Very widely distributed in urban and countryside areas throughout Hong Kong	Very Common	Study Area : Plantation
Japanese Pipistrelle *Pipistrellus abramus*	Cap. 170				Widely distributed throughout Hong Kong.	Very Common	Study Area :Abandoned Pond & Wasteland ; Application Site : Abandoned Pond

1: AFCD (2020), 2: Wang (1998)

Level of concern: LC = local concern, PRC = potential regional concern, RC = regional concern, GC = global concern; Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence (Fellowes et al.2002).

All Birds species are list in WAPO (Cap 170.)

8. IMPACT IDENTIFICATION AND EVALUATION

8.1 *Design Concept of the Proposed Development and the Proposed Construction Works*

8.1.1 The extent of the Application Site is shown in **Figure 1**. The Application Site is zoned as "Other Specified Uses" annotated "Comprehensive Development to Include Wetland Restoration Area" ("OU(CDWRA)") under the OZP (S/YL-NSW/8). The ponds in Pok Wai have been in abandoned or non actively managed status for years, and the ecological value has been jeopardized due to lack of drain-down. The planning intention of "OU(CDWRA)" zone as stipulated in the OZP is: "to provide incentive for the restoration of degraded wetlands adjoining existing fish ponds through comprehensive residential and/or recreational development to include wetland restoration area. It is also intended to phase out existing sporadic open storage and port back-up uses on degraded wetlands." The present Project follows this planning intention, and proposes to provide residential buildings as well as a Wetland Restoration Area which will transform the existing abandoned ponds into wetlands with higher ecological functions (such as more shallow water area for waterbirds) and proper management.

8.1.2 The proposed residential development involves buildings of 5 different types of housing unit, ranging from 2 storeys to 4 storeys, with or without basement, and no piled foundation is needed. For the footings and superstructure, ordinary reinforced concrete construction will be adopted and it should not involve the heavy machinery used in the piled foundations for medium or high rise construction. The scale and extent of the current application are very similar to the previous application, thus the impacts caused by the current proposed development are also comparable to that of the previous application.

8.1.3 A Wetland Restoration Area (WRA) will be constructed in accordance with the OZP (S/YL-NSW/8). The major construction works of the WRA would only involve reprofiling of existing abandoned ponds, which is similar to

traditional fishpond maintenance works practiced in the Deep Bay area, and planting of wetland plants, which is similar to usual landscape planting.

8.1.4 The potential terrestrial and aquatic ecological impacts arising from the construction works, including loss of habitats, removal of vegetation, and disturbance to animals, were assessed with reference to the criteria stated in Annexes 8 and 16 of the TM-EIAO.

8.2 *Construction Phase Impacts*

Direct Impact - Habitat Loss

8.2.1 Loss of habitats and associated vegetation due to site formation within the Application Site will constitute the direct ecological impacts of the Project. The Application Site is partly composed of 0.2ha developed area with little vegetation cover (very low ecological value) and partly composed of 4.9ha abandoned ponds (low to medium ecological value).

8.2.2 As the developed area of the Application Site is mostly concrete-paved with little vegetation cover and low fauna diversity, additional site clearance will be minimal. The impact of the loss of this 0.2ha of developed area and their associated flora and fauna is considered **Insignificant** due to the small area affected, high level of disturbance, and very low diversity of wildlife. No mitigation for the loss of the developed area is required.

8.2.3 A total of 4.9ha abandoned ponds was identified within the Application Site. The ecological value of the abandoned ponds within the Application Site is ranked as low to medium. Although species of conservation were recorded within the abandoned ponds, they only occurred in low abundance. Besides, the abandoned ponds in Pok Wai as well as the Application Site are isolated from other wetland habitats in Deep Bay Area (i.e. surrounded by developed areas), and the abandoned ponds are degraded in terms of function and habitat quality due to overgrown by vegetation in some ponds and lack of drain-down in others. Without drain-down, while the pond bunds are steep that could provide little foraging habitats for wading birds,

the water was too deep for most of the waterbirds. Hence, the existing abandoned ponds were not considered as important foraging habitats for waterbirds, or important habitats for other fauna species of conservation importance recorded in the Study Area.

8.2.4 According to the Master Layout Plan, a portion of the existing abandoned ponds (2.43ha) within the Application Site will be converted into residential area. Due to the permanent nature of habitat loss within Wetland Buffer Area, the impact of permanent or temporary abandoned pond loss within the Application Site (i.e. 4.9ha) is considered **Moderate**. Mitigation for loss of habitat is required.

8.2.5 The remaining of the abandoned ponds (2.47ha) will be enhanced to the Wetland Restoration Area, so that habitat loss will be temporary. The major works for the Wetland Restoration Area (i.e. removal of ruderal vegetation on existing pond bunds, drain-down of existing abandoned ponds and reprofiling of the pond bunds) will be similar to traditional fishpond maintenance works practiced in the Deep Bay area. Together with the temporary loss due to the residential development, the total area of the abandoned pond within the Application Site is 4.9ha. Among the 4.9ha abandoned pond, the area with the proposed residential development will be loss permanently. As the works for the Wetland Restoration Area will be temporary, the potential impact due to temporary loss due to construction of the Wetland Restoration Area is considered **Minor**.

8.2.6 For each of the ponds lying on the Application Site boundary, they will be divided by sheet piling along the site boundary, and then only the portion of ponds within the Application Site will be drained for construction, while the portions outside the Application Sites will retain unchanged. A series of vertical concrete walls (of smaller width than the existing earth pond bunds in the ponds of Pok Wai) will be is built immediately behind the sheet piling within the Application Site. So that, the temporary loss of the portions of

the abandoned ponds outside the Application Site (~0.72 ha) is not anticipated.

8.2.7 According to the tentative phasing programme, the construction works will be completed in 2025, construction of sheet piling and the concrete wall will be conducted at the very beginning and will last for about 3 months within the wet season.

8.2.8 Area size of temporary and permanent habitat loss within the Application Site is shown in **Table 14**.

Table 14 Area size of temporary and permanent habitat loss of abandoned pond within the Application Site

Period	Temporary habitat loss (ha)	Permanent habitat loss (ha)
Construction of WRA	2.47	0
Construction of residential portion	2.43	2.43

Dust, Noise and Disturbance Impact

8.2.9 Dust will increase during construction phase, and might temporarily reduce the abundance and distribution of fauna in habitats adjacent to the works area. Unmitigated construction works create significant levels of dust under certain weather conditions due to the construction vehicles and the phenomenon of wind-blown dust from works areas. The dust would be 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 of these types will, however, be temporary and reversible, and standard construction best practices as mitigation measures can be implemented to negate harmful impacts. Dust deposition impacts arising from the Project, therefore, are considered **Insignificant**.

8.2.10 High level noise disturbance can potentially lead to behavioral disturbance, auditory masking, and physiological stress to wildlife. In the most serious cases, it may also lead to abandonment of preferred habitats by the wildlife if the noise disturbance is constantly present for a prolonged duration. For the present Project, utilization of habitats adjacent to the Application Site by fauna might decrease during construction phase. The significance of construction impacts will depend upon the ecological importance of the surrounding habitats, the distance between the source of noise and sensitive receivers, the type and frequency of disturbance and the tolerance of species to disturbance.

8.2.11 In the present Project, however, piling works for piled foundations, which are the major noise sources in many construction projects, are not required. Major construction activities will include excavation during footing works, materials loading/unloading, and concreting during superstructure works, which may produce noise and cause disturbance but at a much lower magnitude than percussive piling. Acoustic canvas for reduction of noise could be implemented as well. The potential impacts due to construction activities other than piling will be **Insignificant** as the construction works will be small in scale given the nature of low-rise residential building development.

8.2.12 For creating the WRA, as the reprofiling works will be similar to traditional fishpond maintenance works practiced in the Deep Bay area, it is expected the major construction machinery will be bulldozers or excavators, so that large machinery will not be involved and no obstruction of flight is anticipated. Hence, the indirect disturbance impacts due to the creation of WRA are considered **Minor.**

8.2.13 The fauna in abandoned ponds adjacent to the Application Site might be affected by construction disturbance. The conditions and habitat quality of these ponds were similar to Application Site. These ponds are isolated from other wetland habitats and were currently disturbed by the activities in the

surrounding developed area. In addition, the steep slope of some abandoned ponds, which offer little shallow water areas as foraging habitats of waterbirds. Ten bird species of conservation importance were recorded in these abandoned ponds. Abundance of waterbirds recorded in abandoned ponds were low. As no piling works will be conducted during construction phase, the potential disturbance to abandoned ponds due to construction works is considered **Minor** in wet season and **Minor to Moderate** in dry season, if unmitigated. Utilisation of quiet machinery and construction method during construction, and erection of hoardings / noise Barriers are recommended under environmental impact assessment to reduce the potential impact.

8.2.14 As revealed by reviewed literature and ecological surveys, high counts of waterbirds (mostly ardeids) were occasionally recorded in the Ngau Tam Mei Drainage Channel during low tides of wintering season. The Ngau Tam Mei Drainage Channel is however separated from the Application Site by an existing road (Kam Pok Road) and also developed area. Given the types of construction works involved in the proposed development (mainly earth works and concreting) and the separation by existing developed areas, the potential of disturbance impacts to the Ngau Tam Mei Drainage Channel due to the construction works is considered **Minor** in wet season and **Minor to Moderate** in dry season , if unmitigated. Utilisation of quiet machinery and construction method, and erection of hoardings / Noise Barriers have been recommended under environmental impact assessment as control measure.

8.2.15 Fauna in developed area, wasteland and nullah have been habituated to disturbance and these habitats are considered with very low ecological value. Hence, the potential impacts to fauna in developed area, wasteland and nullah are ranked as **Insignificant**.

8.2.16 Good site practices will be implemented to further minimize the potential impact of construction disturbance to fauna in habitats near the Application Site during construction phase.

Surface Runoff

8.2.17 Potential impacts to nearby aquatic habitats (e.g., drainage channel, abandoned ponds, nullah) during the construction phase would mainly arise from sedimentation due to surface runoff. Sediments carried 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, and might affect the uses as foraging and roosting habitats by waterbirds. The potential impact due to runoff is **Minor to Moderate** when without mitigation. Mitigation measures will be required, and have been recommended in Section 8.4 of this report.

8.2.18 As stated in Section 8.4 of this report, contractor(s) of this Project will prepare the temporary site drainage system; wastewater treatment facilities; and maintenance of drainage system in order to ensure that the mitigation measures are in place.

8.2.19 In addition, good site practice and precautionary measures (e.g. those in Section 8.4) will be implemented to avoid the potential impact due to runoff.

Light Glare

8.2.20 The behavior and distribution of nocturnal wildlife and night roost of birds may be affected if strong artificial lightings are present. However, there are existing artificial lightings in the surrounding areas of the Application Site. Fauna sensitive to lightings would have already avoided these areas. Besides, no night roost of birds was found near the Application Site.

Potential impact due to light glare during construction phase is considered **Insignificant**.

Potential Impacts to WRA during the construction of Residential Area

8.2.21 During the construction of the residential area, disturbance to the then-completed Wetland Restoration Area might result. The potential impacts include human and/or dog intrusion into the wetland, dumping of rubbish, spillage of chemicals and/or oil, fire hazard and discharge of grey or other water/liquid into the WRA. Besides, due to the close proximity to the proposed residential portion, other impacts due to noise, vibration, light, surface runoff, etc arising from the construction activities are also expected. Magnitude of impact from humans and dogs would depend upon frequency and number of individuals, hence the potential impact is ranked **Low to Moderate.** Magnitude of other forms of disturbance is ranked **Moderate,** if unmitigated. Phasing of the construction, good site practice and precautionary measures as well as adopting quiet machinery and construction method, and erection of hoardings / noise barriers, will be implemented to avoid the potential impact due to construction. With the implementation of these site practices, it is anticipated the potential impacts could be mitigated to acceptable level.

Potential impact on Recognized Sites of Conservation Importance

8.2.22 The Application Site is 176m away from the WCA, but about 70% of Application Site falls within the WBA. Construction works will not affect the ecological integrity of the fishponds and wetlands within WCA, or cause directly habitat loss in WCA. During the Application Site falls within the WBA, The project will, where applicable, adhere to the "no-net-loss in wetland" principle and the criteria set out for the wetland enhancement and management scheme in the TPB Guidelines No. TPB PG-No. 12C. With

the implementation of the mitigation measures described in section 8.4, there will be no adverse impact during construction phase.

8.2.23 Regarding the potential disturbance impacts during construction phase to recognised sites of conservation importance in Northwest New Territories, including the Mai Po Inner Deep Bay Ramsar Site, Mai Po Nature Reserve, Mai Po Village SSSI, Mai Po Village Egretry and Mai Po Marshes SSSI, where are more than 1.4 km from the Application Site, while Wetland Conservation Area is 176m away from the Application Site. It is considered unlikely as most of these sites of concern are far away from the Application Site, and also sheltered from the Application Site by other developed areas in between. Construction disturbance from the proposed project will be localized, reversible and short-term. The potential impact to these recognized sites of conservation importance is considered **Insignificant**.

8.2.24 The Project is not expected to cause disturbance or impact to the foraging grounds of ardeids nesting in Shan Pui River Egretry, Mai Po Village Egretry or Tung Shing Lane Egretry. There are abundant suitable wetland habitats near the Shan Pui River Egretry, in particular to the north of the egretry (BV 2021). The flight line survey by ENVIRON Hong Kong Limited (2013) showed that most breeding ardeids of Mai Po Village egretry flew to Mai Po, Tam Kon Chau or other nearby wetlands to forage, while the breeding egrets from Tung Shing Lane Egretry flew towards downstream section of Kam Tin River Drainage Channel and Nam Sang Wai (AEC 2017). The abandoned pond within the Application Site is not an important foraging habitat of ardeids due to the long distance, high level of disturbance and the absence of periodic drain-down due to abandonment. In addition, foraging habitats (e.g., fishponds) are present near the Mai Po Village egretry as well as in Nam Sang Wai and near downstream section of Kam Tin River Drainage Channel, so utilisation of habitats within the Study Area by nesting ardeids is expected to be low. Therefore, the potential impact to the egretries during construction phase is considered **Insignificant**.

8.2.25 Regarding the aquatic habitats in Deep Bay, discharge, if any, from the Project Site may cause impacts if containing pollutants. The existing ponds within Subject Site used to be commercial fishponds. At that time when drain-down of these existing ponds within the Subject Site were needed due to operational needs, water would discharge into adjacent existing drainage ditches then to the existing Ngau Tam Mei Drainage Channel without any treatment. During construction of the proposed development, construction activities will be conducted in phases. The WRA will be created first, before the construction of the residential buildings. The construction activities at the existing abandoned ponds will be scheduled to immediately after the dry season as far as possible when the water level is lowest in the year. Prior to the construction commences, water from the ponds within the WRA extent will be drained to other ponds as temporary storage. If there is still water in the WRA, the remaining water will, with the consent of the owners of those ponds sought by the Applicant, be transferred to other ponds outside the Application Site as temporary storage. The chance to drain pond water to the adjacent existing ditches would thus be low. Even if a discharge is needed, as it is expected that the water is of similar quality as when these ponds were commercial fishponds, but with less organic content as no fish feeding, it should not be a water quality issue. Besides construction site surface runoff will be controlled with proper treatment before discharge under environment impact assessment as in other construction sites, the risk of affecting aquatic habitat of Deep Bay due to surface runoff is remote.

Potential Impact on Species of Conservation Importance

8.2.26 Thirteen waterbirds / wetland dependent bird species of conservation importance (out of total 15 bird species of conservation importance) were recorded in the abandoned ponds within the Application Site. However, these species were present in low abundance (**Table 12)**. Due to the

mobility of the birds and the suitable habitats available in the vicinity, the potential impacts to the bird species of conservation importance is considered **Minor to Moderate** without mitigation**.** Mitigation is required and is proposed in Sections on mitigation below.

8.2.27 Twenty-nine bird species of conservation importance were present in low abundance outside the Application Site but within the Study Area. Due to the mobility of the birds, low abundance of the species of conservation importance recorded and the suitable habitats available in the vicinity, the potential impacts to the bird species of conservation importance is considered **Minor** even for the bird species of conservation in the abandoned ponds next to the Application Site, but except the waterbirds in Ngau Tam Mei Drainage Channel.

8.2.28 Fauna species of conservation importance were not present in high abundance in the section of Ngau Tam Mei Drainage Channel near the Application Site. However, as revealed by reviewed literature, high counts of waterbirds (mostly ardeids) were occasionally recorded in the Ngau Tam Mei Drainage Channel in low tides during wintering season. The potential impact to waterbird species of conservation importance will be **Minor to Moderate.**

8.2.29 Only one individual of Japanese Pipistrelles was recorded foraging within the Application Site. This is the commonest bat species in Hong Kong, occurs in many types of habitats (Shek 2006) and few more individuals were also recorded in other parts of the Study Area. In fact, alternative foraging habitats (e.g., wasteland, abandoned pond) are available outside the Application Site. Hence, the potential impact to this species is considered **Insignificant**.

8.2.30 The short-nosed Fruit Bat was outside the Application site and will not be directly affected. Since the roosting site was away from the Application site

and will not be adversely affected by construction disturbance. The potential impact to this species is anticipated to be **Insignificant**.

8.2.31 Many-banded Krait was recorded within the Application Site and Common Rat Snake was recorded outside the Application site. Both species were present in low abundance. These species are widespread in Hong Kong and there are large areas of habitat in the Study Area which are suitable for these species. The potential impact to this species is anticipated to be **Insignificant**.

8.2.32 Grass Demon was recorded outside Application Site and will not be directly affected. As only one individual was recorded during the survey. The potential impact to this species is anticipated to be **Insignificant**.

8.2.33 Yellow Orange Tip was recorded outside Application Site and will not be directly affected. As only one individual was recorded during the survey. The potential impact to this species is anticipated to be **Insignificant**.

8.2.34 Scarlet Basker was recorded within Application Site. There are large areas of habitat in the Study Area which are suitable for these species. As only one individual was recorded during the survey. The potential impact to this species is anticipated to be **Insignificant**.

8.3 *Operation Phase Impacts*

Human activities and Noise

8.3.1 Human activities and noise of the Application Site might potentially affect the utilization of surrounding habitats by fauna during operation phase. Firstly, the expected residential population in the Application Site will be small given the limited number of low-rise buildings (i.e. 2 to 4 storeys high low rise buildings). Large increase in human activities and the associated noise is not expected. Human activities will mainly be indoors and noise from residential houses will be mostly contained by walls of houses and screened by other houses in the Application Site. Also, the houses will be separated from the surrounding habitats by the landscape buffer and setback area. As presented in the landscape master plan, there will be a 2m perimeter landscape area around the entire Application Site with

ornamental trees, shrubs and vertical green walls, and with a footpath about 6-7m behind as a setback. The residential portion will be mainly adjacent to developed areas, abandoned ponds, nullah, wasteland and separated from the Ngau Tam Mei Drainage Channel, which is of relatively higher ecological value, by developed area.

8.3.2 The fauna in abandoned ponds adjacent to the Application Site might be affected by human activities in operation phase. There will be one major footpath/EVA inside the Application Site along the site boundary but will also be shielded from the surrounding habitats by the landscape buffer planting also along the site boundary. Abandoned ponds adjacent to the Application Site is considered of low to moderate ecological value. Also, houses in the Application Site will be separated from the nearest abandoned fishponds by landscape buffer and setback. The potential impact to these habitats and associated fauna due to human activities is ranked as **Insignificant.**

8.3.3 Fauna in developed areas, nullah and wasteland have been habituated to disturbance from noise of existing traffic and these habitats is considered of very low ecological values, and is not expected to be adversely affected by the noise from the Application Site.

8.3.4 High counts of waterbirds were occasionally recorded in the Ngau Tam Mei Drainage Channel near the Application Site at low tides in dry season. Houses in the Application Site will be at least 130m from the channel. In addition, the channel bottom of the Ngau Tam Mei Drainage Channel is lower in elevation than Kam Pok Road and developed area, and thus shielded from the Application Site by Kam Pok Road and surrounding developed area. The line of view of the birds foraging in the channel will be blocked from the human activities in the Application Site.

8.3.5 Potential impact to fauna of surrounding habitats due to human activities and noise is considered **Insignificant**.

8.3.6 The WRA is designed as a habitat for waterbirds. If there is disturbance from the residential buildings, it might potentially impact the waterbirds utilizing the WRA. There will be reed between the residential buildings and the WRA. In addition, wood trellis (of the design similar with bird hide, closely arranged wood poles) will be provided behind the reed. For the nearest buildings (those immediately adjacent to the WRA) the windows will be opaque/translucent tempered glass to avoid bird collision, to reduce the potential disturbance on the WRA (see **Figure 5**).

8.3.7 There will be one major footpath/EVA inside the Application Site along the site boundary, but is mostly shielded from the WRA by the residential buildings, and residents on the footpath are not expected to cause disturbance impact to the WRA.

Traffic Disturbance

8.3.8 The Application Site is a planned comprehensive development site well served by the existing public road network. No new road will be required to enable the proposed development. The Project will rely on the existing roads (i.e. Kam Pok Road East) for access purpose during operation phase. In fact, habitats adjacent to the existing access roads serving the site are mainly of low ecological value (e.g. developed area, wasteland etc.). Fauna inhabiting these habitats are habituated to the existing disturbance. The potential impact to these habitats and associated fauna due to traffic noise during operation phase will be **Insignificant**.

8.3.9 The fauna in WRA or in the surrounding abandoned ponds may be affected by the future residential internal traffic. However, most of the houses are served by underground car parking space and linked with an underground vehicular access, and thus future internal traffic would be limited to near the site entrance. The potential impact to these habitats and associated fauna due to traffic during operation phase will be **Insignificant**.

Artificial Lightings

8.3.10 The behavior of nocturnal wildlife may affected by the increased residential lighting. Nocturnal animals either avoid or are attracted to lighted areas.

Areas near the Application Site is mostly developed area. Residential buildings and other lighting sources have already been present in localities adjacent to the Application Site for a significant duration, and fauna inhabiting in nearby habitats have probably habituated to lighting. Other lightings in the Application Site will only be directed to target areas (i.e., Club house facticity, access roads) and lighting will be kept to minimum lux level for safety. Potential impacts to fauna from this source are considered **Insignificant.**

8.3.11 The fauna in WRA may affected by the increased residential lighting. However, buffer zone with planting between the houses and the WRA is proposed in the surrounding wetland area, will form a barrier between the houses and the WRA. For the nearest buildings (those immediately adjacent to the WRA) the windows will be opaque/translucent tempered glass to avoid bird collision. The potential impact to these habitats and associated fauna due to lighting during operation phase will be **Insignificant.**

Runoff and Effluent Discharge

8.3.12 During the operation phase of the Project, there will be additional paved areas, roads and facilities which may contribute to an additional stormwater surface runoff due to the change of catchment characteristics.

8.3.13 Drainage system will be provided for the formed and paved road/areas in the residential potion of the proposed development to collect stormwater surface runoff. Collected surface runoff from the Application Site will be conveyed to existing government drains after passing through screening facilities. As the proposed Project is a low-density residential development, no considerable pollutants are expected on the road surface. There will be no adverse impact on water quality due to surface runoff.

8.3.14 All sewage will be properly collected by public sewer, no adverse water quality impact is expected. The potential off-site impact on the drainage channel is considered **Minor** during the operational phase of the project.

Barrier Effect to Bird Flight

8.3.15 The heights of noise barriers (ranging from 4.8m to 10.1m), fence wall (2.5m) and units of different types of unit which are ranging from 2-storeys to 4-storeys, of the proposed project are similar to the existing buildings around the Application Site. Large waterbirds, including ardeids and Great Cormorant, which are of lower flight manoeuvrability and were recorded during the ecological survey, mainly flew along the drainage channel within the Study Area, rather than the Application Site. The dry season flight path survey results indicated that no major flight line through the Application Site, while the recorded number of birds flew over the site was low (only 17 numbers from two months) and not showing any patterns or forming a major path. This indicated that the site is not of significance for bird movement. The flight height of the small number of birds flew over the site ranged between 15m and 25m above ground. Only a very small number of buildings (i.e. the 4-storeys) has minor overlap (about 3m) with their current range of flight height. In addition, observations of previous studies showed that most large waterbirds flew at heights higher than the buildings in the Project Site. Flights of these species will not be impeded by buildings in the Application Site. The potential impact due to barrier to the flight of birds is considered **Insignificant.** Besides, the Project is not expected to cause disturbance or impact to the foraging grounds of ardeids nesting in Shan Pui River Egretry, Mai Po Village Egretry or Tung Shing Lane Egretry during the operational phase. It is noted that the tall noise barriers will be reduced / removed once all nearby open storage activities being phased out in the long-run

Noise Barrier and Bird Collision

8.3.16 The Project will provide of low-rise residential development and ancillary passive recreational facilities. In order to mitigate traffic noise and noise from industrial activities in the vicinity during the operation phase, permanent noise barriers are proposed as noise mitigation measures of the Project.

8.3.17 Noise barriers may potentially cause bird collision. However, no major flight line was observed over the Application Site during the field surveys. Birds, particularly large waterbirds, mainly flew along the Ngau Tam Mei Drainage Channel. The Application Site will be residential area during operation phase and still surrounded by urbanized/disturbed habitat during operation phase. Due to the disturbed nature of the Application Site and the surrounding areas, the Application Site is not considered as important ecological corridor. Frequent bird movement (including both land birds and waterbirds) through the Application Site is not expected.

8.3.18 Fence wall (2.5m high) and noise barriers (4.8m to 10.1m high) which composed of solid walls at base (2.5m high) and transparent panels on top are proposed along the Site boundary, The transparent part of the noise barrier will make use of non-glaring and tinted materials, putting dots or stripes on the transparent panels to reduce the risk of bird collision, particularly under dim condition (e.g., dusk and dawn). Due to disturbed nature of the area, the relative low height of noise barrier, and design adopted for the noise barrier, the potential risk of bird collision is anticipated to be **Insignificant.**

8.3.19 There is no glass curtain wall building, which is known to have bird collision risk, in the proposed development, but there would be limited small size tempered glass used for screening in some of the buildings. Though waterbirds, for which the proposed WRA is designed, normally have much lower collision risk than small-sized birds, opaque dots/lines of appropriate intervals (such as 5cm) will be incorporated on the tempered glass. These

could make the glass visible to the birds and break the reflection, and have been proven effective to prevent bird collision.

Habitat Fragmentation

8.3.20 Although the abandoned ponds within the Application Site are connected to the ponds outside the Application Site to form a cluster of wetland which supports small individuals of species of conservation importance, the abandoned ponds are surrounded by developed area or roads and isolated from other wetland habitats, and thus have already been fragmented. Fragmentation might still occur within the fragmented habitat. Currently these abandoned ponds support low to moderate abundance of birds. Frequent movement of wildlife through the Application Site in existing condition is not expected. The potential impact due to habitat fragmentation in the already fragmented habitat is considered **minor.** Besides, the layout plan has intentionally reserves the entire northern part of the Application Site as part of the WRA (without any residential buildings or other structures) to allow connection of the future WRA and the surrounding ponds, especially those to the north. As the WRA would be adjacent to the ponds outside the Application Site, and the future bund dividing the WRA with the adjacent ponds would be of smaller width than a typical earth pond bund currently occurring in the ponds of Pok Wai (both within and outside the Application Site), the connectivity of wetland between WRA and the adjacent ponds could be maintained, and other measures for connectivity such as wildlife tunnel is not considered necessary.

Potential disturbance to Recognized Site of conservation Importance

8.3.21 The Project will not affect the ecological integrity of the fishponds and wetlands within the WCA during operation phase. Regarding the potential disturbance impacts during operation phase to Wetland Conservation Area,

it is considered unlikely as the Project Site is separated from the WCA by long distances (more than 176 m). Disturbance of noise and artificial lighting from the residential buildings will be confined to areas adjacent to the Project Site. The potential impact to these sites from the development project during operation phase is considered **Insignificant**.

8.3.22 Regarding the potential disturbance impacts to other recognized sites of conservation importance during operation phase (i.e. Mai Po Inner Deep Bay Ramsar Site, Mai Po Nature Reserve, Mai Po Marshes SSSI, Mai Po Village SSSI, Mai Po Village Egretry and WCA). It is considered unlikely as the Application Site is separated from these sites by long distances. Disturbance of noise and artificial lighting from the residential buildings will be confined to areas adjacent to the Application Site. The potential impact to these sites from the development project during operation phase is considered **Insignificant.**

Potential Impact on Species of Conservation Importance

8.3.23 During the operation phase, the waterbird or wetland dependent bird species of conservation importance can get benefits from the WRA, a positive impact will be induced. One butterfly and bat species were recorded within the Application Site, but due to their mobility, the proposed WRA and landscape areas as well as some developed area can provide habitat for the species. Other species of conservation importance recorded outside the Application Site are already habituated to the artificial habitat in the vicinity and hence the potential impacts to other species of conservation importance are considered **minor**.

9. MITIGATION MEASURES

9.1 *Project Design Concept*

9.1.1 The present Project follows the planning intention stated in section 8.1.1 above. It is proposed to provide a comprehensive development to include

a Wetland Restoration Area through transformation of the existing abandoned ponds into wetlands with higher ecological functions (such as more shallow water area for waterbirds) and proper management.

9.2 *Impact Avoidance*

9.2.1 **Avoidance of WCA** - The Application Site is located outside the boundary of WCA. The proposed development has thus avoided encroachment on sensitive habitats such as the fishponds and wetlands in WCA.

9.2.2 **Avoidance of Additional Habitat Loss** - The Application Site will be accessed by existing road network during both construction and operation phases. There will be no impact due to temporary or permanent loss of habitats from construction of access.

9.3 *Impact Minimisation*

9.3.1 **Construction Disturbance –** Clear demarcation of the Application Site limits is required in order to minimize and contain any disturbance during the construction period.

9.3.2 Literature review and ecological surveys showed that high counts of waterbirds occasionally foraged in the Ngau Tam Mei Drainage Channel Site during low tides in winter. As proposed under environmental impact assessment, utilisation of quiet construction method and machinery will be undertaken during the whole construction period. These environmental measures could also minimize the potential disturbance to fauna in the vicinity of the Application Site from construction noise.

9.3.3 There will be two types of hoarding, perimeter hoarding and WRA hoarding. Perimeter hoarding will properly delineate the works site boundary and screen disturbance to the nearby habitats during construction phase. In order to reduce the potential disturbance to wildlife utilizing habitats near the Application Site, the hoardings will be made of opaque, non-reflective materials and painted in colour that will blend in with the environment. The

workers will be instructed not to disturb any nearby habitats, and any works beyond the boundary would be strictly prohibited.

9.3.4 Standard site practice would be implemented to minimise potential impacts on the surrounding environment.

9.3.5 Dispersion of dust, noise and silty runoff generated during construction can be minimized by good site practice listed as follows.

- Regular checking should be undertaken to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas;
- Implementation of mitigation measures specified in ProPECC PN 1/94 to control site runoff and drainage at all work sites during construction;
- Implementation of noise control measures at all construction sites to reduce impacts of construction noise to wildlife habitats adjacent works areas;
- Implementation of dust control measures at all construction sites to minimise dust nuisance to adjacent wildlife habitats during construction activities;
- 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;
- Construction effluent, site run-off and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order;
- Proper locations for discharge outlets of wastewater treatment facilities well away from the natural streams/rivers should be identified; and
- Supervisory staff should be assigned to station on site to closely supervise and monitor the works.

9.3.6 **Low-rise Building -** The layout proposed will only involve the construction of low-rise buildings with a maximum height of ranged 9m to 18m. This will minimize the potential barrier effect to bird flights.

9.3.7 **Design of Noise Barriers -** The Recommended Layout Option has the lowest overall height of noise barrier. This would minimize the potential impact of bird collision. Minimization of bird collision will also be taken into account in the design of noise barrier. The transparent part of the noise barrier will make use of non-glaring and tinted materials, putting dots or stripes on the

transparent panels to reduce the risk of bird collision, particularly under dim condition (e.g., dusk and dawn) to reduce bird collision.

Wetland Restoration Area - The earth works and water filling as well as planting works of reed for the WRA will be conducted during the wet season of the first year of construction programme prior to the main construction works adjacent to the WRA (Phase IV, **Figure 6** refers) of the proposed residential development, to avoid disturbance to the habitat within WRA before the active season of waterbirds (see **Table 15**). It is expected 8 months covering wet season are required for the wetland as well as the reed and other vegetation to establish and provide full function of the wetland. However, the construction programme will take the potential impacts to the WRA into consideration i.e. key construction works adjacent to the WRA (Phase IV) will avoid dry season, buildings near to WRA will be commenced in the second year after the WRA is well established, and Phase IV will be commenced in wet season that is considered the less active season for waterbird. Details of phasing of the construction works will be discussed in section **9.3.11 – 9.3.14**.

9.3.8 Table 15 Timeline of the construction of the WRA and the Phasing of the Construction Works

Construction works of the WRA	2024							2025											
	Wet season					Dry season					Wet season							Dry season	
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase I construction (WRA) (Jun 2024 – Aug 2024)																			
Installation of sheet pipe to separate ponds lying on boundary																			
Drain down of Ponds																			
Construction of bunds/walls for ponds lying on boundary																			
Re-profiling earth works																			

Planting																			
Re-filling WRA																			
Establishment period of WRA (Aug 2024 – Mar 2025)																			
Establishment period																			
Construction works of the residential portion (Aug 2024 – Dec 2025)																			
Phase II construction																			
Phase III construction																			
Phase IV construction																			

9.3.9 Furthermore, a temporary hoarding around the WRA will be erected during the construction of WRA. Once the temporary hoarding is formed, the site formation and earth works for the WRA will be commenced in the wet season before the key residential development located adjacent to the WRA. In addition, no unnecessary workers or machinery will be deployed in the WRA in particular during dry season, so as to minimize disturbance impacts during the period of greatest abundance of disturbance-sensitive waterbirds.

9.3.10 During the construction period, no dogs will be allowed on the construction site to ensure that these do not provide a source of disturbance to waterbirds. Access to WRA of construction workers is not allowed unless for management and/or maintenance purposes of the WRA. Good site practice and selection of quiet equipment are expected to minimize noise impacts to waterbirds. Night-time light disturbance will be minimized by limiting the amount of lighting on the Application Site and by locating light sources far away from the adjacent ponds. Planting and initial vegetation maintenance will commence in the subsequent wet season.

9.3.11 **Phasing of the construction works -** The construction period will be divided into four phases, Phase I will be the construction of the WRA; Phase II is the construction of the residential portion in southwestern part of the Application Site; Phase III of building construction is located in

northwestern part; and the Phase IV of building construction is the rest parts of Application Site (**Figure 6** and **Table 15**refers).

9.3.12 The WRA could minimize the impacts of temporary habitat loss of the abandoned pond during the construction phase and to ensure ample time for the establishment of the WRA itself. The primary objective is to mitigate any potential impacts on wetlands, taking into account the subsequent wetland establishment period. During the 8 months covering wet season (Aug 2024 – Mar 2025) (**Table 15** refers) wetland establishment period prior to the construction adjacent to the WRA (Phase IV), no major construction activities will take place adjacent to the WRA. This deliberate measure is intended to minimize any disturbance to the WRA caused by the construction works associated with the residential portion of the project. By allocating a dedicated period for wetland establishment, the phasing of construction works aims to provide sufficient time for the natural processes to restore and establish the wetland ecosystem within the designated area. This period allows for the growth of wetland vegetation (especially the reed), the establishment of wildlife habitats, and the overall development of a self-sustaining wetland ecosystem. During this establishment period, the focus is on creating favorable conditions for wetland species to flourish. This may involve actions such as controlling water levels, managing soil composition, and implementing measures to prevent erosion if necessary. These efforts are essential in promoting the successful establishment of the WRA and ensuring its long-term ecological viability.

9.3.13 Following the second phase of the construction, the construction of houses in the northwestern area of the site, known as Phase III, will commence. These houses are situated at a greater distance from the main part of the WRA when comparing with Phase IV. Only 6 housing units in Phase III are in close proximity to the WRA, specifically the reedbed, which is considered to be less susceptible to the construction activities than the primary usage of the water zones within the core part of the WRA by waterbirds. Unlike other

construction of residential towers of other projects, the construction of Phase III does not require piling works, which are typically the primary sources of noise in construction. Instead, the main construction activities involve excavation during footing works, material loading and unloading, and concreting during superstructure works. While these activities may generate some noise and cause disturbances, the noise level is significantly lower compared to the loud noise produced by percussive piling. Additionally, the temporary hoarding between the WRA and the residential area acts as a barrier, further reducing potential impacts. As a result, it is not expected that the construction of Phase III will have significant negative effects on the establishment period of the WRA.

9.3.14 Once the establishment period is completed, Phase IV of the construction project will be initiated accordingly. The reedbed zone surrounding the water zones, along with the landscape planting near the Wetland Reserve Area (WRA), and the presence of temporary hoarding between Phase IV and the WRA, are expected to serve as buffers to mitigate disturbances during the fourth construction phase. The commencement of Phase IV, which is in close proximity to the WRA, has taken into account the active season of waterbirds, which occurs during the dry season from October to March. The construction works for Phase IV will be scheduled after the establishment period of the WRA and will also avoid the active season of waterbirds. This careful timing aims to minimize any potential impacts on the waterbirds that are expected to utilize the WRA.

9.3.15 The perimeter hoarding to be erected between the northern part of the WRA and the abandoned ponds to the north of the Application Site will be removed after the completion of construction of the WRA to enhance the ecological connectivity of those areas during the establishment period. During the main construction phase for the residential development, there will be temporary WRA hoarding along the interface between the WRA and the residential area. Like the perimeter hoarding, the WRA hoardings will

also be made of opaque, non-reflective materials and painted in colour that will blend in with the environment. The hoarding will reduce anthropogenic disturbance and impacts from the construction activities in the proposed residential area to the WRA. As the proposed WRA will start functioning after completion, where possible, the major superstructure construction of the buildings with higher disturbance located nearest to the WRA should avoid winter season that is the main period with more wildlife (i.e. waterbirds) utilizating the WRA.

9.3.16 **Operational phase of WRA** - no unsupervised public access into the WRA will be allowed to ensure that direct human disturbance to waterbirds in the wetlands will be avoided as far as possible. Reed bed will be formed along the interface between the WRA and the proposed residential area. The reed bed will minimize and screen out the disturbance to waterbirds in the open water zones. Furthermore, according to the most recent Landscape Master Plan, specific sections of partition walls measuring 5 meters and 2.5 meters in height will be strategically placed between the residential area and the WRA. These walls serve the purpose of effectively screening out any potential disturbances that may arise from the residential portion to the WRA during the operational phase, despite the fact that residential activities are generally conducted indoors and are relatively quiet. As a result, the potential impacts caused by the residential area to the WRA during the operational phase can be minimized to an acceptable level. The inclusion of these partition walls in the design plan demonstrates a proactive approach to ensuring the preservation and undisturbed functioning of the WRA in the presence of nearby residential activities.

9.3.17 **Tall noise barrier design** - To mitigate noise disturbances to the Application Site, a series of noise barriers with heights ranging from 4.8 meters to 9.4 meters will be installed around the area. These tall noise barriers have the capacity to effectively screen out noises generated outside the Application Site, such as those stemming from construction activities, open storage

areas, carparks, and nearby village houses. The strategic placement of these noise barriers also took into account the ecological connectivity between the WRA and the adjacent wetland habitats. Specifically, openings have been incorporated into the noise barriers in the western and northern sections of the WRA. This design feature ensures that the connectivity between the WRA and the abandoned ponds in close proximity to it remains unobstructed, preventing any potential blockage and maintaining the ecological continuity of the wetland habitats. + stickers

9.3.18 The above measures will all contribute to the minimization of potential construction disturbance to the surrounding habitats and associated fauna. With the implementation of these measures, noise and disturbance impact would be mitigated to an acceptable level and no residual impact is anticipated.

9.4 *Compensation – Created Wetland Restoration Area*

9.4.1 The mitigation objective for the Wetland Restoration Area is to follow the "no-net-loss in wetland" principle and wetland enhancement and management scheme of the TPB Guidelines (TPB PG-No. 12C). Under the guiding principles, management of the retained wetland habitat to enhance the ecological value of the habitat is proposed as part of the proposed development within the Application Site.

9.4.2 Findings from literature review and results of the surveys indicate that the overall ecological value is ranked low to moderate in the Application Site. The Application Site supported low diversity and abundance of flora and fauna. The exception was bird fauna, which was of low to moderate diversity and abundance, but most species recorded were common and widespread in the Deep Bay. Retaining certain habitats in their present form may not be the most ecologically-beneficial approach for the site (i.e. In particular, the deep water level and overgrown by vegetation, waterbird usage was limited to the limited pond edge). It is believed that habitat

management can be considered to increase the ecological function of this wetland to over the existing levels. This will be achieved by provision of a greater diversity of habitats (including water zones with different water depth, wood log, island, submerge plant, and reedbed) suitable for both wetland-dependent and other taxa.

9.4.3 In order to compensate the impact and enhance the ecological value of the habitat, a total of the 2.47 ha (~48.4% of the Application Site) of abandoned ponds will be enhanced as a Wetland Restoration Area. The proposed Wetland Restoration Area is planned to be located in the middle part of the Application Site with its western side immediately next to other abandoned ponds adjacent to the northern side of the Application Site. The WRA comprises different elements to provide a variety of microhabitats i.e. shallow water, wood log, island, submerge plant and reedbed. Though smaller in size, the WRA could provide more areas which are available for usage by ardeids, by providing more shallow water areas (if the ponds are without drain down, ardeids only able to use the water edge along pond bunds. Assuming an one meter zone along the bunds, the existing shallow water area available for waterbird is about 0.22 ha, and the future WRA will provide about 0.93 ha shallow water area, it should be noted that signs of pond bund renovation, pond reprofiling, vegetation management and fisheries activities were observed in the abandoned ponds within the Application Site). In addition, the planting of riparian vegetation along the island as well as the natural substrate pond bottom which will promote the aquatic fauna community.

9.4.4 The mitigation objective for the Wetland Restoration Area is to follow the "no-net-loss in wetland" principle and wetland enhancement and management scheme of the TPB Guidelines (TPB PG-No. 12C). Under the guiding principles, management of the retained wetland habitat to enhance the ecological value of the habitat is proposed as part of the proposed development within the Application Site.

9.4.5 Loss of habitat for species of conservation importance including Little Grebe, Yellow Bittern, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret, Great Cormorant, Black Kite, Eastern Buzzard, Greater Coucal, White-throated Kingfisher, Collared Crow White-cheeked Starling, Mallard and Purple Heron will be compensated by the provision of suitable habitats in the WRA, including shallow water, wood log, island, submerge plant and reedbed, prior to the major construction works in the residential portion. Details of operation of the Wetland Restoration Area will be described in the "Section 16 Planning Application for Kam Pok Road East – Comprehensive Development to include Wetland Restoration Area – Wetland Restoration Proposal".

Table 16. Summary of Construction Phase and Operational Phase Impacts

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
Construction Phase										
Permanent habitat loss	Works areas of the proposed residential development and WRA	0.2 ha of developed area and 4.9 ha of abandoned pond (2.43 ha will be the residential protion, but 2.47 ha will become WRA)	Ecological value of developed area: very low; Abandoned pond: low to medium	Low abundance and diversity of wildlife in developed area; low to medium abundance and diversity of birds in abandoned pond	developed area: 0.2 ha; Abandoned pond: 4.9 ha;	Permanent	Not reversible	Low to moderate	Insignificant for developed area; moderate for abandoned pond.	Not required for developed area; Wetland compensation as WRA in operational phase for the loss of abandoned pond

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
Temporary habitat loss	Works areas of the residential development and WRA	2.47 ha of Abandoned pond for the WRA	Ecological value of abandoned pond: low to medium	Low abundance and diversity of wildlife in developed area; low to medium abundance and diversity of birds in abandoned pond	Abandoned pond: 2.47 ha for the WRA;	Temporary	Not reversible for those for residential development; Reversible for the WRA	Low	Minor to moderate	No. The loss of ecological value will be fully compensated and even is expected to be increased significantly by the proposed WRA.
Dust	Construction works	Sensitive habitats near the works area	Vary with habitat types	Fauna in habitats adjacent to the works area	Vary	Temporary	Reversible	Low	Insignificant	No.
Construction Noise and other	Construction works	Sensitive habitats near	Vary with habitat types	Mainly waterbirds	Vary	Temporary	Reversible	Low as no piling	Insignificant for general	Use of quiet machinery;

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
disturbance impact		the works area							construction works (no piling is required) Minor for creation of WRA Minor for fauna in surrounding ponds and nearby drainage channel in wet season, Minor to Moderate in dry season.	Perimeter hoarding and WRA hoarding to be erected. Good site practice as required in other assessment
Surface run-off	Construction works	Wetland habitats (e.g. abandoned ponds and drainage	Vary	Aquatic fauna and wetland dependent species	Vary	Temporary	Reversible	Minor to Moderate	Minor to moderate	Follow water quality mitigation measures; standard good site practices

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
		channel)								
Light glare	Works area	Habitats surrounding and adjacent the works area	Vary	Nocturnal fauna	Vary	Temporary	Reversible	Insignificant	Insignificant	No
Impacts to WRA	Construction works for residential buildings	Future WRA	Created wetland, anticipated higher than existing abandoned fishponds	Mainly waterbirds	2.47 ha	Temporary	Reversible	Minor to moderate	Low to moderate due to human activities; Moderate due to noise, vibration, light, surface runoff etc.	Good site practice as required under other assessment; adopting quiet machinery and construction method, WRA hoarding; workers are not allowed going into the WRA; phasing of the construction programme

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
Impacts on Species of conservation importance	Construction works and the proposed development	Fauna found within the Application Site	Very low for developed area and low to medium for abandoned ponds	Waterbirds / Wetland dependent species of conservation importance; Japanese Pipistrelles	Low	Temporary, until the WRA is ready	Reversible	Low	Minor to moderate for waterbirds found within the Application Site Insignificant for Japanese Pipistrelles	Provision of the WRA
		Fauna species of conservation importance outside the Application Site and abandoned ponds near the Application	Low to medium	Waterbirds / Wetland dependent species of conservation importance	Low	Temporary	Reversible	Low	Minor	No.

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
		Site.								
		Ngau Tam Mei Drainage Channel	Medium	Waterbirds / Wetland dependent species of conservation importance	Occasionally high in low tide during winter	Temporary	Reversible	Low	Minor to moderate	Follow water quality mitigation measures; standard good site practices
		Other fauna species of conservation importance outside Application Site	Vary	short-nosed Fruit Bat, Many-banded Krait, Grass Demon, Yellow Orange Tip, Scarlet Basker	Low	Temporary	Reversible	Low	Insignificant	No
Impacts on recognized sites of conservation importance	Construction works	WBA, Mai Po Inner Deep Bay Ramsar Site, Mai Po	Vary, including sites of high ecological importance	Mainly waterbirds and wetland dependent	Vary	Temporary	Reversible	Insignificant	Insignificant	No specific mitigation is required given the distance and the

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
		Nature Reserve, Mai Po Marshes SSSI, Mai Po Village SSSI, Mai Po Village Egretry, Shan Puui River egretry, Tung Shing Lane egretry and WCA		species						perimeter hoarding will
Operational Phase										
Human activities and noise	The proposed development	Sensitive habitats near the residential area	Vary with habitat types	Fauna including those species of conservation	Vary	Permanent	Not Reversible	Low	Insignificant	No

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
				importance						
Traffic Disturbance	The proposed development	Sensitive habitats near the residential area	Vary with habitat types	Fauna including those species of conservation importance	Vary	Permanent	Not Reversible	Low	Insignificant	No
Artificial light	The proposed development	Sensitive habitats near the potential development area	Vary	Nocturnal fauna including firefly and night roosting sites of ardeids and Great Cormorant	Vary	Permanent	Not Reversible	Low	Insignificant	No.
Runoff and effluent discharge	The proposed development	Wetland habitats	Vary	Aquatic fauna and wetland dependent	Vary	Permanent	Not Reversible	Insignificant	Minor	No

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
				species						
Barrier effect to bird flight	The proposed development	N/A	Vary	Birds	Vary	Permanent	Not Reversible	Insignificant	Insignificant	No
Noise barrier and bird collision	The proposed development	N/A	N/A	Birds	Vary	Permanent	Not reversible	Low	Insignificant	No but the transparent part of the noise barrier will make use of non-glaring and tinted materials, putting dots, stripes and stickers on the transparent panels to reduce the risk of bird collision; strategic design of placement of tall noise barrier0.0
Habitat	The proposed	Surrounding	Ecological	Low	Abandoned pond	Permanent	Not reversible	Minor	Minor	No

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
fragmentation	development	Habitats	value of Abandoned pond: low to modium	abundance and diversity of wildlife in developed area; low to moderate abundance and diversity of wildlife in abandoned pond						
Impacts on recognized sites of conservation importance	The proposed development	WBA, Mai Po Inner Deep Bay Ramsar Site, Mai Po Nature Reserve, Mai Po Marshes SSSI, Mai Po	Vary, including sites of high ecological importance	Mainly waterbirds and wetland dependent species	Vary	Permanent	Not reversible	Insignificant	Insignificant	No

Impact	Sources	Receivers	Nature of impacts						Significance of ecological impact	Mitigation required
			Habitat quality	Species affected	Size / abundance	Duration	Reversibility	Magnitude		
		Village SSSI, Mai Po Village Egretry, Shan Puui River egretry, Tung Shing Lane egretry and WCA								
Impact on species of conservation importance	The proposed development	Species of conservation importance recorded in the vicinity of the Application Site	Vary	Species of conservation importance recorded in the vicinity of the Application Site	Vary	Permanent	Not reversible	Minor	Minor	No

9.5 *Positive Effects*

9.5.1 The design of the wetland has considered the potential connections to the adjoining wetlands. At two areas within the WRA, the WRA wetlands will be immediately adjacent to or without obstruction in between with other wetlands outside the Application Site, and can act as openings to the surrounding wetlands (see **Figure 5**). One opening is located at the northern side of the WRA, which will be near other abandoned ponds outside the Application Site in Pok Wai. The other opening is located at the western side of the WRA, which will be immediately adjacent to another WRA under a separated planning application. It is expected that with the future re-profiling, planting and management, the ecological functions of the WRA will be increased and will exceed that of the current abandoned ponds inside the Application Site. The connections with the adjacent wetlands will have mutual benefits as the WRA will extend its space in both air space and water-surface area, while the adjacent wetlands may have increase of waterbird usage given a higher quality wetland is present in the area. The WRA will also provide feeding opportunities for the waterbirds in the nearby Ngau Tam Mei Drainage Channel.

Landscape Planting

9.5.2 Vegetation cover in the Application Site will be enriched by landscape planting during operation phase. The development will have wider landscape buffer. The planting of native species providing berry (e.g., *Syzygium jumbo*, *Viburnum odoratissimum*) and nectar (e.g., *Ixora chinensis*) will be recommended to enhance the food resources of birds. Nectar plants will also provide food resources for butterflies. The planting of trees will also provide roosting habitats for birds. The potential impact of replacement of existing plantation by landscape planting to birds and butterflies will be positive.

9.6 *Environmental Monitoring Programme*

9.6.1 Regular site audit will be conducted on weekly basis for checking the implementation of the proposed good site practice during construction phase.

9.6.2 Ecological monitoring of Wetland Restoration Area during both constructional phase and operation phase is proposed. Baseline surveys will be conducted prior to commencement of site construction works. Observations during construction phase monitoring will be compared against the baseline data, and the effectiveness of the recommended mitigation measures will be evaluated. Details of monitoring method are given in the EM&A Manual and Details of operation of the Wetland Restoration Area will be described in the "Section 16 Planning Application for For Kam Pok Road East – Comprehensive Development to include Wetland Restoration Area – Wetland Restoration Proposal ".

9.7 *Residual Impacts*

9.7.1 The residual environmental impacts refer to the net environmental impacts after the implementation of mitigation measures. With implementation of good site practice and compensation, there will be no significant residual impacts from the Project. And the loss of the 4.9 ha of abandoned ponds will be compensated by the provision of wetland restoration area which could provide more areas available for waterbirds as feeding and roosting ground. The residual ecological impacts of the project are considered acceptable.

10. *CONCLUSION*

10.1.1 About 70% of Application Site is located within WBA, but outside WCA. Habitats recorded within the Study Area included abandoned pond, active agricultural land, active pond, developed area, drainage channel, flood storage pond, meander, nullah, plantation, wasteland and woodland. Potential construction impacts include a permanent loss of 0.2 ha of developed area and 4.9 ha of abandoned ponds in which 2.47 ha will become the Wetland Restoration Area. Potential ecological impacts due to

habitat loss are considered **Moderate**. Mitigation measures to minimize the potential impact have been recommended. With mitigation measures in place, these impacts will be minimized to acceptable level. Species of conservation importance recorded during the ecological field survey within the Application Site included 13 bird species of conservation importance, 1 dragonfly, 1 reptile and 1 bat. Potential impact to these species is considered **Minor to Moderate**, and mitigation measures to minimize the potential impact have been recommended. With mitigation measures in place, these impacts will be minimized to acceptable level. The Project will follow the "no-net-loss in wetland" principle and wetland enhancement and management scheme of the TPB Guidelines (TPB PG-No. 12C).

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FIGURES

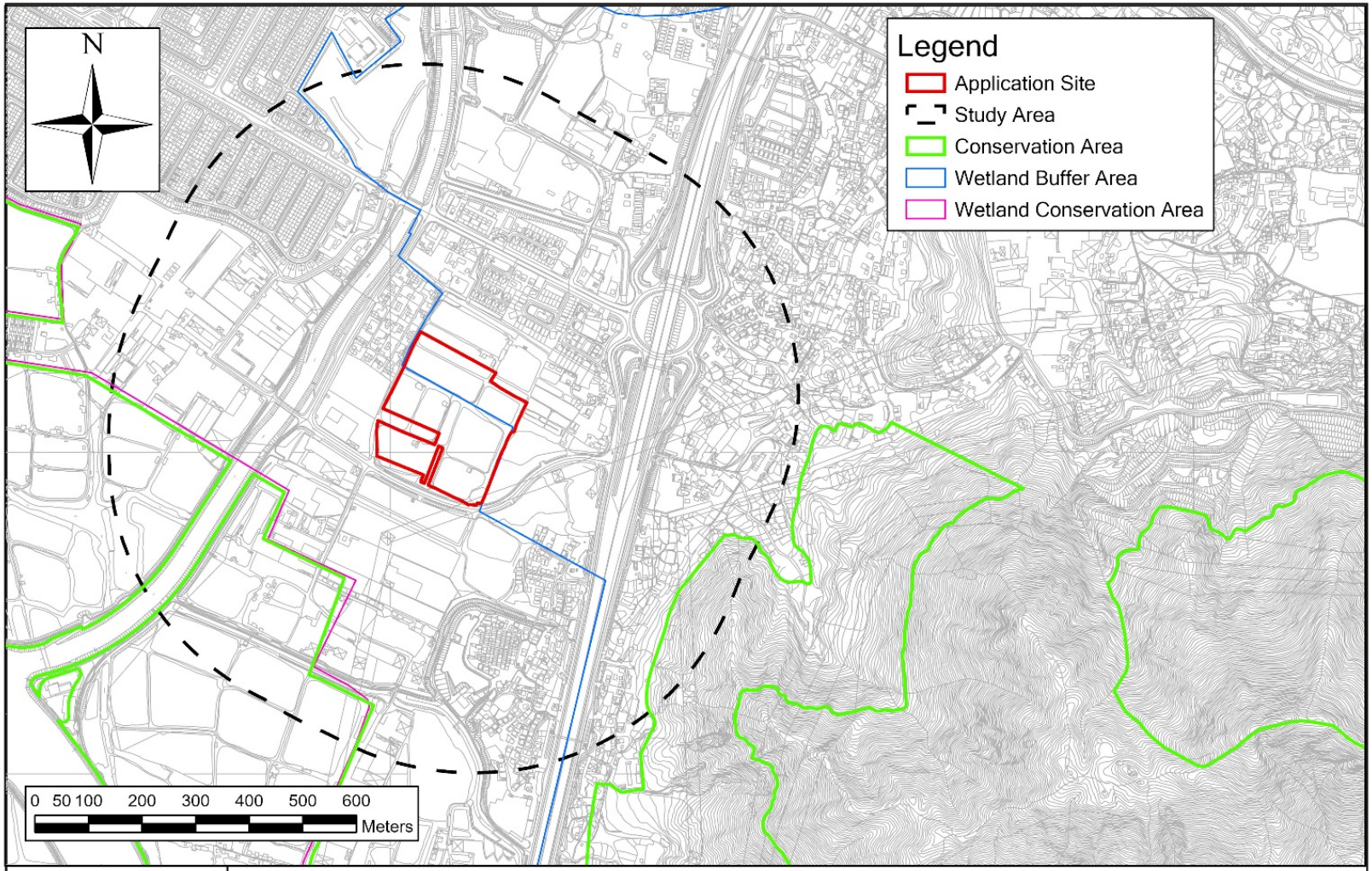

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Figure 1 Locations of Application Site, Study Area and Recognized Sites of Conservation Importance within the Study Area

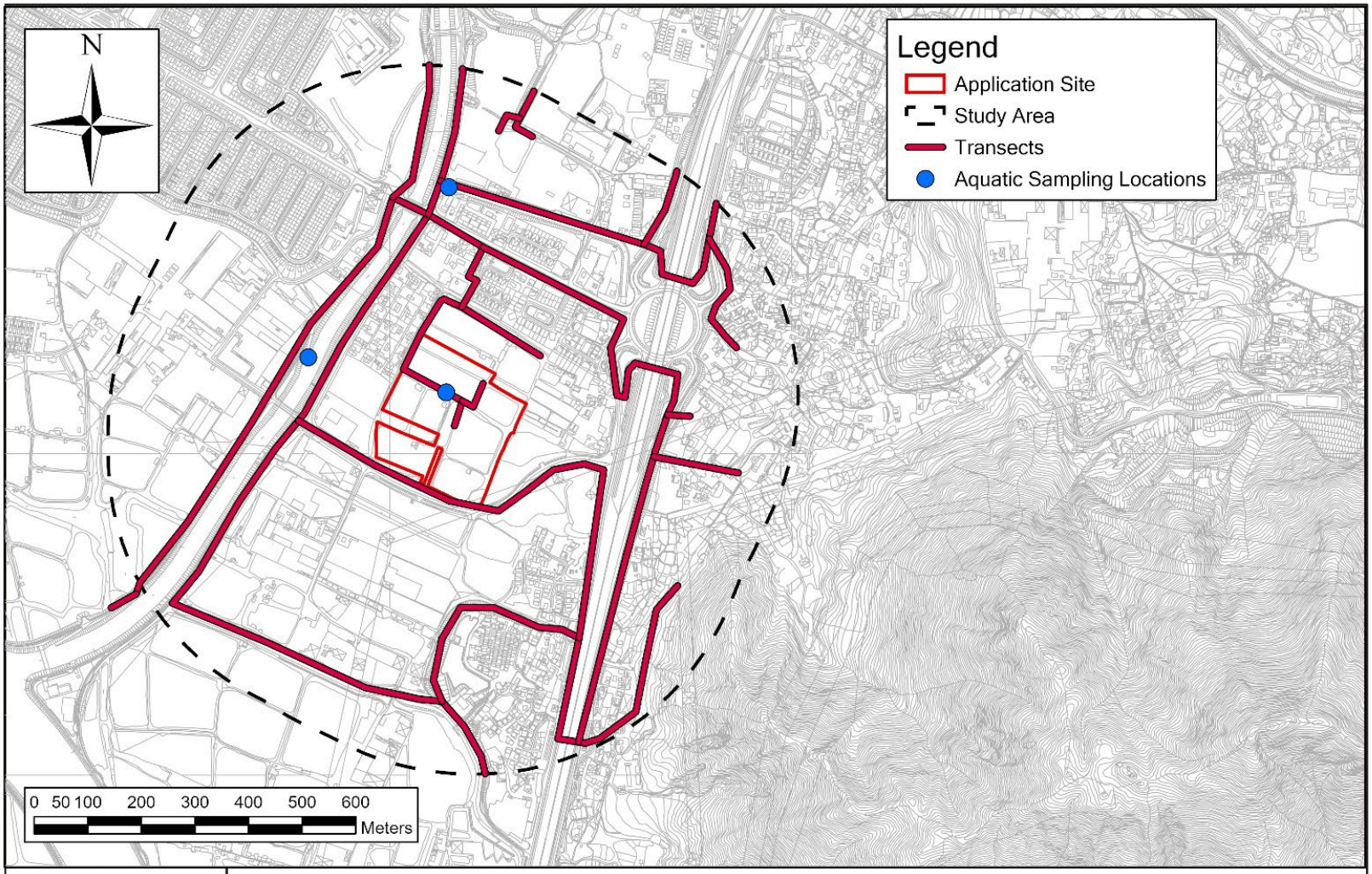

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Figure 2 Terrestrial fauna survey transects and Aquatic Sampling Locations

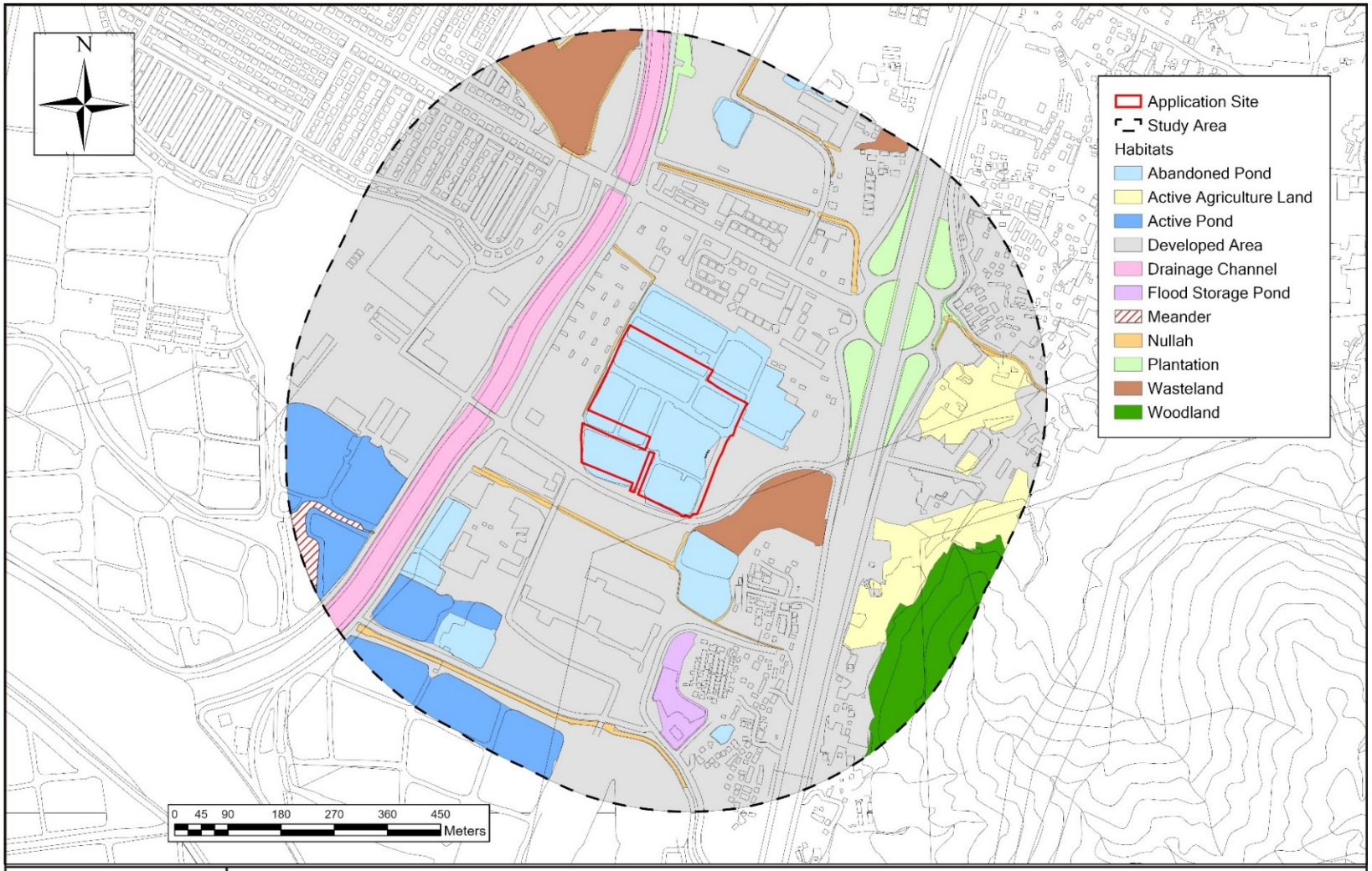

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Figure 3 Habitat Map

Figure 4 Photos of Habitats in the Application Site and Study Area

		
Application Site (Developed Area)	Application Site (Abandoned pond)	Developed Area
		
Plantation	Abandoned Pond	Flood Storage Pond

		
Drainage Channel	Nullah	Active Agricultural Land

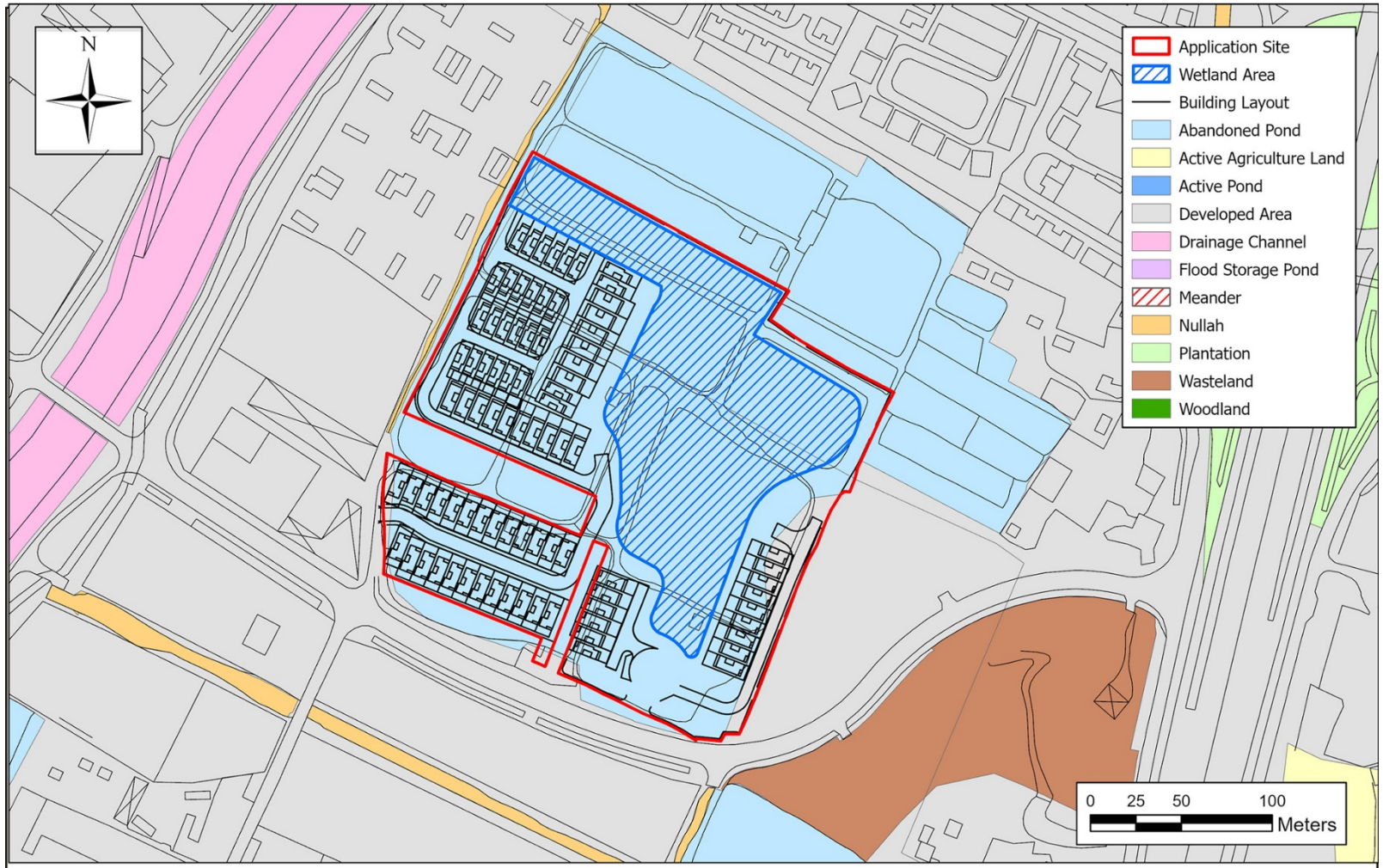

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Figure 5 Building Layout, the Wetland Restoration Area and the Existing Habitat

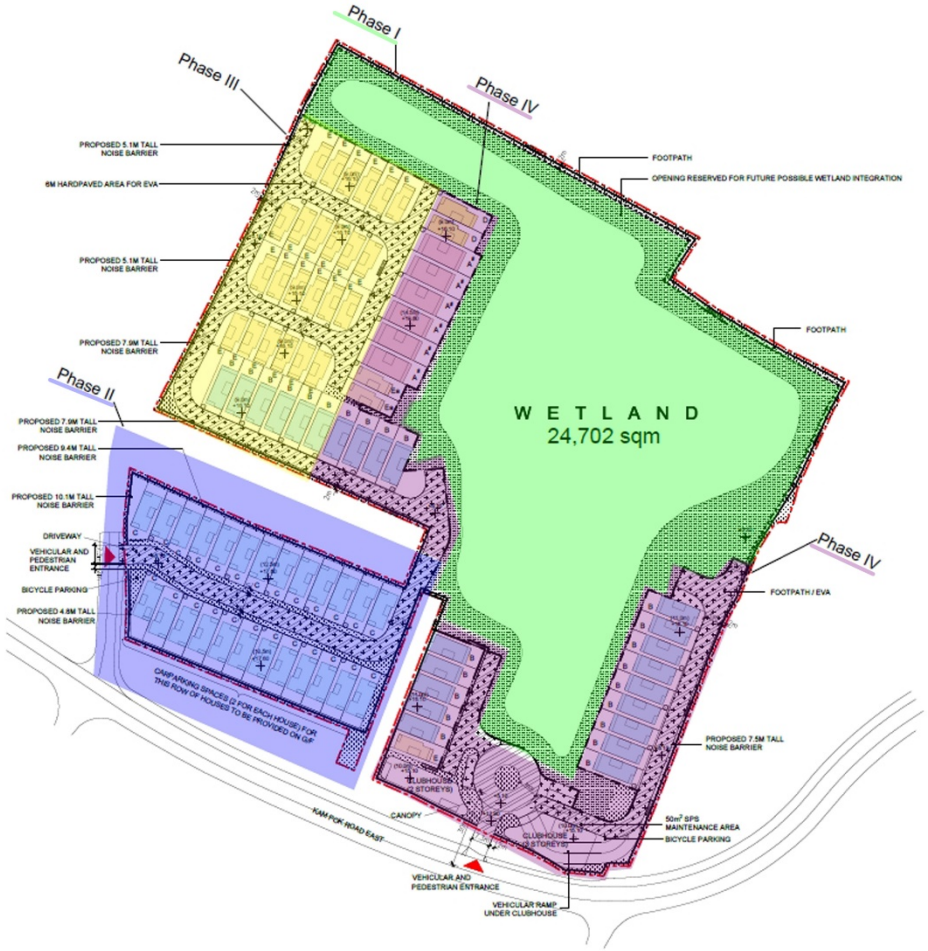

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Figure 6 Phasing of the Construction Works

APPENDIX

Appendix 1 Vascular plant species recorded within the Study Area

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Acacia auriculiformis	Tree	Exotic	-	-						O							
Acacia confusa	Tree	Exotic	-	-						S					C		
Ageratum conyzoides	Herb	Exotic	Common	-		C				C							
Albizia lebbeck	Tree	Exotic	-	-						S					C		
Aleurites moluccana	Tree	Exotic	-	-											S		
Alocasia macrorrhizos	Herb	Native	Very common	-	C		C			C					O	C	O
Aloe vera	Herb	Exotic	-	-						S							
Amaranthus viridis	Herb	Native	Very common	-		O			S								S
Aporusa dioica	Tree	Native	Very common	-						S							C
Archontophoenix alexandrae	Tree	Exotic	-	-				S		O							
Artocarpus heterophyllus	Tree	Exotic	-	-		S											
Asystasia micrantha	Herb	Exotic	-	-						C							O
Averrhoa carambola	Tree	Exotic	-	-		S											
Axonopus compressus	Herb	Exotic	Common	-											O		
Bambusa sp.	Bamboo	Unknown	-	-						S							
Bambusa ventricosa	Bamboo	Exotic	-	-											S		
Bambusa vulgaris cv. *Vittata*	Bamboo	Exotic	-	-											S		
Bauhinia purpurea	Tree	Exotic	-	-						S					O		

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Bidens alba	Herb	Exotic	Very common	-	C			C	C	C		C					O
Bischofia javanica	Tree	Native	Common	-						C					O		
Boehmeria nivea	Shrub	Exotic	Restricted	-						S					S		
Bombax ceiba	Tree	Exotic	-	-													S
Bothriochloa bladhii	Herb	Native	Very common	-						O							
Bougainvillea spectabilis	Climber	Exotic	-	-					S	C							
Brachiaria mutica	Herb	Exotic	Common	-		O				O							
Breynia fruticosa	Shrub	Native	Very common	-													S
Bridelia tomentosa	Shrub	Native	Very common	-						C					S		C
Broussonetia papyrifera	Tree	Native	Very common	-						C							S
Calliandra haematocephala	Shrub	Exotic	-	-						C					C		
Callistemon viminalis	Tree	Exotic	-	-											S		
Carica papaya	Tree	Exotic	-	-		S			S	S							
Carmona microphylla	Shrub	Exotic	-	-					S								
Caryopteris incana	Herb	Native	Common	-		S											
Caryota mitis	Tree	Exotic	-	-		S											
Casuarina equisetifolia	Tree	Exotic	Rare	-						S							
Celosia argentea	Herb	Native	Very common	-				S									
Celtis sinensis	Tree	Native	Common	-			S			C					O		
Centotheca lappacea	Herb	Native	Common	-													S
Chloris barbata	Herb	Native	Very common	-		O											

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Cinnamomum burmannii	Tree	Native	-	-											S		
Cinnamomum camphora	Tree	Native	Common	-						O							
Citrus sp.	Tree	Exotic	-	-		S				S							
Clausena lansium	Tree	Exotic	-	-		S			S	O							S
Cleistocalyx nervosum	Tree	Native	Common	-											S		
Crateva unilocularis	Tree	Exotic	-	-											S		
Cleome rutidosperma	Herb	Exotic	Restricted	-		S											
**Coccinia grandis*	Climber	Native	Very rare	-		S											
Cocculus orbiculatus	Climber	Native	Common	-						O							S
Codiaeum variegatum	Shrub	Exotic	-	-						S							
Colocasia esculenta	Herb	Exotic	-	-	O												
Commelina diffusa	Herb	Native	Common	-													
Cuscuta campestris	Herb	Native	-	-	C			C									
Cyclosorus interruptus	Herb	Native	Common	-	C												
Cyperus difformis	Herb	native	Very common	-		S											
Cyperus involucratus	Herb	Exotic	Restricted	-	O												
Cyperus malaccensis var. *brevifolius*	Herb	Native	Common	-							C						
Delonix regia	Tree	Exotic	-	-						S					O		
Desmos chinensis	Shrub	Native	Common	-						S							C
Dicranopteris pedata	Herb	native	Very common	-													C

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Digitaria sp.	Herb	Unknown	-	-		S			S	C							
Dimocarpus longan	Tree	Exotic	Restricted	-		C	O	S		C					S		C
Dioscorea alata	Climber	Exotic	-	-													
Dioscorea hamiltonii	Climber	Native	Restricted	-		S											
Dracaena fragrans	Shrub	Exotic	-	-						S							
Dracaena sanderiana	Shrub	Exotic	-	-		S											S
Drymaria cordata	Herb	Native	Common	-													O
Duranta erecta	Climber	Exotic	-	-					S						C		
Duranta repens `Variegata`	Shrub	Exotic	-	-					S	O							
Eclipta prostrata	Herb	Native	Common	-		S											
Elaeocarpus rugosus	Tree	Exotic	-	-						O							
Eleusine indica	Herb	Native	Very common	-		S											
Eleutherococcus trifoliatus	Climber	Native	Restricted	-	S	S											
Emilia sonchifolia	Herb	Native	Very common	-		S											
Epipremnum aureum	Climber	Exotic	-	-		S											
Eriobotrya japonica	Tree	Exotic	-	-						S							
Eucalyptus citriodora	Tree	Exotic	-	-											C		
Eucalyptus robusta	Tree	Exotic	-	-											O		
Eucalyptus tereticornis	Tree	Exotic	-	-											C		
Euphorbia hirta	Herb	Exotic	Very common	-		S			S	O							
Euphorbia thymifolia	Herb	Native	Very common	-						C							

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area									
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Ficus elastica	Tree	Exotic	-	-						S							
Ficus hispida	Shrub	Native	Very common	-						C							O
Ficus microcarpa	Tree	Native	Common	-						C					C		
Ficus microcarpa `Golden Leaf`	Shrub	Exotic	-	-						S							
Ficus pumila	Climber	Native	Very common	-		S									S		
Ficus subpisocarpa	Tree	Native	-	-	O	S				S							
Ficus variegata var. *chlorocarpa*	Tree	Native	Common	-						O							
Ficus virens var. *sublanceolata*	Tree	Native	Common	-											O		
Flueggea virosa	Shrub	Native	Common	-		S											
Gnetum luofuense	Climber	Native	Very common	-													S
Hedychium coronarium	Herb	Exotic	-	-	S	S											
Hedyotis corymbosa	Herb	Native	Very common	-	S					C							
Hedyotis hedyotidea	Shrub	Native	Very common	-													S
Hibiscus rosa-sinensis	Shrub	Exotic	-	-						C					C		
Hibiscus tiliaceus	Tree	Native	Very common	-						O					S		
Hippeastrum vittatum	Herb	Exotic	-	-						S							
Hydrocotyle verticillata	Herb	Exotic	-	-										O			
Hylocereus undatus	Herb	Exotic	-	-		S			S								

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Ilex pubescens	Shrub	Native	Very common	-													S
Ipomoea aquatica	Herb	Exotic	Very common	-	C												
Ipomoea batatas	Herb	Exotic	-	-		S											
Ipomoea cairica	Climber	Exotic	Very common	-				O		C			C				
Ipomoea triloba	Herb	Native	-	-	O					C							
Khaya senegalensis	Tree	Exotic	-	-											O		
Koelreuteria bipinnata	Tree	Exotic	-	-						O							
Kyllinga polyphylla	Herb	Exotic	Common	-		O											
[#]*Lagerstroemia speciosa*	Tree	Exotic	-	Cap. 96A						C					O		
Lantana camara	Shrub	Exotic	Very common	-	S	C		O		C		O			O		
Leucaena leucocephala	Tree	Exotic	Common	-	S					C		S	S		C	S	
Ligustrum sinense	Tree	Native	Common	-						O							S
Liquidambar formosana	Tree	Native	Common	-						S							
Liriope spicata	Herb	Native	Very common	-													S
Litchi chinensis	Tree	Exotic	Restricted	-		S	S										S
Litsea glutinosa	Tree	Native	Very common	-													S
Litsea rotundifolia var. *oblongifolia*	Shrub	Native	Very common	-													S
Lophatherum gracile	Herb	Native	Very common	-													C
Lygodium japonicum	Herb	Native	Very common	-													O
Livistona chinensis	Tree	Exotic	-	-											O		

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Macaranga tanarius var. *tomentosa*	Tree	Native	Common	-			S	O		C			S		C		
Macroptilium atropurpureum	Herb	Exotic	Common	-						O							
Macroptilium lathyroides	Herb	Exotic	Common	-						C							
Malvastrum coromandelianum	Shrub	Native	Common	-						S							
Mangifera indica	Tree	Exotic	-	-						S							
Manihot esculenta	Shrub	Exotic	-	-		S				S							
Melastoma malabathricum	Shrub	Native	Common	-													S
Melastoma sanguineum	Shrub	Native	Common	-													S
Melaleuca cajuputi subsp. cumingiana	Tree	Exotic	-	-											C		
Melia azedarach	Tree	Exotic	Common	-		O		S		C			S		O		S
Melicope pteleifolia	Shrub	Native	Common	-													S
Microstegium ciliatum	Herb	Native	Very common	-													O
Mikania micrantha	Herb	Exotic	Very common	-	C	C	C	C		C	S				O	C	O
Mimosa pudica	Herb	Exotic	Very common	-						O					S		
Miscanthus floridulus	Herb	Native	Common	-		C				C							
Morus alba	Tree	Native	Common	-													
Murraya paniculata	Tree	Exotic	-	-		S				S							

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Musa x paradisiaca	Herb	Exotic	-	-		O	O	S	S	S						S	
Mussaenda pubescens	Climber	Native	Very common	-													S
Nelumbo nucifera	Herb	Exotic	-	-	C			S									
Oplismenus compositus	Herb	Native	Very common	-						C							
Pachira aquatica	Tree	Exotic	-	-		S				S							
Paederia scandens	Climber	Native	Very common	-				O		C							
Panicum maximum	Herb	Exotic	Common	-				C		C		C	S		C		
Panicum repens	Herb	Native	Very common	-		O											
Passiflora foetida	Climber	Exotic	Very common	-	O					O							
Pennisetum alopecuroides	Herb	Native	Common	-						S							
Peperomia obtusifolia	Herb	Exotic	-	-					S								
Phragmites vallatorius	Herb	Native	Very common	-	S												
Phyllanthus reticulatus	Shrub	Native	Common	-													S
Phyllanthus tenellus	Herb	Unknown	-	-		O											
Pinus elliottii	Tree	Exotic	-	-													S
Platycladus orientalis	Tree	Exotic	-	-													S
Plumeria rubra	Tree	Exotic	-	-		S											
Portulaca oleracea	Herb	Native	Very common	-		S											
Pouzolzia zeylanica	Herb	Native	Common	-		O											
Praxelis clematidea	Herb	Exotic	Very common	-													S
Prunus persica	Tree	Exotic	-	-					C								

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Pseudocalymma alliaceum	Climber	Exotic	-	-					S								
Psidium guajava	Tree	Exotic	Common	-		S		S									
Psychotria asiatica	Tree	Native	Very common	-													O
Pteris semipinnata	Herb	Native	Very common	-													C
Pterocypsela indica	Herb	Native	Common	-						C							
Pueraria lobata var. *montana*	Climber	Native	Common	-		C											
Pyrostegia venusta	Climber	Exotic	-	-					S								
Quisqualis indica	Climber	Exotic	Restricted	-						S							
Ricinus communis	Shrub	Exotic	Restricted	-		S											
Roystonea regia	Tree	Exotic	-	-						S							
Sansevieria sp.	Herb	Exotic	-	-						S							
Sapium sebiferum	Tree	Native	Common	-		S											
Schefflera arboricola	Climber	Exotic	-	-						O							
Sida rhombifolia	Shrub	Native	Common	-						S					O		
Solanum americanum	Herb	Exotic	-	-		C											
Solanum torvum	Shrub	Exotic	Common	-		S	S										
Solanum mammosum	Herb	Exotic	-						S								
Sonneratia caseolaris	Tree	Exotic	-	-							O						
Spathodea campanulata	Tree	Exotic	-	-											O		
Spermacoce glaber	Herb	Unknown	-	-		S											

Scientific name	Growth form	Origin	Rarity in Hong Kong [1]	Protection/Conservation status [2]	Relative abundance in each habitat within the Application Site		Relative abundance in each habitat outside the Application Site but within the Study Area										
					AbP	DA	AbP	AcP	AAL	DA	DC	FSP	M	N	P	WA	WO
Sporobolus fertilis	Herb	Native	Very common	-						O							
Stephania longa	Climber	Native	Common	-						S							
Syngonium podophyllum	Herb	Exotic	-	-		S				S							
Syzygium cumini	Tree	Exotic	-	-						S							
Syzygium jambos	Tree	Exotic	Common	-						O					S		S
Tetracera asiatica	Climber	Native	Very common	-													O
Trema tomentosa	Shrub	Native	Common	-						S							
Tridax procumbens	Herb	Exotic	Very common	-						C							
#*Typha angustifolia*	Herb	Exotic	Rare	-	C												
Uvaria macrophylla	Climber	Native	Common	-													C
Vernonia cinerea	Herb	Native	Very common	-						O							
Wedelia trilobata	Herb	Exotic	Common	-	C			C		C							S
Zanthoxylum avicennae	Tree	Native	Common	-													S
Zanthoxylum nitidum	Climber	Native	Very common	-						S							

Notes:

1. Corlett *et al*. (2000). Hong Kong vascular plants: distribution and status.

2. Cap. 96A Forestry Regulations under Forests and Countryside Ordinance.

- *Though *Coccinia grandis* was considered very rare by Corlett *et al*. (2000), it is a food crop species that may be dispersed from villages nearby. Therefore, it is not regarded as a species of conservation importance.

- #*Lagerstroemia speciosa*, *Casurarina equisetifolia*and *Typha angustifolia* are listed under Cap. 96A Forestry Regulations under Forests and Countryside Ordinance and/or regarded as rare by Corlett *et al*. (2000) respectively. However, all species are exotic to Hong Kong and therefore they are not regarded as species of conservation importance.

Abbreviations:

- Habitats: AbP = Abandoned Pond; AcP = Active Pond; AAL = Active Agricultural Land; DA = Developed Area; DC = Drainage Channel; FSP = Flood Storage Pond; M = Meander; N = Nullah; P = Plantation; WA = Wasteland; WO = Woodland
- Relative abundance: C = Common; O = Occasional; S = Scarce

Appendix 2a Birds species recorded in Study Area

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Tachybaptus ruficollis	Little Grebe	+		+	+									**Fellowes et al. (2002): LC**		Common resident. Found in Deep Bay area.
Platalea minor	Black-faced Spoonbill						+							**Class 2 Protected Animal of China;China Red Data Book Status: (Endangered); Fellowes et al. (2002): PGC; IUCN Red List Status: ED**		Common winter visitor. Found in Deep Bay area.
Ixobrychus sinensis	Yellow Bittern	+			+		+							**Fellowes et al. (2002): (LC)**		Uncommon summer visitor and passage migrant. Found in Deep Bay area, Chek Keng, Tai Long Wan.
Nycticorax nycticorax	Black-crowned Night Heron			+	+									**Fellowes et al. (2002):(LC)**		Common resident and winter visitor. Widely distributed in Hong Kong.
Ardeola bacchus	Chinese Pond Heron	+		++	++	+	+++	+						**Fellowes et al. (2002): PRC,(RC)**		Common resident. Common resident. Widely distributed in Hong Kong.
Bubulcus coromandus	Eastern Cattle Egret			+	+	+						+		**Fellowes et al. (2002):(LC)**		Resident and common passage migrant. Widely

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
																distributed in Hong Kong.
Ardea cinerea	Grey Heron	+		+	+	+	+++	+	+					**Fellowes et al. (2002): PRC**		Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.
Ardea alba	Great Egret	+		++	+		++ +	+	+					**Fellowes et al. (2002): PRC,(RC)**		Common resident and winter visitor. Widely distributed in Hong Kong.
Egretta intermedia	Intermediate Egret			+										**Fellowes et al. (2002): RC**		Common passage migrant. Found in Deep Bay area, Tai Long Wan, Starling Inlet, Tai O, Cape D'Aguilar.
Egretta garzetta	Little Egret	++		++	+	+	+++	+	+				+	**Fellowes et al. (2002): RC**		Common resident. Widely distributed in coastal area throughout Hong Kong.
Phalacrocorax carbo	Great Cormorant	++		+++	++	+	+							**Fellowes et al. (2002): PRC**		Common winter visitor. Widely distributed in coastal areas throughout Hong Kong.
Milvus migrans	Black Kite	+		+			+					+	+	**Fellowes et al. (2002): RC; Appendix 2 of CITES**	(Cap. 586)	Common resident and winter visitor. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Buteo japonicus	Eastern Buzzard	+												**Appendix 2 of CITES**	(Cap. 586)	Common winter visitor. Widely distributed in Hong Kong.
Amaurornis phoenicurus	White-breasted Waterhen	++		+	+	+	+					+				Common resident. Widely distributed in wetland throughout Hong Kong.
Gallinula chloropus	Common Moorhen	+			+		+									Common resident. Found in Deep Bay area, Shuen Wan, Starling Inlet.
Himantopus himantopus	Black-winged Stilt						+++							**Fellowes et al. (2002): RC**		Common passage migrant. Found in Deep Bay area, Long Valley, Kam Tin.
Recurvirostra avosetta	Pied Avocet						+							**Fellowes et al. (2002): RC**		Abundant winter visitor. Found in Deep Bay area.
Tringa erythropus	Spotted Redshank						+							**Fellowes et al. (2002): RC**		Abundant in winter and spring. Found in Deep Bay area.
Tringa totanus	Common Redshank						++							**Fellowes et al. (2002): RC**		Common passage migrant. Found in Deep Bay area.
Tringa stagnatilis	Marsh Sandpiper						+++							**Fellowes et al. (2002): RC**		Common winter visitor and passage migrant. Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Sai Kung.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Tringa nebularia	Common Greenshank						+							**Fellowes et al. (2002): RC**		Abundant passage migrant and winter visitor. Found in Deep Bay area.
Tringa glareola	Wood Sandpiper						+		+					**Fellowes et al. (2002): LC**		Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong.
Actitis hypoleucos	Common Sandpiper	+				+	+	+								Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong.
Streptopelia orientalis	Oriental Turtle Dove			+												Common winter visitor and passage migrant. Widely distributed in Hong Kong.
Streptopelia decaocto	Eurasian Collared Dove	+		+												Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai.
Spilopelia chinensis	Spotted Dove	+++	+	++	+++		++	+	+	+	+	+	+++			Abundant resident. Widely distributed in Hong Kong.
Centropus sinensis	Greater Coucal	+		+	+		+					+		**Class 2 Protected Animal of**		Common resident. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
														China;China Red Data Book Status: (Vulnerable)		
Eudynamys scolopaceus	Asian Koel	+		+						+			+			Common resident. Widely distributed in Hong Kong.
Cacomantis merulinus	Plaintive Cuckoo												+			Uncommon summer visitor. Widely distributed in open area throughout Hong Kong.
Hierococcyx sparverioides	Large Hawk Cuckoo												+			Common passage migrant and summer visitor. Widely distributed in woodland throughout in Hong Kong.
Halcyon smyrnensis	White-throated Kingfisher	+		+			+							**Fellowes et al. (2002): LC**		Common resident. Widely distributed in coastal areas throughout Hong Kong
Alcedo atthis	Common Kingfisher	++		+	+		+	+	+							Common passage migrant and winter visitor. Widely distributed in wetland habitat throughout Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Ceryle rudis	Pied Kingfisher						+							**Fellowes et al. (2002): LC**		Uncommon resident. Widely distributed in lakes and ponds throughout Hong Kong.
Falco tinnunculus	Common Kestrel												+	**Class 2 Protected Animal of China; Appendix 2 of CITES**	(Cap. 586)	Common autumn migrant and winter visitor. Widely distributed in Hong Kong
Pericrocotus speciosus	Scarlet Minivet										+					Common resident. Found in Tai Po Kau, the Peak, Lam Tsuen, Cape D'Aguilar Road, Peel Rise, Shing Mun.
Lanius schach	Long-tailed Shrike	+		+			+									Common resident. Widely distributed in open areas throughout Hong Kong.
Dicrurus macrocercus	Black Drongo	+		+						+			+			Common summer visitor. Widely distributed in open area throughout Hong Kong.
Cyanopica cyanus	Azure-winged Magpie			+	+											Introduced resident. Found in Mai Po.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Pica pica	Eurasian Magpie									+						Common resident. Widely distributed in Hong Kong
Corvus torquatus	Collared Crow	+		+	+		+			+		+	+	**Fellowes et al. (2002): LC; IUCN Red List Status: VU**		Uncommon 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.
Corvus macrorhynchos	Large-billed Crow	+									+					Common resident. Widely distributed in Hong Kong
Parus cinereus	Cinereous Tit		+				+			++	+		+			Common resident. Widely distributed in Hong Kong.
Pycnonotus jocosus	Red-whiskered Bulbul	+++	+	+++	++	+	+++	+	+++	+++	++	+++	+++			Abundant resident. Widely distributed in Hong Kong.
Pycnonotus sinensis	Chinese Bulbul	+++	+	+++	+	+	+++		+++	+++	++	++	+++			Abundant resident. Widely distributed in Hong Kong.
Hemixos castanonotus	Chestnut Bulbul								+		+					Common resident and winter visitor. Widely distributed in woodland throughout Hong Kong.
Hirundo rustica	Barn Swallow	++		++	+		+			+		+	+++			Abundant passage migrant and summer visitor. Widely

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
																distributed in Hong Kong.
Phylloscopus fuscatus	Dusky Warbler	+		+	+		+					+				Common passage migrant and winter visitor. Widely distributed in shrubland and waterside vegetation throughout Hong Kong.
Phylloscopus proregulus	Pallas's Leaf Warbler								+	+						Common winter visitor. Found in woodland throughout Hong Kong.
Phylloscopus inornatus	Yellow-browed Warbler	+	+	+	+		+		+	+	+	+	+			Common winter visitor. Found in woodland throughout Hong Kong.
Cisticola juncidis	Zitting Cisticola			+										**Fellowes et al. (2002): LC**		Common passage migrant and winter visitor. Widely distributed in grassland throughout Hong Kong.
Prinia flaviventris	Yellow-bellied Prinia	+++		++	++	+	++		+	+	+	+				Common resident. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area										Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Prinia inornata	Plain Prinia	++		+	+	+	+		+		+		+			Common resident. Widely distributed in grassland throughout Hong Kong.
Orthotomus sutorius	Common Tailorbird	+++	+	++	++	+	+++	+	+	+	+	+	+			Common resident. Widely distributed in Hong Kong.
Garrulax perspicillatus	Masked Laughingthrush	++			+		+			+	+	+	+++			Abundant resident. Widely distributed in shrubland throughout Hong Kong.
Zosterops japonicus	Japanese White-eye	++	+	+	+		+++		+++	+++	++	++	+++			Abundant resident. Widely distributed in Hong Kong.
Acridotheres cristatellus	Crested Myna	+++		+++	+++	+	+++		+	++	+	+	+++			Common resident. Widely distributed in Hong Kong.
Acridotheres tristis	Common Myna			+					+							Uncommon resident. Found in Mai Po, Sheung Uk Tsuen, Sheung Shui, Kam Tin, Shek Kong, Ping Shan, Mong Tseng.
Spodiopsar sericeus	Red-billed Starling			+++	+		+							**Fellowes et al. (2002): RC**		Common winter visitor. Widely distributed in Hong Kong

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Spodiopsar cineraceus	White-cheeked Starling	+												**Fellowes et al. (2002): PRC**		Common winter visitor. Found in Deep Bay area, Kam Tin, Long Valley.
Gracupica nigricollis	Black-collared Starling	+++	+	+++	+++		+++		+	+	+	++	+++			Common resident. Widely distributed in Hong Kong.
Sturnia sinensis	White-shouldered Starling			+										**Fellowes et al. (2002): LC**		Common passage migrant. Found in Kam Tin, Deep Bay area, Po Toi Island, Long Valley, Victoria Park, Ho Chung, Ma Tso Lung, Mui Wo, Lam Tsuen Valley.
Copsychus saularis	Oriental Magpie Robin	++	+	+	+		+		+	+	+	+	++			Abundant resident. Widely distributed in Hong Kong.
Phoenicurus auroreus	Daurian Redstart	+	+	+	+	+	+	+		+		+	+			Common winter visitor. Widely distributed in Hong Kong.
Saxicola stejnegeri	Stejneger's Stonechat	+	+	+	+											Common passage migrant and winter visitor. Widely distributed in open cultivated fields throughout Hong Kong.
Aethopyga christinae	Fork-tailed Sunbird												+			Common resident. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Passer montanus	Eurasian Tree Sparrow	++	+	+	+++				++	+++	++	+++	+++			Abundant resident. Widely distributed in Hong Kong.
Lonchura punctulata	Scaly-breasted Munia	+++	+	++	+	+						+	++			Common resident. Widely distributed in Hong Kong
Motacilla cinerea	Grey Wagtail	+		+			+	+		+						Common passage migrant and winter visitor. Widely distributed in hill streams throughout Hong Kong.
Motacilla alba	White Wagtail	++	+	+	+	+	++	+	+			+	+			Common passage migrant and winter visitor. Widely distributed in Hong Kong.
Anthus godlewskii	Olive-backed Pipit			+												Common passage migrant and winter visitor. Widely distributed in Hong Kong.

1: AFCD (2020), 2: Wang (1998).

*All birds are protection under Cap. 170

Level of concern: LC = local concern, PRC = potential regional concern, RC = regional concern, GC = global concern; Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence (Fellowes *et al*,.2002)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 2b Birds species recorded in Study Area during verification surveys

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Tachybaptus ruficollis	Little Grebe	5												Fellowes et al. (2002): LC		Common resident. Found in Deep Bay area.
Anas platyrhynchos	Mallard	4												Fellowes et al. (2002): RC		Scarce winter visitor. Found in Deep Bay area, Tai Lam Chung, Hok Tau Reservoirs, Tolo Harbour, Nam Chung, Long Valley, Kam Tin.
Ardeola bacchus	Chinese Pond Heron							2						Fellowes et al. (2002): PRC		Common resident. Widely distributed in Hong Kong.
Ardea cinerea	Grey Heron							4						Fellowes et al. (2002): PRC		Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.
Ardea purpurea	Purple Heron	1												Fellowes et al. (2002): RC		Uncommon passage migrant. Found in Deep Bay area.
Ardea alba	Great Egret	1						2						Fellowes et al. (2002): PRC		Common resident, migrant and winter visitor. Widely distributed in Hong Kong.
Phalacrocorax carbo	Great Cormorant	4						2						Fellowes et al. (2002): PRC		Common winter visitor. Widely distributed in coastal

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
																areas throughout Hong Kong.
Amaurornis phoenicurus	White-breasted Waterhen	2												-		Common resident. Widely distributed in wetland throughout Hong Kong.
Gallinula chloropus	Common Moorhen	14												-		Common winter visitor, resident and migrant. Found in Deep Bay area, Shuen Wan, Starling Inlet.
Spilopelia chinensis	Spotted Dove	12												-		Abundant resident. Widely distributed in Hong Kong.
Centropus sinensis	Greater Coucal	1												Class 2 Protected Animal of China;China Red Data Book Status: (Vulnerable)		Common resident. Widely distributed in Hong Kong.
Ceryle rudis	Pied Kingfisher	4						1						Fellowes et al. (2002): (LC)		Common resident. Widely distributed in lakes and ponds throughout Hong Kong.
Corvus torquatus	Collared Crow	2												Fellowes et al. (2002): LC; IUCN Red List Status: VU		Locally common resident. Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
																Fu Lam, Chek lap Kok, Shuen Wan, Lam Tsuen.
Parus cinereus	Cinereous Tit												2	-		Common resident. Widely distributed in Hong Kong.
Pycnonotus jocosus	Red-whiskered Bulbul												12	-		Abundant resident. Widely distributed in Hong Kong.
Pycnonotus sinensis	Chinese Bulbul												15	-		Abundant resident. Widely distributed in Hong Kong.
Phylloscopus fuscatus	Dusky Warbler												7	-		Abundant winter visitor and migrant. Widely distributed in shrubland and waterside vegetation throughout Hong Kong.
Prinia flaviventris	Yellow-bellied Prinia												4	-		Common resident. Widely distributed in Hong Kong.
Prinia inornata	Plain Prinia												5	-		Locally common resident. Widely distributed in grassland throughout Hong Kong.
Acridotheres cristatellus	Crested Myna												20	-		Abundant resident. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Spodiopsar sericeus	Red-billed Starling												80	Fellowes et al. (2002): GC		Common winter visitor. Widely distributed in Hong Kong
Spodiopsar cineraceus	White-cheeked Starling												24	Fellowes et al. (2002): PRC		Common winter visitor. Found in Deep Bay area, Kam Tin, Long Valley.
Gracupica nigricollis	Black-collared Starling												10			Common resident. Widely distributed in Hong Kong.
Turdus mandarinus	Chinese Blackbird												4			Common winter visitor. Widely distributed in Hong Kong.
Copsychus saularis	Oriental Magpie Robin												5			Abundant resident. Widely distributed in Hong Kong.
Phoenicurus auroreus	Daurian Redstart												2			Common winter visitor. Widely distributed in Hong Kong.
Saxicola stejnegeri	Stejneger's Stonechat												4			Common passage migrant and winter visitor. Widely distributed in open cultivated fields throughout Hong Kong.
Passer montanus	Eurasian Tree Sparrow												12			Abundant resident. Widely distributed in Hong Kong.

Scientific Name	English Name	Application Site	Study Area											Conservation Status	Statutory Protection in Hong Kong*	Commonness and Distribution in Hong Kong
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA			
Lonchura punctulata	Scaly-breasted Munia												2			Common resident. Widely distributed in Hong Kong
Motacilla alba	White Wagtail												2			Common passage migrant and winter visitor. Widely distributed in Hong Kong.
Spinus spinus	Eurasian Siskin												6			Scarce winter visitor. Found in Tai Po Kau, Shek Kong, Tsim Bei Tsui, Mount Austin, Fanling Golf Course, Mai Po, Chinese University

1: AFCD (2020), 2: Wang (1998).

*All birds are protection under Cap. 170

Level of concern: LC = local concern, PRC = potential regional concern, RC = regional concern, GC = global concern; Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence (Fellowes *et al*,.2002)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Appendix 3 Mammal species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Bos taurus	Domestic Ox			+													Common. Widely distributed in forested areas throughout Hong Kong, except northwest N.T. and Hong Kong Island.
Canis lupus familiaris	Domestic Dog	+			+								+				Common. Widely distributed in forested areas throughout Hong Kong.
Felis catus	Domestic Cat				+								+				Uncommon. Widely distributed in urban and forested areas throughout Hong Kong.
Cynopterus sphinx	Short-nosed Fruit Bat									+ + +				China Red Data Book Status: (Indeterminate); (Cap. 170)		(Cap. 170)	Very Common. Widely distributed in urban & forested areas

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	throughout Hong Kong.
Pipistrellus abramus	Japanese Pipistrelle	+			+							+		(Cap. 170)		(Cap. 170)	Very Common. Widely distributed throughout Hong Kong.

1: AFCD (2020)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 4 Amphibian species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Bufo melanostictus	Asian Common Toad	+++	+	+						+			+				Widely distributed in Hong Kong.
Fejervarya limnocharis	Paddy Frog	+															Widely distributed in Hong Kong.
Rana guentheri	Gunther's Frog	+															
Polypedates megacephalus	Brown Tree Frog	+											+				Widely distributed throughout Hong Kong.

1: AFCD (2020)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 5 Reptile species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Calotes versicolor	Changeable Lizard	+											+				Widely distributed throughout Hong Kong.
Ptyas mucosus	Common Rat Snake						+							China Red Data Book Status: (Endangered); Fellowes et al. (2002): PRC; Appendix 2 of CITES	Potential Regional Concern	(Cap. 586)	
Bungarus multicinctus	Many-banded Krait	+												China Red Data Book Status: (Vulnerable); Fellowes et al. (2002): PRC	Potential Regional Concern		Widely distributed in New Territories, Hong Kong Island and Lantau Island.
Hemidactylus bowringii	Bowring's Gecko								+								Distributed throughout Hong Kong.
Mabuya longicaudata	Long-tailed Skink												+				Widely distributed

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	throughout Hong Kong.

1: AFCD (2020)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 6 Butterfly species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Erionota torus	Banana Skipper	+															Uncommon. Widely distributed in agricultural field throughout Hong Kong
Udaspes folus	Grass Demon				+												Rare. Widely distributed in agricultural field throughout Hong Kong
Acytolepis puspa	Common Hedge Blue	+		+									+				Common. Widely distributed throughout Hong Kong
Chilades lajus	Lime Blue	+															Common. Widely distributed throughout Hong Kong
Everes lacturnus	Tailed Cupid	+											+				Common. Widely distributed throughout Hong Kong
Lampides boeticus	Long-tailed Blue	+															Common. Widely distributed in abandoned field

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	throughout Hong Kong
Nacaduba kurava	Transparent 6-line Blue				+												Common. Widely distributed throughout Hong Kong
Pseudozizeeria maha	Pale Grass Blue	++	+	+					+	+			+				Very Common. Widely distributed throughout Hong Kong
Rapala manea	Slate Flash	+															Common. Widely distributed throughout Hong Kong
Spindasis lohita	Long-banded Silverline										+						Common. Common and widespread throughout Hong Kong
Abisara echerius	Plum Judy										+						Very Common. Widely distributed throughout Hong Kong
Danaus genutia	Common Tiger						+										Common. Widely distributed

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	throughout Hong Kong
Euploea core	Common Indian Crow	+								+							Common. Widely distributed throughout Hong Kong
Euploea midamus	Blue-spotted Crow	+								+							Very Common. Widely distributed throughout Hong Kong
Tirumala limniace	Blue Tiger	+											+				Common. Widely distributed throughout Hong Kong
Charaxes bernardus	Tawny Rajah										+		+				Common. Widely distributed throughout Hong Kong
Cupha erymanthis	Rustic									+							Very Common. Widely distributed throughout Hong Kong
Hestina assimilis	Red Ring Skirt				+					+							Common. Widely distributed in woodland

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	throughout Hong Kong.
Hypolimnas bolina	Great Egg-fly	+		+									+				Common. Widely distributed throughout Hong Kong
Neptis hylas	Common Sailer	+		+	+						+		+				Very Common. Widely distributed throughout Hong Kong
Rohana parisatis	Black Prince									+			+				Common. Widely distributed throughout the woodland in Hong Kong
Symbrenthia lilaea	Common Jester												+				Common. Widely distributed throughout Hong Kong
Lethe confusa	Banded Tree Brown	+					+			+	+						Common. Widely distributed in woodland throughout Hong Kong
Mycalesis mineus	Dark Brand Bush Brown	+								+	+		+				Very Common. Widely

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	distributed throughout Hong Kong
Papilio helenus	Red Helen	+		+						+							Very Common. Widely distributed throughout Hong Kong
Papilio memnon	Great Mormon			+						+	+		+				Very Common. Widely distributed throughout Hong Kong
Papilio paris	Paris Peacock									+							Very Common. Widely distributed throughout Hong Kong
Papilio polytes	Common Mormon	+		+			+			+	+	+	+				Very Common. Widely distributed throughout Hong Kong
Papilio protenor	Spangle									+							Very Common. Widely distributed throughout Hong Kong

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Catopsilia pomona	Lemon Emigrant	+		+			+				+		+				Common. Widely distributed throughout Hong Kong
Catopsilia pyranthe	Mottled Emigrant	+															Very Common. Widely distributed throughout Hong Kong
Delias pasithoe	Red-base Jezebel	+											+				Very Common. Widely distributed throughout Hong Kong
Eurema hecabe	Common Grass Yellow	+		+	+		+					+	+				Very Common. Widely distributed throughout Hong Kong
Hebomoia glaucippe	Great Orange Tip	+			+					+							Common. Widely distributed throughout Hong Kong
Ixias pyrene	Yellow Orange Tip									+							Uncommon. Widely distributed throughout Hong Kong

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes et al. (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Pieris canidia	Indian Cabbage White	+	+	+	+					+	+	+	++				Very Common. Widely distributed throughout Hong Kong

1: AFCD (2020)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO: Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 7 Dragonfly species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes *et al.* (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Ceriagrion auranticum	Orange-tailed Sprite	+						+									Abundant. Widely distribute in ponds and marshes throughout Hong Kong
Ischnura senegalensis	Common Bluetail	+															Abundant. Widely distribute in all wetland habitats except fast flowing rivers throughout Hong Kong
Ictinogomphus pertinax	Common Flangetail	+															Common. Widely distribute in ponds throughout Hong Kong
Brachythemis contaminata	Asian Amberwing	+															Abundant. Widely distribute in

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes *et al.* (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	weedy ponds and sluggish streams
Crocothemis servilia	Crimson Darter	+		+	+												Abundant. Widely distribute in cultivated areas, ponds and marshes throughout the New Territories
Neurothemis fulvia	Russet Percher								+								Common. Widely distribute in cultivated areas and streams throughout Hong Kong
Orthetrum glaucum	Common Blue Skimmer	+		+													Abundant. Widely distributed in streams, conduits, drainage channels,

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes *et al.* (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
																	seepages and road gutters throughout Hong Kong.
Orthetrum sabina	Green Skimmer	+			+			+									Abundant. Widely distribute in all wetland habitats throughout Hong Kong
Pantala flavescens	Wandering Glider	++					+			+			+				Abundant. Widely distribute in all wetland habitats throughout Hong Kong
Rhyothemis variegata arria	Variegated Flutterer	++											+				Common. Widely distribute in marshes, ponds and tanks throughout Hong Kong

Scientific Name	Common Name	Application Site	Study Area											Conservation Status	Fellowes *et al.* (2002)	Statutory Protection in Hong Kong	Commonness and Distribution in Hong Kong[1]
		Ab Pond	Ac Agr	Ac Pond	Ab Pond	Me	DC	Nu	FSP	PL	WO	WL	DA				
Trithemis aurora	Crimson Dropwing	+															Abundant. Widely distribute in marshes, ponds, streams and ornamental ponds throughout Hong Kong
Urothemis signata	Scarlet Basker	+												Fellowes et al. (2002): LC	Local Concern		Common. Common in areas containing abandoned fish ponds throughout Hong Kong
Copera marginipes	Yellow Featherlegs							+									Abundant. Widely distribute in streams throughout Hong Kong

1: AFCD (2020)

Level of concern: LC = local concern, PRC = potential regional concern, RC = regional concern, GC = global concern; Letters in parentheses indicate that the assessment is on the basis of

restrictedness in breeding and/or roosting sites rather than in general occurrence (Fellowes *et al*,.2002)

(Habitats: Ac Agr : Active Agriculture Land, Ac Pond: Active Pond, Ab Pond: Abandoned Pond, Me: Meander, DC: Drainage Channel, FSP: Flood Storage Pond, PL: Plantation, WO:

Woodland, WL: Wasteland, DA: Developed Area)

Relative Abundance: +++ = common, ++ = occasional, + = scarce

Appendix 8 Aquatic species recorded in Study Area

Scientific Name	Common Name	Application Site	Study Area
Ctenopharyngodon idellus	Grass carp	+	
Hypophthalmichthys nobilis	Big Head Carp	+	
Mugil cephalus	Grey mullet, Striped mullet		++
Oreochromis niloticus	Nile tilapia	+	+
Pomacea canaliculata	Apple snail	+	+

Relative Abundance: +++ = common, ++ = occasional, + = scarce