

MTR Corporation Limited

Northern Link

Habitat Creation and Management Plan

March 2026

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Date:

24 March 2026

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Habitat Creation and Management Plan

for

NOL Works Package 2

Report No.: 1637-B-WCA-GCL-660-000004

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1 INTRODUCTION

1.1 Background

The Northern Link (NOL) is one of the seven railway schemes recommended to be taken under the Railway Development Strategy 2014 (“RDS-2014”). The Project will be a heavy underground railway line with a route length of about 10.7km between Kam Sheung Road (KSR) Station on the Tuen Ma Line (TML) and Kwu Tung (KTU) Station on the Lok Ma Chau Spur Line (LMCSL) of East Rail Line (EAL). The Project connects the EAL and the TML, forming a railway loop in the Northern New Territories. Passengers will be able to interchange at KSR Station on TML and KTU Station on EAL. The Project will also serve the transportation needs to the potential New Development Areas (NDAs) in the Northern New Territories and enhance cross-boundary movement.

The NOL runs underground in tunnel between KSR(NOL) and KTU(NOL). Stations with three proposed intermediate stations at Au Tau (AUT), Ngau Tam Mei (NTM) and San Tin (SAT) to support the unleashing of the development potential along its alignment. An at-grade depot is proposed at NTM area, and also there would be other aboveground structures including station entrances and ancillary buildings (ABs), i.e. ventilation shafts/ventilation buildings (VBs), Emergency Access Points (EAPs) and Emergency Egress Points (EEPs), as well as enabling works to the south of KSR(NOL) Station, for potential southern extension, to the north of SAT Station for potential bifurcation to Lok Ma Chau Loop and Huanggang Port, and to the east of KTU(NOL) Station for potential eastern extension to Ping Che areas.

The Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-259/2024) for the Project was approved on 9 February 2024 under the Environmental Impact Assessment Ordinance (EIAO). Subsequent to the approval of the EIA Report, an Environmental Permit (EP) was issued on 9 February 2024 (EP No.: EP-638/2024) for the construction and operation of the Project.

The approved EIA Report identified the unavoidable direct loss of wetland habitats (including watercourse, marsh/reed, pond and wet agricultural land at Sha Po/Au Tau (SPAUT) and San Tin/Shek Wu Wai (SATSWW) due to the proposed NOL development. To mitigate the direct loss of wetland habitats with moderate ecological values (i.e. Marsh/Reed at SPAUT and SATSWW), the Report recommended establishing a Wetland Compensation Area (WCA) located adjacent to Chi Ho Road, with an area of at least 1.94 ha, to compensate the wetland loss.

Pursuant to Condition 2.16 of the EP-638/2024, the Permit Holder shall, no later than 3 months before commencement of construction of the Project, submit a Habitat Creation and Management Plan (HCMP) for the Wetland Compensation Area to the Director for approval.

No construction works for San Tin Station (SAT) and San Tin Ancillary Building (SNA) shall commence before all the recommended enhancement measures for the WCA described in the approved HCMP have been completed (for locations of SAT and SNA refer to **Figure 1-1** below).

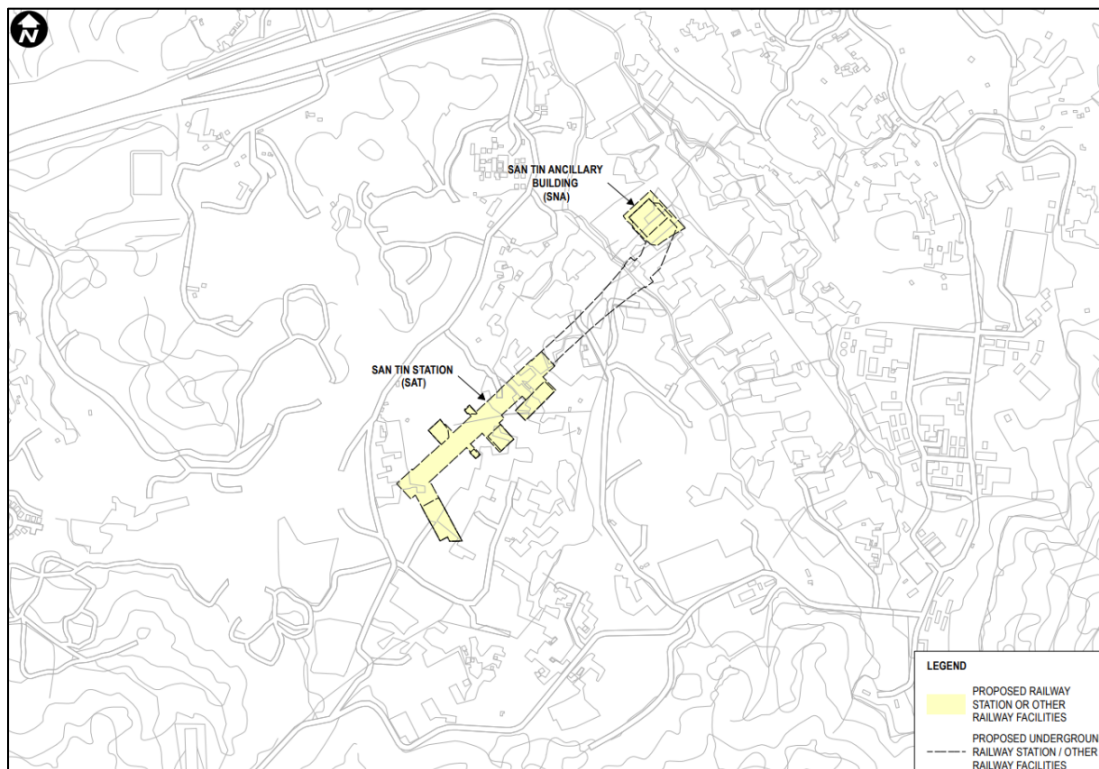


Figure 1-1. Locations of San Tin Station (SAT) and San Tin Ancillary Building (SNA).

The HCMP shall be prepared by the Qualified Ecologist(s) as appointed under Condition 2.5, certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC).

2 Permit Requirements and Plan Objectives

2.1 Permit Requirements

According to EP-638/2024 of NOL, Condition 2.16 requests the submission of Habitat Creation and Management Plan for the WCA, with details set as follows:

- To set out details of the specifications for the habitats and ecological functions;
- To define the management, including the cooperation arrangement with the management party of the adjacent compensation wetland (if any);
- To define the ecological monitoring and audit requirements of the Wetland Compensation Area
- Show the design details, location and implementation schedule to clearly list out the mitigation measures to be implemented, and the implementation party, location, timing, and environmental performance required for implementation of the mitigation measures.

The key target of the construction of the proposed WCA is to fully meet and complete the recommended enhancement measures for the WCA as described in this HCMP by December 2026, so as to allow the commencement of the construction works for San Tin Station and San Tin Ancillary Building.

2.2 Plan Objectives

This HCMP is prepared to fulfill the requirements under Condition 2.16 of the EP No: EP-638/2024. The primary objectives of this HCMP are to detail:

- the design approach and features for creating and enhancing the existing fishpond areas into an ecologically functional WCA of at least 1.94ha, including the creation of an Enhancement Pond, retention and enhancement of an existing Marsh/Reed, creation of Marsh/Reed and grassy bund;
- the implementation of constructing the WCA;
- the monitoring programme to monitor the physical environment of the created and enhanced habitats within the WCA; and
- maintenance and management approach of the WCA.

3 Description of the Project Area

3.1 Location and Environs

The proposed WCA is located in Kam Tin area, with the existing boundary of WCA to be built slightly different from the boundary of the WCA proposed in the approved EIA Report due to the land lot liaison issue with Lands Department. The latest site boundary of the WCA adopted in this HCMP has been updated after the approval of the NOL EIA Report (**Drawing No. 1637/B/WCA/GCL/C24/027**), comprising a total of 1.97 ha of land within this final boundary of the WCA.

The WCA will be mainly formed from parts of the three existing fishponds to the east of Kam Tin River and Chi Ho Road, with some land to be formed from the existing village/ orchards area lined along the pond bunds. It is also ecologically linked to the existing West Rail Compensatory Wetland at the east and south, bounded by a tidal meander connected with Kam Tin River at the south. The WCA includes part of an existing fishpond to be used by future Ecological Enhancement Area (EEA) for a separate project to the north, with villager houses and a fishpond at the east (**Drawing No. 1637/B/WCA/GCL/C24/028**).

3.2 Existing Site Conditions

The proposed WCA comprises existing fishponds and their vegetated pond bunds, village/orchards areas and a small marsh/reed area. The pond bunds and village/orchards environs are densely planted with fruit trees (dominated by Jackfruit *Artocarpus heterophyllus*, Mango *Mangifera indica* and Rose Apple *Syzygium jambos*). Naturally colonised trees, such as native trees *Celtis sinensis* and *Macaranga tanarius* var. *tomentosa*, and exotic tree *Leucaena leucocephala* are often found standing on the bunds. The understory of this densely wooded area is colonised by grass or herbs (*Dracaena sanderiana*). Larger native *Ficus microcarpa* and exotic *Casuarina equisetifolia* can be found at a densely vegetated southwestern corner and along Chi Ho Road.

According to the latest aerial photos, site visit and approved EIA Report (AEIAR-259/2024), no active aerators used in fishpond operation were observed, and hence all three fishponds

within the WCA are supposed to be inactive fishponds.

3.3 Topography

In general, the existing ground levels of the WCA range from approximately +0.2 mPD to +4.4 mPD. The pond bottom of the existing three fishponds is generally flat and varies between +0.2 mPD to +1.12 mPD, while the bottom of the existing Marsh/Reed is a bit higher, ranging from about +1.57 mPD to +1.79 mPD. The existing fishponds are surrounded by raised pond bunds range from approximately +3.32 mPD to +4.76mPD, and these bunds bound the western, southern and part of the eastern side the WCA. The southern side of the WCA is facing the tidal meander, with slope running down to the tidal meander. The southern boundary of the WCA ranges from approximately +2.09 mPD to +2.62 mPD, with higher ground levels located at the southwestern corner measured from +3.86 mPD to +4.04 mPD.

3.4 Hydrology

Water sources for the existing ponds mainly include rainwater and groundwater seepage, with occasional active pumping from the nearby tidal meander believed to be used in the past when the ponds functioned as active fishponds. As inspected on-site, one fishpond (Pond 1 in **Drawing No. 1637/B/WCA/GCL/C24/028**) was hydrologically connected to the tidal meander at the north through pipe, while the existing Marsh/Reed is directly influenced by the tidal water through a broken bund at the south.

In planning long-term water management for the proposed Enhancement Pond and the large Marsh/Reed pond (i.e. Pond 3 in **Drawing No. 1637/B/WCA/GCL/C24/028**) in the WCA, water supply will primarily come from tidal fluctuations and rainfall, respectively. **Table 1** below presents the water budget for the proposed WCA. Although a water deficit is likely from October to March (i.e. the whole dry season), this is manageable because annual rainfall exceeds evaporation. Seasonal water level reductions are acceptable, as the proposed wetland habitats in the WCA can be replenished via a powered water control system to maintain the appropriate operational water level during the dry season.

Table 1 Water Budget for the proposed Wetland Conservation Area (Source: Hong Kong Observatory Data Climatological means 1986 – 2025)

Month	Rainfall (mm) ¹	Evaporation (mm) ¹	Surplus/ deficit (mm)
January	26.5	70.8	-44.3
February	36.0	62.4	-26.5
March	52.7	73.5	-20.8
April	114.2	85.5	28.7
May	222.1	107.5	114.6
June	316.0	112.0	204.0
July	260.1	140.2	119.9
August	297.9	127.9	170.0
September	198.7	122.3	76.4
October	60.7	121.9	-61.2

Month	Rainfall (mm) ¹	Evaporation (mm) ¹	Surplus/ deficit (mm)
November	32.6	93.8	-61.2
December	24.1	81.4	-57.3
Year	1,641.5	1,199.3	442.2

Notes:

1. The rainfall and evaporation data (1986 – 2025) are collected from the automatic rainfall station at Au Tau and the automatic weather station at King's Park respectively.

In addition, **Table 2** presents a summary of the mean highest high water level and mean lowest low water level between 2015 and 2024 at the nearest HKO weather station at Tsim Bei Tsui. The average highest high water level is 3.06 mCD (i.e. 2.918 mPD) (including the consideration of storm surges under the influence of Typhoon Signal Nos. 10 Hato (4.56mCD), in August 2017, and Mangkhut (4.18mCD) in September 2018). This tide height information provides baseline design on the top level of the pond bund to be built in maintaining the protection of the WCA from daily tidal fluctuations.

Table 2 Summary of mean highest high water level and mean lowest low water adopted from the nearest Tsim Bei Tsui weather station (Source: Hong Kong Observatory Data, 2015 - 2024)

Month	Mean Highest High Water Level (mCD)	Mean Highest High Water Level (mPD)	Mean Lowest Low Water Level (mCD)	Mean Lowest Low Water Level (mPD)
January	3.08	2.937	0.05	-0.094
February	3.00	2.857	0.06	-0.083
March	2.80	2.653	0.07	-0.076
April	2.78	2.633	0.08	-0.066
May	3.00	2.849	0.06	-0.083
June	3.11	2.960	0.07	-0.081
July	3.16	3.016	0.06	-0.086
August	3.40	3.254	0.10	-0.046
September	3.15	3.004	0.22	0.074
October	3.05	2.905	0.27	0.128
November	3.13	2.986	0.12	-0.025
December	3.11	2.964	0.06	-0.088
Year	3.06	2.918	0.10	-0.044

3.5 Key Findings of Pre-construction Baseline Survey

A baseline ecological survey, covering both wet and dry seasons, of the WCA and its 300m surrounding environs were carried out between June to August 2024 and November 2024 to January 2025. The surveys provide comprehensive ecological character of the areas and provide baseline information to support the formulation of this HCMP, and the key findings are summarised as below.

The baseline ecological survey includes surveys on habitat and vegetation, terrestrial

mammal, avifauna, ardeid night roost and pre-roost, herpetofauna, butterflies, odonates, firefly, and freshwater aquatic assemblages, as well as water quality monitoring. Within the WCA and its close proximity, a total of 8 mammals (including bats), 43 avifauna, 8 amphibians, 6 reptiles, 25 butterflies, and 14 dragonflies were recorded. One confirmed ardeid night roost at Ko Po Road, and two potential ardeid night roosts at Ko Po Road and on tree canopies located on pond bunds between Pond 1 and 2 within the WCA were identified. Both Ko Po Road ardeid night roosts were located away from the WCA (at least 150m - 350m) and separated by access path and Kam Tin River. Ko Po Road ardeid night roost is at least 350m away from the WCA, and it was utilised by Chinese Pond Heron, Great Egret, Little Egret, Grey Heron and Black-crowned Night Heron, with a peak of 211 ardeids recorded in August 2024. In addition, night roosting ardeids were recorded 150m to the south of the WCA, where 85 Chinese Pond Heron and Little Egret were recorded in November 2024. Within the WCA small numbers of ardeids were occasionally recorded roosting in the tree groups between Pond 1 and 2. This included a maximum of 16 Great Egrets in December 2024 and less than 10 Chinese Pond Heron, Grey Heron and Black-crowned Night Heron on other dates. Such numbers and frequency are not considered significant in a Deep Bay context. Additional site visits were conducted on 1 and 4 February 2026 to verify the location and utilisation of the potential ardeid night roost within the WCA, and affirmed that an exotic tree *Albizia lebbbeck* was used as a roosting tree for low number of Great Egrets (with only 10 and 6 individuals of Great Egrets recorded on 1 and 4 February 2026). Night roosts are dynamics and ardeids will likely relocate to nearby night roosts (e.g. Ko Po Road or other high-tide loafing area immediately next to the WCA), or establish 'new' roost on suitable trees in the locality.

In summary, 1 plant, 7 mammal (all bat species), 16 bird, 2 amphibian, 1 reptile and 2 odonate species of conservation importance were recorded within the proposed WCA and its close proximity. **Table 3** summarises the species of conservation importance recorded during the baseline ecological surveys within the WCA. Survey methodologies and findings of the fauna surveys conducted during the baseline ecological surveys within the WCA are presented in **Appendix A**.

Table 3 Summary of Species of Conservation Importance recorded in the baseline ecological survey for the WCA

Species Name	Conservation and Protection Status ¹	Status in Hong Kong ²	Within Project Area	Max. Count
Plant				
<i>Aquilaria sinensis</i>	Cap. 586; NT; VU(CPRDB) (Category II) VU(IUCN)	Common in Hong Kong	V/O	3
Mammals				
Short-nosed Fruit Bat <i>Cynopterus sphinx</i>	NT(RLCV); Cap.170	Very widely distributed in urban and countryside areas throughout Hong Kong.	V/O	3

Species Name	Conservation and Protection Status ¹	Status in Hong Kong ²	Within Project Area	Max. Count
Intermediate Horseshoe Bat <i>Rhinolophus affinis</i>	(LC); Cap.170	Widely distributed in countryside areas throughout Hong Kong.	✓	✓
Least Horseshoe Bat <i>Rhinolophus pusillus</i>	PRC (RC); Cap.170	Widely distributed in countryside areas throughout Hong Kong.	✓	✓
<i>Myotis</i> spp.	(LC); NT(RLCV); Cap.170	Found in Shek Kong, Pak Tam Chung, Fung Yuen, Plover Cove, Pat Sin Leng and Shing Mun Country Parks.	✓	✓
Chinese Noctule <i>Nyctalus plancyi</i>	PRC (RC); Cap.170	Fairly widely distributed in countryside areas throughout Hong Kong.	✓	✓
Japanese Pipistrelle <i>Pipistrellus abramus</i>	Cap.170	Widely distributed throughout Hong Kong.	IF, V/O	2 (Both sighting and acoustic records observed)
Lesser Bamboo Bat <i>Tylonycteris fulvida</i>	(LC); Cap.170	Fairly widely distributed in countryside areas throughout Hong Kong.	✓	✓
Avifauna				
Northern Shoveler <i>Spatula clypeata</i>	RC	Abundant winter visitor. Found in Deep Bay area.	PD	5
Eurasian Teal <i>Anas crecca</i>	RC; HR	Common winter visitor. Found in Deep Bay area, Shuen Wan, Tai Lam Chung Reservoir, Victoria Harbour, urban parks.	PD	38
Greater Coucal <i>Centropus sinensis</i>	NKPWA(II)	Common resident. Widely distributed in Hong Kong.	V/O (in V/O just outside the WCA)	1
Little Grebe <i>Tachybaptus ruficollis</i>	LC	Common resident. Found in Deep Bay area.	PD (in Pond 2 outside the WCA)	2
Great Cormorant <i>Phalacrocorax carbo</i>	PRC	Common winter visitor. Widely distributed in coastal areas throughout Hong Kong.	V/O, PD, IF	17(V/O), 50 (PD), 10 (IF)

Species Name	Conservation and Protection Status ¹	Status in Hong Kong ²	Within Project Area	Max. Count
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	(LC)	Common resident and migrant. Widely distributed in Hong Kong.	V/O, PD, IF	4(V/O), 4(PD), 4(IF)
Chinese Pond Heron <i>Ardeola bacchus</i>	PRC (RC)	Common summer visitor. Widely distributed in Hong Kong.	V/O, PD, IF	2(V/O), 4(PD), 2(IF)
Grey Heron <i>Ardea cinerea</i>	PRC; MR	Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.	V/O, PD, IF	16(V/O), 3(PD), 5(IF)
Great Egret <i>Ardea alba</i>	PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in Hong Kong.	V/O, PD, IF	2(V/O), 3(PD), 4(IF)
Little Egret <i>Egretta garzetta</i>	PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong.	V/O, PD, IF, MS	2(V/O), 3(PD), 3(IF), 2(MS)
Black Kite <i>Milvus migrans</i>	(RC); CITES(II); NKPWA(II); Cap.586	Abundant resident and winter visitor, present all year	PD, IF	1(PD), 1(IF)
White-throated Kingfisher <i>Halcyon smyrnensis</i>	(LC); NKPWA(II)	Common resident. Widely distributed in coastal areas throughout Hong Kong.	PD, IF	1(PD), 1(IF)
Pied Kingfisher <i>Ceryle rudis</i>	(LC); HR(B)	Common resident. Widely distributed in lakes and ponds throughout Hong Kong.	PD, IF	2(PD), 2(IF)
Long-tailed Shrike <i>Lanius Schach</i>	MR(B)	Common resident. Widely distributed in open areas throughout Hong Kong.	V/O	1(V/O)
Black Drongo <i>Dicrurus macrocercus</i>	MR(B)	Common autumn passage migrant and winter visitor. Widely distributed in open area throughout Hong Kong.	PD	1(PD)

Species Name	Conservation and Protection Status ¹	Status in Hong Kong ²	Within Project Area	Max. Count
Collared Crow <i>Corvus torquatus</i>	LC; NT(RLCV); VU(IUCN);MR(B)	Locally common resident. Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek Lap Kok, Shuen Wan, Lam Tsuen.	PD	2
Herpetofauna				
Spotted Narrow-mouthed Frog <i>Kalophrynus interlineatus</i>	NT(RLCV)	Widely distributed from low to moderate altitudes in northern and central New Territories.	V/O (in V/O just outside WCA)	1
Günther's Frog <i>Sylvirana guentheri</i>	NT(RLCV)	Widely distributed throughout Hong Kong.	V/O	2
Four-clawed Gecko <i>Gehyra mutilata</i>	VU(RLCV)	Widely distributed throughout Hong Kong.	V/O	1
Odonates				
Dingy Dusk-hawker <i>Gynacantha subinterrupta</i>	LC	Uncommon	V/O	1
Mangrove Skimmer <i>Orthetrum poecilops</i>	GC; VU(IUCN)	Uncommon	V/O	1

Notes:

- Conservation and protection status refers to Fellowes et al. (2002), IUCN (2023), RLCV (Jiang et al., 2016), List of National Key Protected Wild Animal (2021), CITES (2023), Or and Chan (2025), Cap. 170 and Cap. 586.
 - Conservation status by Fellowes et al. (2002): 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.
 - Conservation status by IUCN (2023): NT = Near Threatened; VU = Vulnerable; EN = Endangered.
 - Conservation status by RLCV (Jiang et al., 2016): EN = Endangered; NT = Near Threatened; VU = Vulnerable.
 - Protection status by CITES (2023): II = Listed in Appendix II of CITES.
 - Protection status by NKPWA (2021): II = Class II of NKPWA; I = Class I of NKPWA.
 - Hong Kong Status by Or and Chan (2025): HR = High Risk; MR = Moderate Risk; Letter "B" in parentheses indicate that the assessment is on the basis of restrictedness in breeding population.
 - Cap. 170 = Wild Animals Protection Ordinance
 - Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
 - * = Rare species are also considered of conservation importance according to Annex 16, Note 3 of the EIAO-TM.
- Distribution and rarity follow the data of HKBIH (AFCD, 2023).
Habitats: V/O = Village/Orchard; PD = Pond; MS = Marsh; IF = In Flight
✓ - Occurrence detected in the acoustic records. Exact location is difficult to indicate from the acoustic recordings.
Cells with "-" indicate that ardeid species is not recorded.

4 Design Considerations for Wetland Compensation Area

4.1 Consideration of the Interfacing Issues

Key interface challenges pertain to land ownership of neighboring parcels and their current and future uses. The northern sections of the Pond 1 and 2 have been designated as a

mitigation area (known as Ecological Enhancement Area (EEA)) under the approved application A/YL-KTN/663. These northern sections of the ponds, together with the remaining proposed residential development, are zoned as “Comprehensive Development Area (CDA)” under Approved Kam Tin North Outline Zoning Plan No. S/YL-KTN/11. One of the approval conditions of Application A/YL-KTN/663 requires the project proponent of the private development to submit “*a revised ecological impact assessment, including an updated Habitat Creation and Management Plan for the Ecological Enhancement Area before commencement of construction of the Ecological Enhancement Area, and the implementation of ecological mitigation measures identified therein to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB*”. However, by the time of preparing this HCMP, the tentative works programme for the EEA construction and any update of the EEA design are still unknown. Given that the WCA construction is tentatively programmed from April 2026, the establishment of hydrological connection between the WCA and the nearby EEA is not feasible as the latter shows no tentative construction programme.

South of the WCA lies a tidal meander hydrologically linked to the Kam Tin River. This meander forms part of the West Rail Compensatory Wetland (WRCW) and is managed by MTR Corporation Limited (MTRCL) and land owned by Kowloon-Canton Railway Corporation (KCRC). It will serve as the tidal water source to create the Enhancement Pond mandated by the approved EIA Report.

4.2 Consideration of Wetland Design

The strategy aims to restore and enhance ecological functions and values of degraded wetland habitats, compensating for impacts from the NOL Project by reestablishing connected, diverse wetland ecosystems that support a wide range of wetland-dependent species. Section 10.9.6.15 – 10.9.6.29 of the approved NOL EIA Report list out the proposed wetland habitat design and habitat creation and enhancement measures of the WCA that need to be met and are summarised as below. It should be noted that the original proposal of creating a ridge and furrow profile superimposed on the slopes perpendicular to the pond margin for forming a scalloped edging (stated in Section 10.9.6.25 of the approved EIA Report) is not incorporated into the current wetland design. A ridge and furrow profile involves alternating raised ridges and lower furrows across a wetland. It is typically used on relatively flat wetlands to provide varied water levels and plant composition/distribution with the aim of optimizing microhabitat diversity. However, it is not a suitable profile for the slopes of a wetland as it would create gullies down the bund slope where surface water would be channelled which would result in bund erosion, especially in Hong Kong where heavy rainfall events are common. The risk of erosion would be higher on newly formed bunds as these are less compacted, and the situation might be further compounded by the proposed tidal nature of the Enhancement Pond. **Table 4** showed the proposed habitat types and respective areas of the WCA in the current design.

- **Existing habitat and area conversion:** The existing site covers approximately 1.35 ha of wetland (1.25 ha pond, 0.10 ha marsh/reed), 0.60 ha dryland (village/orchard) and 0.02 ha of tidal meander connecting immediately to the WCA. Efforts aim to convert as much dryland as possible into wetland to maximize wetland area, also providing about 0.04 ha grassy bund linking terrestrial and aquatic vegetation,

enhancing ecological value by supporting wildlife in both habitats;

- **Enhancement of inactive fishponds:** Two inactive fishponds (Pond 1 and 2) will be rehabilitated into a 0.78 ha Enhancement Pond (comprising a tidal pond with shallow slopes and an island that is exposed when water levels drop in relation to the tide), while part of the another inactive fishpond (Pond 3) will be reprofiled to form 1.04 ha of Marsh/Reed pond. This includes improving habitat quality, reprovion of suitable roosting and loafing habitats for waterbirds through pond reprofiling works, and enhancing ecological function with targeted enhancement measures, to compensate for existing degradation and future impacts;
- **Retention and expansion of marsh/reed habitat:** The existing 0.10 ha marsh/reed at the southern part, despite low to moderate ecological value and surrounded by banana trees on the bunds, will be retained. To compensate for an overall loss of 1.02 ha of marsh/reed due to the habitat loss under the NOL, 0.47 ha of wetland (mostly inactive ponds) and 0.56 ha dryland will be converted to Marsh/Reed, totalling 1.04 ha as per the wetland compensation requirement. Planting will follow native species patterns to create diverse wetland microhabitats for avifauna, odonates and amphibians. In addition, a grassy bund of 0.05 ha will be established between the created Enhancement Pond and Marsh/Reed for providing loafing and perching area for wildlife.
- **Habitat creation and enhancement:** Design focusing on attracting diverse wetland fauna (odonates, herpetofauna, avifauna). Partial portion of Pond 3 will be reprofiled to create future Marsh/ Reed which will be merged to the existing marsh/reed area to be enhanced by planting native species to establish varied microhabitats. Partial bunds between the existing fishponds (Pond 1 and 2 falling within the WCA) will be removed and reprofiled to consolidate habitat and reduce enclosure effects;
- **Water management regime:** Installation of adjustable sluices will hydrologically link the created Enhancement Pond to surrounding wetlands and tidal flows, creating a tidal pond system with mostly natural water level fluctuations. This regime supports diverse feeding and loafing habitats for waterbirds across tidal cycles; and
- **Physical habitat complexity by reprofiling of pond bunds and creation of a tidal island:** Pond bunds will be reprofiled to create raised shallow slopes (most formed slopes are of approximately 1:3 slopes), and a tidal island.
- **Establishment of Vegetation:** Whilst the planting required to provide the requisite habitats, the type and way wetland plants are provided is crucial. Reed *Phragmites australis* will be planted as one of the key wetland vegetation in the created Marsh/Reed habitat for providing screening to the future private development at the east of the WCA. This species has higher adaptation to fluctuated water level especially in dry season once it is well established. Other emergent and wetland plant, as well as drought-tolerate plant will be provided to suit the created and enhanced Marsh/Reed habitats and the sloping areas. Vegetation will vary in density, creating a mosaic of microhabitats that provide multiple ecological niches for feeding, breeding, and refuge for fauna such as ardeids, waders, ducks, and fish.

The current planting design on the created pond bunds facing the waterbody of the Enhancement Pond are maintained as bare areas with no proposed planting works, since it is anticipated that the change of water level due to tidal water influence into the pond will not facilitate the early establishment of newly planted vegetation. Nonetheless, this kind of pond bund will be progressively colonised by grass and wetland herbs naturally within the 12-month post-construction monitoring period, and

such naturally created plant community would provide more diverse plant community to fauna utilisation. On the other hand, the pond bund created to the north of the Enhancement Pond (i.e. facing the EEA) will be planted with wetland plants (*Alternanthera sessilis*, *Commelina diffusa* and *Ludwigia adscendens*) and grass *Paspalum distichum*.

- **Vegetation Removal:** The conflict between pond bund (embankment) reshaping and retaining existing tree is a common challenge in wetland creation and management. According to the latest site inspection, the presence of potential roosting trees (i.e. *Albizia lebbbeck*) on pond bund between Ponds 1 and 2 can undermine the very purpose of a bund especially when the proposed pond bund levels (i.e. +3.5mPD) is different from the existing tree location (~4.1mPD). On the other hand, it is also difficult to retain this leaning tree when reshaping the pond bund due to its unpredictable underground root spread. The reshaping works of the pond bund by machinery may compact the soil on the pond bund to ensure it is watertight. This action may cause certain level of soil compaction and root damage within the tree's critical root zone and this could potentially lead to the decline of its underground roots in supporting this leaning tree. By considering all these factors, it is not recommended to retain this potential roosting tree of poor structure and form for a potential temporary use as roosting trees by ardeids. Retention of other *Albizia lebbbeck* trees for ardeid use within the WCA has been explored. All these trees are all located at the pond bund edge with poor tree form (such as bending trunk leader, severely leaning trunk towards ponds, or unbalanced tree form). They are located on pond bunds which will be modified into Marsh/Reed, key access path or bund of 1:3 slope gradient for Marsh/Reed. It is difficult to trace the underground root structures of these leaning trees for preservation on pond bunds. By considering all these factors, it is not recommended to retain all these trees of *Albizia lebbbeck* within the WCA. Implementation of the required wetland design is impossible without the removal of most of the trees (especially fruit trees and undesirable weedy tree *Leucaena leucocephala* of low ecological value to waterbirds and wetland-dependent fauna). Critical review of the wetland design and the location of suitable roost trees (i.e. not fruit trees) have been incorporated into the current design.

Our wetland designs have also considered the baseline ecological survey findings presented in Section 3.5 above and any supplementary site visits to confirm the latest site conditions and characteristics. Before arriving at the final design a number of constraints were considered, especially with regard to explore the possibility of retaining trees on site to provide roosting habitat for ardeids and to reduce the number of trees to be felled. The constraints are,

- A primary constraint is Condition 2.16 of the EP No: EP-638/2024 which includes the requirement of enhancing the existing fishpond areas into an ecologically functional WCA of at least 1.94ha, including the creation of an Enhancement Pond with tidal island (0.78ha), retention and enhancement of an existing Marsh/Reed (0.10ha), creation of Marsh/Reed (1.02ha) and grassy bund (0.04ha).
- Site inspections raised concerns about the condition of the bunds, especially in light of the long period during which the ponds had been inactive. Bund damage from tree roots was apparent, and it was concluded that retaining trees would pose issues regarding bund permeability and future maintenance.

- A key requirement for the construction and operation of the WCA was the provision of adequate access. This alone would require the removal of a large number of trees on site.
- A further review of the tree species present demonstrated that at least 68% of tree composition within the proposed WCA is fruit trees (dominated by *Artocarpus heterophyllus*, *Mangifera indica*, *Syzygium jambos* and *Musa x paradisiaca*), and around 63% and 25% of trees are evaluated to have poor forms (e.g. leaning or bending tree trunks, unbalanced tree forms) and poor structural condition (e.g. previous failure of scaffold trunks).
- The need for excavation to install an electricity supply requires the removal of trees or risks potential damage to trees especially their roots.
- Given the unpredictable, dynamic nature of small ardeid night roosts there is no guarantee that this tree would be used in future, given the material changes to the site following creation of the Enhancement Pond. Keeping the tree would compromise the optimal function of the wetland, given the irregular footprint of the allowed area of the WCA.

In light of these constraints, it was concluded that tree removal is unavoidable for the wetland formation to comply with the EP Condition, and possibility of retaining trees has been explored as far as practicable.

4.3 Targets for the WCA

In order to quantify the effectiveness of the WCA in mitigating for the impacts identified in the approved EIA Report, targets are required, either in the form of species-specific targets or qualitative habitat targets. The approved EIA Report states that wetland habitats that would be directly affected during the construction and operation phases of Sha Po/ Au Tau (SPAUT) and San Tin/ Shek Wu Wai (SATSWW) and require compensation, comprise 1.02 ha and 0.13 ha of Marsh/Reed respectively. No species of conservation importance or target species were identified as requiring compensation for the proposed wetland construction according to the approved EIA Report.

The baseline ecological survey, conducted between June to August 2024 and November 2024 to January 2025 identified 1 plant, 7 mammal (all bat species), 16 bird, 2 amphibian, 1 reptile and 2 odonate species of conservation importance recorded within the proposed WCA. However, almost all of these species are common and/or widespread in Hong Kong, and all were present in low numbers that are not of significance in a Hong Kong context (details refer to **Table 3**).

It is of note that the WCA is relatively small and will form part of a larger mosaic of wetland habitats which may mean that utilization of the WCA by individual wetland dependent species is unpredictable, even though a suite of such species is likely to be present over time.

Accordingly, the proposed wetland habitats in the WCA are designed to facilitate colonisation by fauna characteristic of these habitats in the Kam Tin Areas in the long-term. With this background, it is considered that adopting qualitative habitat targets is appropriate and it is proposed that these be a compliance with the Contingency Plan detailed in **Section 8.3** below.

The results of the ecological monitoring shall be reviewed during the post-establishment phase to investigate whether species-specific targets have become relevant.

5 Detailed Design of Wetland Compensation Area

5.1 Proposed Wetland Design

The WCA is currently wetland habitat comprising largely of abandoned fishponds which crucially function as wetland habitats at present. Given the existing fishponds are permanently wet and have been operated as ponds for at least five decades (supported by aerial photos from Lands Department), it is safe to presume that the ponds, like all fishponds in Hong Kong, were formed on impermeable wetland soils. Therefore, there is no need for the installation of artificial liners, or the importation of wetland soils for the proposed wetland construction.

The proposed design includes creating and enhancing 1.14 ha of Marsh/Reed habitat along with a 0.78 ha Enhancement Pond containing a tidal island and a 0.05 ha grassy bund to be built between the Enhancement Pond and Marsh/Reed (**Drawing No. 1637/B/WCA/GCL/C24/029**). The Marsh/Reed pond in the east will be predominantly planted with reed *Phragmites australis*, which support bird species of conservation importance. The target water depth of the created and enhanced Marsh/Reed is about 1 meter, optimal for reed growth in Hong Kong. While reeds can grow in shallower water, this encourages invasive plants needing manual removal. Shallow water zones along the margins, together with the planted bunds with marshy vegetation, will create a variety of microhabitats for odonates and herpetofauna. Removing bunds and dryland will enlarge the pond and lessen enclosure effects.

Effective water management is key to the wetland compensation's success and sustainability. A 1-meter-wide sluice gate will link the tidal Enhancement Pond to the WRCW tidal meander. The sluice will have a proposed invert level of +1.7 mPD to allow tidal water exchange, though some reprofiling of the adjacent WRCW earth bund may be required for proper function.

The Enhancement Pond will generally maintain a moderate tidal range of about 1.5 m, fluctuating between +1.7 mPD and +3.2 mPD, to avoid daily complete drainage at low tide. This management approach prevents fish stranding and mortality, curbs invasive mangrove spread common in Kam Tin River, and reduces sediment buildup, which poses long-term concerns. Once or twice monthly, water levels will be lowered to expose mud and trapped fish, benefiting shorebirds and herons. Overall, this regime supports regular water flushing and recruitment of small fish and shrimp while minimizing management issues.

The Marsh/Reed will be connected to the Enhancement Pond via two set of submersible water pumps, that will allow for the movement of water to either add or remove water from the Marsh/Reed when required. Water will need to be removed when water depths exceed 1 m, and added when less than 0.5 m.

The following habitats will be provided to meet the approved EIA requirements (**Table 4**).

Table 4 Proposed habitat types and respective areas of the WCA

Proposed Habitats	Minimum Area (ha) Required in approved EIA Report	Achieved Area (ha)
Enhancement Pond (with Tidal Island)	0.78	0.78
Marsh/Reed (Created)	1.02	1.04
Marsh/Reed (Retained/ Enhanced)	0.10	0.10
Grassy bund/ grassland	0.04	0.05
Total	1.94	1.97

Grassy bund

This will provide habitat for loafing waterbirds and facilitate access to the WCA. As such regular grass cutting will be required during the operation of the WCA to keep the grass at below 20cm in height and prevent the colonization of aggressive grass species which would otherwise overgrow the bund.

Creation of Marsh/Reed

This includes both retained/enhanced Marsh/Reed (0.10ha) and created Marsh/Reed (1.04ha) to be provided in the existing pond to the east, newly created bunds which will be inundated by water, and a small drier area at the southwest corner. Majority of this habitat will be a shallow water habitat, dominated by wetland plants including reed and a matrix of wetland plants. Enhancement planting will be provided in the retained/ enhanced Marsh/Reed in which a mix of emergent plants (such as *Cyperus malaccensis* and *Colocasia esculenta*) and floating wetland plant *Ludwigia adscendens* will be planted. Water levels will be maintained at a level that not only supports the growth of such wetland plants, but also inhibits to growth or colonization of terrestrial plants such as grasses and creepers.

Enhancement Pond

This will be hydrologically connected to the adjacent tidal meander connected with Kam Tin River and water levels will fluctuate in relation to the time and operation of the motorized sluice gate. The pond will be maintained with little or no vegetation and the profile will allow for areas of mud to be exposed during low water levels. A tidal island and a platform will be constructed with the top level at +2.3mPD to provide bare ground for waterbirds during low tide.

Water management

There are two primary requirements to be met, to provide a pond that is connected to the tidal meander and is tidally influenced, and to provide a pond that has water levels maintained at 0.5 – 1.0 m to facilitate the growth of wetland plants.

A penstock motorized sluice gate between Enhancement Pond and the tidal meander will be installed as water exchange between the WCA and the tidal meander in relation to the tidal cycle, and also for the discharge of water from the Enhancement Pond into the meander after heavy rainfall event. Example of the sluice gate is shown in **Figure 5-1** below.

Water management in the Marsh/Reed will be operated through sump pump installed at the Marsh/Reed for pumping out the water from the Marsh/Reed to the Enhancement Pond in case water level at the former rise up above the +1.7 mPD due to heavy rainfall such as Black Rainstorm or storm surges. In case the water level at the Marsh/Reed is below +0.7 mPD, the

sump pump installed at the Enhancement Pond will be utilized to pump water from the Enhancement Pond to the Marsh/Reed. An ultrasonic level sensor will be installed inside each of the concrete sump pits at the edge of the Enhancement Pond and Marsh/Reed for the cut-in/out of the sump pumps. This would be more accurate for level detection and pumps control and minimise surrounding environmental factors that affect the stability of the sensor. Ultrasonic level sensor will also be provided outside the penstock sluice gate to detect the Kam Tin River water level for the open/close control of the sluice gate to equalize the water level. The motorized sluice gate can also be opened / closed manually.



Figure 5-1. Example of motorised sluice gate

Locations of the proposed penstock motorized sluice gate and two sets of sump pumps are indicated in **Drawing No. 1637/B/WCA/GCL/C24/030**.

Existing vegetation and proposed wetland planting

The WCA is currently a wetland habitat comprising largely of abandoned fishponds with densely planted fruit trees on the bunds and village environs. The area will be designed to enhance the wetland with the aim to provide habitats of higher ecological value. As the WCA is required under the approved EIA requirements to create and enhance considerable sizes of wetland habitats (i.e. 0.78ha Enhancement Pond, 1.12ha of created and enhanced Marsh/Reed, and 0.04ha of grassy bund), two existing ponds have to be merged to form a larger pond with gentler slope gradient with suitable microhabitats for fauna, and new pond bunds are required to be created for demarcating the wetlands with fence, nearly the whole WCA has to be reprofiled to form new wetland habitats to meet the habitat areas required in the approved EIA Report.

Tree removal within the WCA is inevitable since reprofiling of the WCA involves reshaping of the existing fishponds where many trees (esp. exotic fruit trees) growing along the bunds will directly conflict with the new wetland design. Additionally, there will be an ecological trade-off since the presence of the large proportion of exotic fruit trees (such as *Artocarpus heterophyllus* and *Musa × paradisiaca*) do not support the target wetland functions and cannot be retained if wetland habitat and enhancement of ecological function goals are to be met. Subject to the LandsD approval of the latest Tree Preservation and Removal Proposal (TPRP) of the WCA, a total of six existing trees (including 1 *Celtis sinensis*, 4 *Melia azedarach* and 1 *Macaranga tanarius* var. *tomentosa*) are proposed to be retained at the southern side, together with other existing trees standing at the tidal meander edge outside the WCA, to provide roosting locations for ardeids. These trees were retained on-site by considering their locations close to the tidal meander where is favourable for ardeid's roosting and their less direct conflict with the proposed wetland reprofiling works. According to the baseline ecological survey report, the potential ardeid night roost was once recorded on *Melia* trees within the WCA, and retention of *Melia azedarach* at the southern side of the WCA become the key composition of this retained tree group. Trees *Celtis sinensis* and *Macaranga tanarius* var. *tomentosa* were once recorded as egretty and roosting substrates in the previous local roosting site study in Hong Kong (e.g. So and Yuen 2020).

In addition to creating and enhancing the required habitats, maintenance trails of around 2 – 3.5m wide are proposed surrounding the designed Enhancement Pond and Marsh/ Reed. The trails demarcating the boundary of the WCA will be used for boundary fence establishment and maintained with minimal trees for potential future use by maintenance machinery for bund reprofiling or repairing works. No trees will be maintained along the 3.5m trail between the Enhancement Pond and the Marsh/Reed since there will be an underground cable laying to support the proposed water pump system, hence tree planting along such trail is not desirable due to the potential tree root penetration into the cable-laying draw pit.

No compensation trees or seedlings are proposed around the bunds of the Enhancement Pond due to the long-term tree stability issue on the formed 1:3 soil slope without biodegradable erosion control mat, which is not installed on forming natural wetland habitats. However, one heavy standard tree of *Albizia lebbbeck* will be planted on top of a pond bund to be modified from the existing bund located at the eastern part of the WCA. The proposed heavy standard tree will be located close to other tree groups to be preserved immediately next to the eastern boundary of the WCA, and this compensation tree will be located next to the fish pond and created marsh/ reed. Other proposed planting design in the WCA primarily include herbaceous vegetation planting to create and enhance the Marsh/Reed habitat.

According to the Plant Preservation and Transplantation Proposal (PPTP) of this WCA separately submitted to Agriculture, Fisheries and Conservation Department (AFCD)/ Environmental Protection Department (EPD), three seedlings/ sapling of protected *Aquilaria sinensis* identified would be transplanted to appropriate locations within the WCA.

6 Construction of Wetland Compensation Area

6.1 Implementation

The implementation of the WCA will require the following:

- Reprofilling and excavation works will be required to create the proposed contour levels to form the Enhancement Pond (including the tidal island), the Marsh/Reed and the grassy bund (see **Drawing No. 1637/B/WCA/GCL/C24/030 – 032**);
- Installation of water control systems (1) between Enhancement Pond and Marsh/Reed Pond, and (2) between the tidal meander to the south and Enhancement Pond to enable maintenance of water level (see **Drawing No. 1637/B/WCA/GCL/C24/030**);
- Planting of the required reed, marsh, other vegetation and hydroseeding works in the proposed Marsh/Reed Pond (including retained/enhanced Marsh/Reed, and created Marsh/Reed pond and area), and created pond bund (see **Drawing No. 1637/B/WCA/GCL/C24/033 - 035**).

The following sections include details of each implementation procedure and their justification for the proposed design and construction.

6.2 Protection of Existing Trees

During the whole construction phase of the WCA, two existing trees will be preserved/protected *in situ* in accordance with the latest update of the General Specifications for Civil Engineering Works 2020 edition (GS). The actual tree quantity to be retained and removed will be subject to the LandsD's approval on the TPRP. The tree felling should follow the approved TPRP and no tree felling is allowed without the written approval from the Project Engineer/ supervising officer. Some protection guidelines include:

- Proper tree protection zone (TPZ) should be established properly, and no works are allowed within the TPZ.
- All excavation works in the vicinity of the preserved/ protected trees within the WCA should be carried out manually and no involvement of machines; and
Install temporary protective wood planks around the trunk, preferably on a hessian cover to avoid damage to all retained trees. Straps or wire are used to bind the planks in place. In any case, temporary hessian and plank armouring cannot be provided, temporary hessian armouring should be provided to avoid possible damage to the existing trees.

6.3 Reprofilling works

Reprofilling works should be undertaken to meet the levels shown in **Drawing No. 1637/B/WCA/GCL/C24/030**. The Qualified Ecologist would conduct regular site inspection to check the reprofilling progress and slope gradient in the WCA.

6.4 Installation of Water Control Systems

Submersible pump systems

To control the water level of the Marsh / Reed Pond above the minimum level and avoid flooding, two submersible pump systems are required.

A 2-duty and 1-standby submersible pumps system inside the concrete sump pit at the boundary of the created Marsh / Reed will be provided to pump out water to the adjacent Enhancement Pond whenever the water level at the Marsh/Reed Pond exceeds a certain level

during heavy rainfall. Ultrasonic level sensor will be provided inside the concrete sump pit to monitor the water level. When the water level is higher than a predetermined level, the two duty pumps will be activated one by one whenever necessary to pump out the water. If the two duty submersible pumps work together still cannot control the water level, the standby pump will also be activated to pump out the water from the Marsh/Reed Pond to the Enhancement Pond.

Another 1-duty and 1-standby submersible pumps system will be put inside the concrete sump pit at the boundary of the Enhancement Pond to pump water from the Enhancement Pond to the Marsh/Reed whenever the water level at the Marsh / Reed Pond is below a certain level. The ultrasonic level sensor put inside the concrete sump pit at the Enhancement Pond boundary will check the water level of the Enhancement Pond. If the Enhancement Pond water level is above a certain predetermined height while the Marsh / Reed Pond water level is below a certain level, the duty pump at the Enhancement Pond will be activated at first to pump out water to the Marsh/Reed. The standby pump will also be activated if the desired water level at the Marsh/Reed could not be achieved after a certain period.

Penstock motorised sluice gate

To experience the change of water level at the Enhancement Pond during high tide and low tide situation, a penstock motorized sluice gate will be built in between the Enhancement Pond and the tidal meander to control the water flow. Ultrasonic level sensor will be provided outside the penstock sluice gate to detect the water level at the tidal meander for the open/close control of the sluice gate to equalize the water level. The motorized sluice gate can also be opened / closed manually.

The actual operation of the sluice and hence water levels will subject to adaptive management once the Enhancement Pond is operational. However, initially the pond will be subject to drain-down and refilling on an as-needed basis during the regular site inspection.

When the water level at the Enhancement Pond exceeds a desired operational water level and higher than water level in the tidal meander, the penstock sluice gate can also be opened to discharge the water to the tidal meander.

6.5 Planting

Planting works will be focused on the Marsh/ Reed habitats (including both created/enhanced Marsh/Reed and the created Marsh/Reed and the sloping areas around the created pond bund). Hydroseeding works will be provided along the proposed grassy bund and the created pond bunds (except the sloping gradient from pond bottom to created pond bund of the Enhancement Pond in which the tidal fluctuation does not facilitate the growth of hydroseeded grass) surrounding the Enhancement Pond, and Marsh/Reed area.

The planting for the WCA is proposed as detailed in **Drawing No. 1637/B/WCA/GCL/C24/033 - 035**. The proposed plant list is prepared by taking the considerations of the native floral species recorded in the marsh/reed directly impacted in Shek Wu Wai works area (refer to Table 10.109 of the approved NOL EIA Report), and the proposed contour plan and operational water levels in Marsh/Reed ponds and habitats. **Table 5** shows a list of plant species proposed in the WCA. A row of screen planting (bamboo planting of *Bambusa*

tuldoides) is proposed along the western and southeastern boundaries of the WCA, for screening of the disturbance from Chi Ho Road and nearby fishpond respectively.

Table 5 Proposed Plant List for the Wetland Compensation Area

Scientific Name	Chinese Name	Proposed Habitats in WCA		
		Retained/ Enhanced Marsh/Reed	Created Marsh/Reed	Grassy bund/ pond bund
<i>Alocasia macrorrhizos</i>	海芋		✓	
<i>Alternanthera sessilis</i>	蝦鉗菜 (蓮子草)		✓	
<i>Bacopa monnieri</i>	假馬齒莧	✓	✓	
<i>Colocasia esculenta</i>	芋	✓		
<i>Commelina diffusa</i>	節節草	✓	✓	
<i>Cynodon dactylon</i>	狗牙根 (絆根草)			✓
<i>Cyperus involucratus</i>	風車草	✓	✓	
<i>Cyperus malaccensis</i>	茼蒿	✓	✓	
<i>Ludwigia adscendens</i>	水龍	✓	✓	
<i>Paspalum distichum</i>	雙穗雀稗		✓	✓
<i>Paspalum notatum</i>	百喜草			✓
<i>Phragmites australis</i>	蘆葦	✓	✓	

Notes:

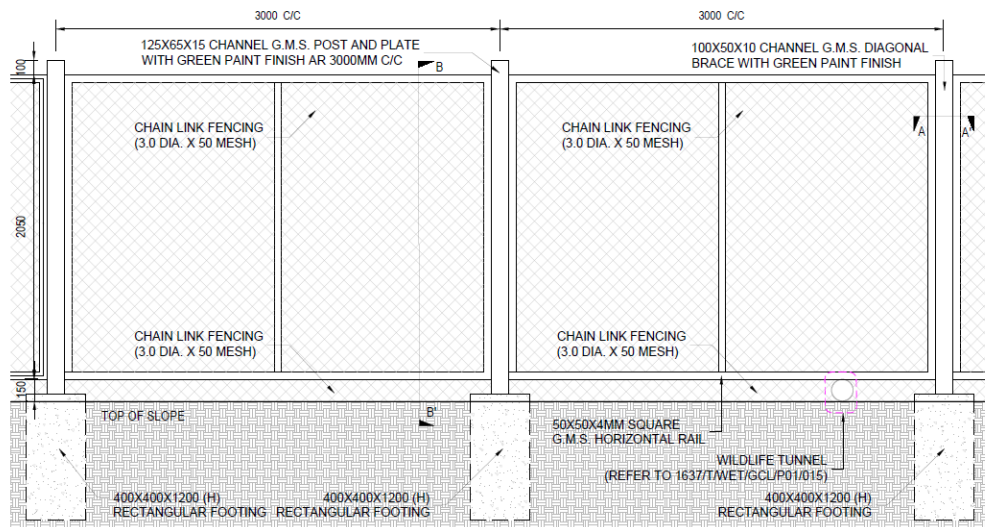
All proposed plant species are native to Hong Kong, except *Alocasia macrorrhizos*, *Colocasia esculenta*, *Cyperus involucratus* and *Paspalum notatum*.

6.6 Built Structures (boundary fences and wildlife underpass)

The proposed WCA is located in a typical village environ in Kam Tin area facing rapid residential (including The Riva and Park YOHO Phase 1, and along with ongoing construction for the low-rise residential development along Kam Tin River, as well as the potential Sha Po North Phase 2 and 3 Development) and infrastructural development (NOL Main Line and CEDD's Kam Tin South development). Establishing boundary fences around the WCA is essential for both operational integrity and maintain wetland security in long-term.

Two types of boundary fences are proposed to delineate the WCA. Type A Boundary Fence (**Figure 6-1**) is proposed along Chi Ho Road and on pond bunds adjacent to the existing village houses to the east and fishpond to the southeast (**Drawing No. 1637/B/WCA/GCL/C24/030**). Type B Boundary Fence (**Figure 6-2**), which is in the form of wooden pole with wire fencing design, is proposed to be installed in submerged area including the interfacing pond bund between the WCA and future EEA under future private development, remaining pond fragment

at the east, and along tidal meander at the south (**Drawing No. 1637/B/WCA/GCL/C24/030**).



*Note: The actual dimension and footing design of the boundary fence will subject to the latest design approved in the statutory submission.

Figure 6-1. Type A Boundary Fence

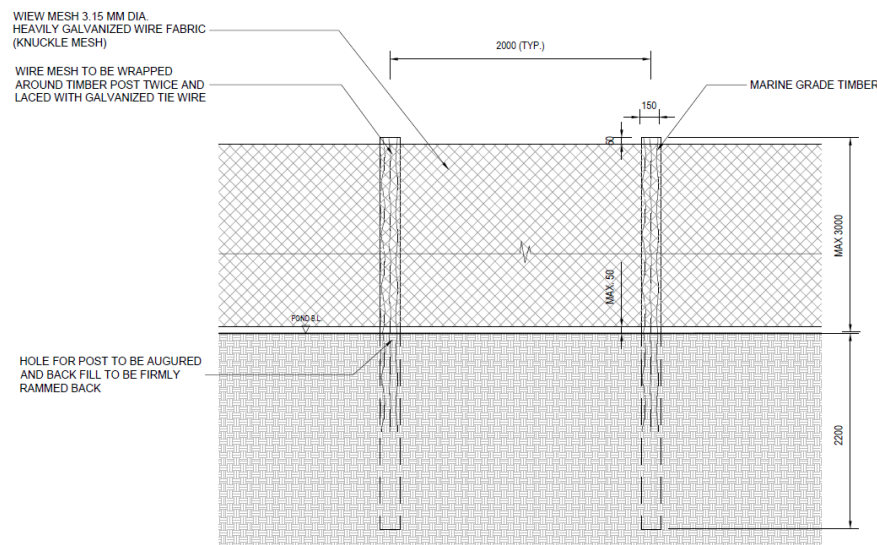


Figure 6-2. Type B Boundary Fence

The design of Type A Boundary Fence aims at maintaining the integrity of the current WRCW maintained in Kam Tin area. The fence will exclude larger mammals (such as feral dogs and goats commonly found in Kam Tin area) to minimise disturbance to waterbirds and grazing pressure on the planted vegetation. The chain link fencing on Type A Boundary Fence can still allow and maintain ecological connectivity for herpetofauna and small mammals between the WCA and other surrounding wetland habitats.

The design of Type B Boundary Fence aims at maintaining the delineation of the boundary of WCA from the future EEA, the remaining fragmented ponds at the east and the tidal meander at the south. The fence is designed with a sheet of heavily galvanized wire fabric to avoid inflow of dead fish and rubbish. The actual location of installing the heavily galvanized wire fabric would be adjusted to suit the actual site condition, e.g. the wire fabric could be replaced

by rope to allow exchange of aquatic fish between the tidal meander and the WCA.

Approximately 5 wildlife underpass tunnels in the form of uPVC pipe will be provided for safe entrance for small mammals along Chi Ho Road, at east and southeast corners of the WCA (location indicated in **Drawing No. 1637/B/WCA/GCL/C24/030**, example refers to **Figure 6-3**). The wildlife underpass tunnel provides access for wild mammals and helps maintain ecological connectivity to surrounding areas.



Figure 6-3. Example of wildlife underpass tunnel

6.7 Implementation Programme

Wetland construction and planting programme is proposed as follows (**Table 6**). The Qualified Ecologist will conduct weekly site inspection of the WCA and surrounding areas during the construction phase.

Table 6 Tentative implementation programme

Works	M1	M2	M3	M4	M5	M6	M7	M8	M9
	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
Site clearance, pond drain-down and ground investigation works									
Reprofiling works									
Installation of water pumping system/ water sluice gate system, and water level marker									
Planting of Marsh/ Reed, hydroseeding works and compensation trees (if any)									
Installation of boundary fences, warning signage and wildlife tunnel									

Notes:

Assumption to meet the proposed tentative programme:

1. Land access to the WCA is tentatively achieved in the April 2026.

6.8 Definition of Completion for the WCA

Completion of the WCA is defined as the stage at which all recommended enhancement measures for the WCA, as described in this HCMP, have been carried out. These includes:

- The reprofiling and excavation works to create the proposed contour levels to form the Enhancement Pond (including the tidal island), the Marsh/Reed and the grassy bund are substantially completed;
- The water control systems (1) between Enhancement Pond and Marsh/Reed Pond, and (2) between the tidal meander to the south and the Enhancement Pond are installed to enable maintenance of water level; and
- The proposed planting and protection of trees as required in the WCA are substantially completed.

7 Habitat Management of Wetland Compensation Area

7.1 Management of Habitat Characteristics

Characteristics for habitats to be maintained within the WCA following the 12-month post-construction phase (tentatively to commence as early as January 2027, and the followed 12 months) and post-establishment phase (tentatively to commence from January 2028) are provided below. These prescriptions for habitat characteristics are based on the design principles as listed in **Section 4.2** above. These prescriptions are intended to provide clear directions to inform the practical adaptive habitat management process. Thus, the values proposed do not represent exact targets which must be reached in order to achieve a specific threshold; rather they are indicative of workable objectives which it is known can be achieved on a regular and replicable basis by the management agency. They are, moreover, carefully selected in order to determine the proportion of each habitat on site so that the required balance of habitats.

Specific management aims for the WCA are as follows:

- Hydrological Management
- Vegetation management (including management on wetland vegetation and terrestrial vegetation, and supplementary planting if needed)
- Built Structures
- Pest Control

7.2 Hydrological Management

Two essential hydrological requirements are to maintain the tidal connection between the pond and the tidal meander and keep water levels between 0.5 and 1.0 meters to support wetland vegetation. A 1-meter-wide sluice gate will connect the tidal Enhancement Pond to the WRCW tidal meander. The sluice gate will have a proposed invert level at +1.7 mPD to permit pond drainage if needed.

The Enhancement Pond will generally experience a moderate tidal fluctuation of about 1.5 meter, ranging from +1.7 mPD to +3.2 mPD, to prevent daily full drainage during low tides. This management strategy helps avoid fish stranding and mortality, limits the spread of invasive mangroves frequently found in Kam Tin River, and reduces sediment accumulation, which is a long-term concern. Water levels will be lowered once or twice a month to expose mudflats and trapped fish, which benefits shorebirds and herons. Overall, this regime promotes consistent water exchange and supports the recruitment of small fish and shrimp while minimizing management challenges.

The Marsh/Reed habitat will be hydraulically linked to the Enhancement Pond by water pumps installed in sump pits, enabling controlled transfer of water to maintain appropriate levels. Water will be removed if depths exceed 1 meter and added when levels fall below 0.5 meters.

To prevent the WCA from flooding during storm surge, water can be discharged for site via the water sluice gate at low tides.

7.3 Vegetation Management

Vegetation management will be required to maintain suitable wetland plant community and to prevent colonisation of undesirable, weedy terrestrial or aquatic vegetation in the proposed wetland and terrestrial habitats.

Wetland Vegetation

The control of emergent/ floating vegetation and unwanted plant species in the Enhancement Pond will be conducted as required to prevent common or rapidly colonisation of undesirable aquatic species (such as *Typha angustifolia*, *Ipomoea aquatica*, *Ludwigia erecta*) and exotic mangroves (*Sonneratia* spp.) Uncontrolled colonisation by such vegetation will reduce the habitat diversity in the Enhancement Pond and subsequently influence faunal colonisation.

Terrestrial Vegetation

Pruning of trees will be required to prevent them encroaching onto adjacent habitats. Wherever possible, dead trees, branches and shrubs will be retained. Cuttings from trees and shrubs will be placed in neat piles where they will be permitted to decompose naturally, providing refugia for invertebrates, reptiles and amphibians.

The control of vegetation around the Enhancement Pond and Marsh/Reed will be required. Without such management regime, common and rapidly developed weeds such as herbs *Bidens alba*, *Mimosa pudica*, exotic climbers such as *Ipomoea cairica*, *Mikania micrantha*, wetland herbs *Typha angustifolia* and *Ludwigia erecta* and weedy tree *Leucaena leucocephala* will become established and these would in time out-compete or smother the species to be planted in these areas during the wetland restoration process. Some of these may also invade the Marsh/ Reed habitats where they would be more difficult to control should they become established.

Annual monitoring of tree cover, including both retained trees and those that have naturally colonised within the WCA, will be monitored and assessed by measuring their overall height, diameter at breast height (DBH), crown spread and growth form. If practical, monitoring of the change of tree cover by using small unmanned aircraft will be adopted. Furthermore,

supplementary notes regarding tree management will be recorded, particularly any potential hazards posed by trees along the access road or area due to failures resulting from structural/health defects.

To summarise for the wetland and terrestrial vegetation management, any undesired, exotic climbers (such as *Ipomoea cairica* and *Mikania micrantha*), floating herbs (*Pistia stratiotes* and *Eichhornia crassipes*), wetland herbs (*Typha angustifolia* and *Ludwigia erecta*), exotic mangrove *Sonneratia* spp. and weedy tree *Leucaena leucocephala* found in the Enhancement Pond, Marsh/ Reed and grassy bunds should be removed manually (including removal of their roots for complete eradication).

Supplementary Planting

Some die-off of plants is to be expected in both aquatic and terrestrial systems and this will require replacement through supplemental planting when needed. The supplementary planting should be conducted during the wet season (i.e. March to October) for better survival and establishment of the newly planted vegetation.

7.4 Built Structure Management

Boundary fences and access gate will need to be checked and repaired or replaced accordingly. The integrity of other elements, including the submersible pump system, penstock motorised sluice gate, uPVC pipe and RC structure will need to be checked and repaired or replaced accordingly.

7.5 Pest Control

Apple Snail *Pomacea lineata* and Red Imported Fire Ants *Solenopsis invicta* are considered to be invasive pest that may potentially occur in the WCA, they should be monitored and controlled if necessary.

Should Apple Snails be identified in the Enhancement Pond and Marsh/Reed pond (including the retained/ enhanced Marsh/ Reed), a programme to control the species by removing and destroying the adults and egg masses will take place as required. If the numbers of Apple Snails in the WCA become a significant problem, additional pond drain-downs will be implemented in order to remove all adult snails from the wetland area. These will be collected and disposed of in an appropriate manner.

Any nests of Red Imported Fire Ants will be marked on site by the Permit Holder/ Contractor of Permit Holder. These nests will then be treated with an appropriate and approved pesticide over a sustained period to eradicate their presence.

7.6 Standard Management Actions

A list of standard management actions that must be undertaken for the WCA during both 12-month post-construction and post-establishment phases is provided in **Table 7**. The proposed maintenance frequency in long-term maintenance regime of the WCA may be subject to review during the post-establishment phase.

Table 7 Regular management actions for the WCA for both post-construction and post-establishment phases

Action	Frequency	Notes
Hydrological Management		
Adjustment of water level at each water control device to meet the water level management target	Checked bi-monthly (once every two months) and as required, particularly during dry season.	The required water levels and control of water sluice gate will be reviewed and adjusted on case-by-case, especially before severe weather.
Vegetation management		
Monitoring of the health of trees, vegetation cover, and any need of pruning and removal of unhealthy vegetation	Monthly	General inspection during site inspection/ visit will monitor the general condition of the health of trees, vegetation cover and identify any need of pruning and removal of unhealthy vegetation especially after severe weather.
Control of wetland vegetation	As needed	The frequency of works can be reviewed in dry season.
Control of terrestrial vegetation	As needed	The frequency of works (such as grass-cutting, weeding and pruning of trees) can be reviewed in each general site inspection.
Removal of exotic/undesirable plants	As needed	Removal of unwanted plant species in the Enhancement Pond and Marsh/Reed will be removed immediately or reviewed on a case-by-case basis should there be a safety concern during the vegetation removal works.
Annual monitoring of tree cover	Annual	Monitoring of tree cover (including both retained trees and naturally colonized trees) by measuring their

Action	Frequency	Notes
		overall height, DBH, crown spread, growth form and any potential hazards on individual trees due to failures resulting from structural/ health defects. If practical, monitoring of the change of tree cover by using small unmanned aircraft will be adopted.
Supplementary planting	As needed	Supplemental planting will be necessary only by evaluating the health status of the planted wetland vegetation and trees following the routine monitoring. Planting should be limited to the wet season.
Structural maintenance		
Inspect condition of slopes/ bunds/ paths/ boundary fences with animal passage (if any)/ water pumping system/ sluice gate/ pipe	Every 6 months or more frequently if required	Also after any flood events and lowering of Typhoon Signal No. 8 or Red/ Black Rainstorm Warning Signals
Inspect condition of pipework	Quarterly	
Pest Control		
Pest Control (such as Apple Snail, Red Fire Ant, insect pest on reed)	Monthly checking for Red Imported Fire Ants, Apple Snails and insect pest for reed. Should action be required, this should be conducted within 30 days of the checking.	Review and assess suitable treatment individually for each case.

8 Ecological Monitoring and Audit

8.1 Post-construction Ecological Monitoring and Audit

Upon satisfactory completion of the WCA, ecological monitoring surveys will be carried out by

Qualified Ecologist of at least 7 years of relevant experience in ecological monitoring during the 12-month post-construction period. Though there is no specific target fauna species identified in the WCA, monitoring of fauna and vegetation using and colonising the WCA will provide valuable evidence of the success of the WCA. Moreover, this post-construction ecological monitoring can provide information for the Permit Holder/ Contractor of Permit Holder of any remedial measures which he requires to undertake and list out a baseline for future monitoring and management protocols. During the 12-month post-construction ecological monitoring, the following monitoring will be conducted:

- Monitoring of habitat types and vegetation cover
- Monitoring of vegetation health
- Monitoring of avifauna
- Monitoring of other fauna groups (herpetofauna, odonates, fireflies, butterflies and mammals)
- Monitoring of Water Quality and Water Depth
- Site inspection

Monitoring of habitat types and vegetation cover

Monitoring of habitat types and vegetation cover will be conducted once by the end of dry season (usually February) and once by the end of wet season (usually September) during the 12-month post-construction ecological monitoring period after the completion of the planting works. The monitoring aims to determine the exact extent of the wetland habitats (i.e. Enhancement Pond, created Marsh/ Reed, and retained/ enhanced Marsh/Reed) and vegetation cover in each of these habitats during the 12-month post-construction phase. It also helps to identify the location/ area with excessive colonisation of unwanted vegetation in specific habitats and report to the Permit Holder/ Contractor of Permit Holder to take maintenance action. Vegetation cover will be estimated by using small unmanned aircraft, supplemented with detailed plant surveys covering all habitats within within the WCA on biannually basis.

The monitoring data, in the form of habitat mapping and detailed plant survey findings, would provide baseline habitat characteristics for the Permit Holder/ Contractor of Permit Holder after the handover of the WCA.

Monitoring of vegetation health

Monitoring on the growth and health condition of the planted vegetation in various habitats (i.e. Enhancement Pond, created Marsh/ Reed, retained/enhanced Marsh/ Reed and Grassy Bund) will be conducted on a monthly basis during the 12-month post-construction ecological monitoring period following the completion of the planting work in the WCA. This monitoring aims to inspect the growth and health of the planted vegetation, and implement any necessary pest control treatment if an outbreak occurs.

During the monthly inspection on vegetation health, the Qualified Ecologist will inspect the general growth and health of the planted vegetation along a fixed transect across each habitat type. Any adverse plant health (such as dieback of planted species or presence of pest) will be noted and supplementary planting will be arranged if necessary. Plants with presence of

pests will be identified and recorded, and appropriate treatment would be applied if required. According to the PPTP, three seedlings of *Aquilaria sinensis* identified within the WCA would be transplanted. Post-transplantation monitoring of the transplanted seedlings at the final recipient site would follow the agreed PPTP as deposited.

Monitoring of tree cover

Annual monitoring of tree cover, including both retained trees and those that have naturally colonised within the WCA, will be monitored and assessed by measuring their overall height, diameter at breast height (DBH), crown spread and growth form. If practical, monitoring of the change of tree cover by using small unmanned aircraft will be adopted. Furthermore, supplementary notes regarding tree management will be recorded, particularly any potential hazards posed by trees along the access road or area due to failures resulting from structural/ health defects).

Monitoring of avifauna

Monthly avifauna monitoring will be conducted in early morning when birds are most active. The survey will be conducted by walking through a fixed transect covering all habitat types within the WCA. All avifauna species will be detected either by direct sighting or by their call. Species recorded will be identified and quantified.

Monitoring of other fauna groups

Herpetofauna

Monthly day- and night-time monitoring covering March to October will be conducted for herpetofauna group. All potential habitats for amphibians and reptiles will be actively searched within the WCA throughout the monitoring. It would also be necessary to examine or uncover microhabitats (e.g. stones, crevices or rotten log) deliberately to reveal the presence of the amphibians and reptiles hiding under these covers. Active searching for eggs and tadpoles of amphibians in Enhancement Pond, created Marsh/ Reed, and retained/ enhanced Marsh/Reed will be conducted to indicate breeding activities. All life for of amphibians, including adult, tadpole, juvenile and egg, will be recorded to indicate the breeding potential in the WCA.

Odonates

Monthly day-time monitoring covering March to November will be conducted for odonates, with species mainly detected by direct observation. Any presence of exuviae found on emergent vegetation along bunds will also be identified and recorded. The monitoring will be conducted at suitable weather condition to avoid overcast weather when the odonate is less active and less easy to be detected. All species observed within the WCA will be identified to species level and quantified.

Fireflies

Monthly monitoring (April to June, and October to December) on firefly will be conducted along the green channels by direct observation. The monitoring will be carried out under suitable weather conditions (i.e. without rain or strong wind), and shall commence immediately after sunset and last for approximately 1 hour. All fireflies observed, including adults and larvae,

will be quantified and identified to species level as far as possible.

Butterflies

Monthly day-time monitoring covering March to November will be conducted for butterflies, with species mainly detected by direct observation. Any adults observed during butterfly surveys will be recorded, and any species that are dependent upon wetland plants or rare in Hong Kong will be highlighted. All species observed within the WCA will be identified to species level and quantified.

Mammal

Monthly day-time mammal surveys will be conducted by covering all habitat types within the WCA. All sightings, tracks and signs of mammal species will be actively searched along the survey transect. In addition, infra-red cameras will be used to study the occurrence of any secretive mammals in the WCA. All species observed by monthly transect survey and recorded by infra-red cameras within the WCA will be identified to species level.

No scheduled quantitative monitoring of fish is proposed in the WCA. Any presence of fish within the Enhancement Pond will be observed from the pond bunds at the same time when other fauna monitoring is undertaken, and the fish species will be recorded as incidental record during other fauna monitoring.

Monitoring of water quality and water depth

Since the Enhancement Pond is designed to allow free movement of tidal (i.e. brackish) water from the nearby tidal meander connected to Kam Tin River, water quality in the WCA will be largely dependent on water quality in the river. In this open system, it is not appropriate to set specific levels for water quality parameters. Nevertheless, data on water quality collected during the post-construction phase, in particular seasonal patterns, would potentially be useful in informing long-term management of the WCA. *In-situ* water quality will be measured by hand-held water quality multiparameter meters once per month during the 12-month post-construction ecological monitoring period, and the following water quality parameters will be measured:

- Temperature
- pH
- Salinity
- Turbidity
- Dissolved oxygen

Water levels in the Enhancement Pond and the Marsh/Reed will be measured from the water level markers installed in these two habitats.

Site inspection

Site inspection will be carried out on regular basis during the 12-month post-construction phase, and any events detrimental to the operation of the WCA will be identified and suitable remedial action taken. The inspected items could refer to the management actions listed in **Table 7**. The site inspections will be conducted twice per month during the 12-month post-construction phase.

8.2 Post-establishment Phase Ecological Monitoring and Audit

After the 12-month post-construction ecological monitoring phase, post-establishment phase monitoring will be conducted in order to observe whether the fauna groups are utilising the WCA. In addition, other parameters which are required for management reasons (e.g. vegetation surveys, water quality and water depth) will also be monitored. The post-establishment phase, and the monitoring and reporting frequency will be subject to periodic review as listed in **Section 10** below.

The ecological monitoring during the post-establishment phase will follow the survey frequency and scope as the ecological monitoring, except that site inspection will be conducted on monthly basis during the post-establishment phase. **Table 8** presents a summary of the ecological monitoring during 12-month post-construction and post-establishment phases.

Table 8 Proposed Ecological Monitoring for 12-month Post-construction Phase and Post-establishment Phase

Monitoring Items	12-month Post-construction Phase Ecological Monitoring	Post-establishment Phase Ecological Monitoring
Habitat types and vegetation cover	Bi-annual (once by the end of dry season and once by the end of wet season)	Bi-annual (once by the end of dry season and once by the end of wet season)
Vegetation health	Monthly	Monthly
Tree cover	Annually	Annually
Avifauna	Monthly	Monthly
Other fauna groups (herpetofauna, odonates, fireflies, butterflies and mammals) ¹	Monthly	Monthly
Water Quality and Water Depth	Monthly for <i>in situ</i> water quality (temperature, pH, salinity, turbidity, dissolved oxygen) and water depth	Monthly for <i>in situ</i> water quality (temperature, pH, salinity, turbidity, dissolved oxygen) and water depth
Site Inspections	Twice per month	Monthly

Note:

- No scheduled quantitative monitoring of fish is proposed in the WCA. Any presence of fish within the Enhancement Pond will be observed from the pond bunds at the same time when other fauna monitoring is undertaken, and the fish species will be recorded as incidental record during other fauna monitoring.

8.3 Contingency Plan

Should the monitoring programme during the 12-month post-construction phase and post-establishment phase identify that WCA not performing as intended, remedial actions will be proposed to enhance habitat condition. **Table 9** summarises the corresponding action and threshold levels, as well as the associated action plan. This table also serves as a management framework for the post-establishment phase wetland monitoring and habitat management. The proposed contingency plan will be periodically reviewed to ensure the continued functionality and ecological integrity of the WCA.

The Enhancement Pond of the WCA is subject to the influence of regular tidal fluctuations, which may result in the accumulation of trash and debris brought by the tidal water into the pond. Routine habitat management activities, including the quarterly removal of unwanted vegetation and debris clearance within the WCA and at the inlet, are necessary to sustain the ecological health of the area. Debris removal at the inlet will be conducted following episodes of heavy rainfall and typhoon.

Table 9 Contingency Plan

Parameters	Action Level	Limit Level	Action
Flooding/ storm damage	N/A	N/A	Review damage in conjunction with short-term weather forecast. Evaluate the damage (e.g. vegetation condition) and determine severity and undertake repairs/ modifications to the design.
Emergent or floating vegetation in the Enhancement Pond (it is expected that these vegetations could naturally colonise the Enhancement Pond brought by tidal water over time)	>10%	>20%	Action Level exceedance: double the monitoring frequency, identify and review the problem. If the problem is likely to deteriorate, the action plan for limit level exceedance should be implemented. Limit Level exceedance: manual or mechanical vegetation clearance.
Vegetation cover in the created Marsh/ Reed	<80%	<70%	Action Level exceedance: double the monitoring frequency, identify and review the problem. In addition, (1) check water conditions, growth cycle, and pests; and (2) if the problem is due to pest, control measures should be carried out as required. If the problem is likely to deteriorate (such as dead plants or invasion of undesirable plant species), the action plan for limit level

Parameters	Action Level	Limit Level	Action
			exceedance should be implemented. Limit Level exceedance: carry out weeding or planting. In addition, (1) Check water conditions, growth cycle, and pests; (2) if the problem is due to pest, control measures should be carried out as required; and (3) consider replacement planting using other suitable species.
Vegetation cover in the retained/ enhanced Marsh/ Reed	<80%	<70%	Action Level exceedance: double the monitoring frequency, identify and review the problem. In addition, (1) check water conditions, growth cycle, and pests; and (2) if the problem is due to pest, control measures should be carried out as required. If the problem is likely to deteriorate (such as dead plants or invasion of undesirable plant species), the action plan for limit level exceedance should be implemented. Limit Level exceedance: carry out weeding or planting. In addition, (1) Check water conditions, growth cycle, and pests; (2) if the problem is due to pest, control measures should be carried out as required; and (3) consider replacement planting using other suitable species.
Undesirable plant species colonising the WCA (including but not limited to exotic climbers (such as <i>Ipomoea cairica</i> , <i>Mikania micrantha</i>), floating herbs (<i>Pistia stratiotes</i> , <i>Eichhornia crassipes</i>), wetland herbs (<i>Typha angustifolia</i> , <i>Ludwigia erecta</i>), exotic mangrove <i>Sonneratia</i> spp. and weedy tree <i>Leucaena leucocephala</i>)	>10% of vegetation in the WCA	>20% of vegetation in WCA	Action Level exceedance: removal by weeding. Limit Level exceedance: removal by weeding, if problem is likely to return/deteriorate review design and management regime.

Parameters	Action Level	Limit Level	Action
Undesirable fauna including invasive/ exotic aquatic invertebrates (including but not limited to Red Imported Fire Ant)	Presence	Negatively impacting wetland function	Action Level exceedance: treatment or removal (or other method if suitable). Limit Level exceedance: increase frequency of treatment or removal (or other method if suitable), review management protocols and design.

9 Reporting

A monthly post-construction ecological monitoring report will be prepared by the Qualified Ecologist to summarise the findings from the site inspection, ecological monitoring and management activities undertaken in the reporting month. This monthly report also recommends adaptive management measures to be implemented in the followed month. A Final Report will be prepared by the end of the 12-month post-construction phase to summarise the monitoring findings, and management activities collected and implemented in the 12-month post-construction ecological monitoring period. The Final Report will also review the wetland management action and recommendations to be undertaken in the post-establishment phase.

Similar reporting arrangement will be adopted throughout the post-establishment phase, with the production of quarterly reports and annual reports to summarise the ecological findings and adaptive management measures of the reporting years.

The monthly post-construction ecological monitoring reports and quarterly and annual reports for post-establishment ecological monitoring will be submitted to the Project Proponent. Monthly reports prepared during the post-construction phase, and quarterly and annual reports during the post-establishment phase could be submitted to EPD and/or relevant authority (e.g. AFCD) separately upon request.

10 Review of monitoring programme and consequent adaptive management

The results from the habitat and vegetation monitoring program described above will be reviewed monthly, by the Qualified Ecologist during the 12-month post-construction phase to determine any necessary changes to the management plan.

The Qualified Ecologist will conduct fortnightly inspections during the 12-month post-construction phase, to detect any issues that could negatively impact wetland operation and implement appropriate corrective measures.

The monitoring program will remain adaptable to include extra inspections after significant events that may affect wetland function (such as typhoons, floods, or pollution incidents), as well as monitoring the effectiveness of any remedial actions taken.

An annual review of the monitoring programme and frequency, and adaptive management of the habitats shall be conducted throughout the post-establishment phase. This review will recommend any need of habitat enhancement works to enhance the wetland function and value in the followed monitoring and management years. If any modifications are proposed to the maintenance and monitoring parameters listed in Table 8 and Table 9 following the annual review, the proposed change shall be agreed with AFCD and EPD before implementation.

11 Implementation Schedule

An implementation schedule with the proposed mitigation measures, the implementation party, location, timing and environmental performance required for implementation of the mitigation measures for the WCA is summarized in **Table 10** below.

Table 10 Implementation Schedule of Recommended Mitigation Measures

Recommended Mitigation Measures	Implementation Party	Location of the measures	When to implement the measures ⁴	Environmental Performance Requirement
1. Completion of construction of the WCA	1637 Contractor	WCA	April 2026 – December 2026	The WCA is constructed according to the proposed wetland design and recommended enhancement measures for the WCA according to Section 6.8 in this HCMP
2. Post-construction ecological monitoring of the constructed WCA^{1 & 3}	MTR/ Contractor of MTR	WCA	During 12-month post-construction phase	The monitoring items and frequency shall follow Table 8 of this HCMP.
3. Maintenance of the constructed WCA during post-construction phase^{1 & 3}	MTR/ Contractor of MTR	WCA	During 12-month post-construction phase	The WCA is maintained and managed according to Tables 7 and 9 of this HCMP
4. Post-establishment monitoring of the constructed WCA^{2 & 3}	Permit Holder/ Contractor of Permit Holder	WCA	During post-establishment phase	The monitoring items and frequency shall follow Table 8 of this HCMP.
5. Maintenance of the constructed WCA during the post-establishment period^{2 & 3}	Permit Holder/ Contractor of Permit Holder	WCA	During the post-establishment phase of the WCA and on a need basis	The WCA is maintained and managed according to Tables 7 and 9 of this HCMP

Notes:

1. The management organisation for the implementation of the above mitigation measures no. 2 to 3 shall be submitted to EPD no later than 1 month before commencement of the 12-month post-construction ecological monitoring and maintenance period of the constructed WCA.
2. The management organisation for the above mitigation measures no. 4 to 5 shall be submitted to EPD no later than 1 month before commencement of post-establishment monitoring of the constructed WCA / maintenance of the constructed WCA during post-establishment period.
3. Should there is any change to the management organization, the updated management organisation shall be submitted to EPD no later than 1 month before the implementation of any such change.
4. The post-construction phase of the WCA is tentatively to be commenced as early as January 2027, with the followed 12-months as the 12-month post-construction phase. The post-establishment phase will tentatively commence from January 2028.

12 Reference

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Appendix A

SUMMARY OF SURVEY METHODOLOGY AND ECOLOGICAL BASELINE MONITORING FINDINGS OF BASELINE ECOLOGICAL SURVEY REPORT OF WETLAND COMPENSATION AREA

1 Introduction

1.1 Background

The Environmental Impact Assessment (EIA) Study for the Northern Link (AEIAR-259/2024) proposed wetland compensation as one of the mitigation measures for the ecological impact resulting from the unavoidable direct loss of wetland habitats in the construction and operation of the Northern Link (NOL) railway scheme. A potential wetland compensation area of about 1.9 ha, situated between three existing fishponds and the proposed Ecological Enhancement Area (EEA) of the Park Yoho Phases 2 and 3 Development, is identified as potential location for Wetland Compensation Area (WCA).

A baseline ecological surveys for wet season (June to August 2024) and dry season (November 2024 to January 2025) on the proposed compensation wetland (i.e. the WCA boundary as proposed in the approved EIA report) and the surrounding environs was carried out to establish the ecological character of the surveyed area.

This Appendix presents the survey methodology and findings of the fauna species recorded during the fauna surveys of the baseline ecological survey within the WCA so as to supplement the findings presented in Section 3.5 of this HCMP. Findings from the confirmed Ko Po Road Ardeid Night Roost and the potential additional ardeid night roosts at Ko Po Road, both outside the WCA, are also presented to provide supplementary information on ardeid night roosting areas around the WCA. The survey methodology follows habitat and vegetation survey methodology stated in the “Method Statement of Ecological Baseline Monitoring (Revision 3)” accepted by AFCD in October 2024.

2 Survey Methodology

The ecological surveys were carried out following the requirements specified in the Method Statement and with reference to the EIAO Guidance Notes No. GN 7/2023 “Ecological Baseline Survey for Ecological Assessment” and No. 10/2023 “Methodologies for Terrestrial and Freshwater Ecological Baseline Survey”. The below survey methodology presents the ecological survey methodology relevant to the proposed fauna surveys within the WCA, and the 300m Study Area. In addition to the conservation and protection status assessed through a list of literatures stated in the baseline ecological survey, the latest conservation status of fauna species in Hong Kong are also evaluated regarding to the latest literature of “The State of Hong Kong Biodiversity 2025” (Or and Chan 2025).

2.1 Study Area for Ecological Baseline Survey

The ecological surveys conducted during the survey period (June to August 2024, and November 2024 to January 2025) included the WCA and the 300m Study Area.

2.2 Survey Programme

Ecological field surveys for habitats, vegetation, terrestrial mammals, avifauna, herpetofauna (amphibian and reptile), butterflies and odonates, fireflies, and freshwater aquatic assemblages as well as water quality monitoring were conducted within the reporting period

(Table A-1).

Table A-1 Baseline Ecological Survey Programme

Surveys ¹	2024					2025
	Wet Season			Dry Season		
	June	July	August	November	December	January
Habitat and Vegetation Cover Survey	✓	✓	✓	✓	✓	✓
Terrestrial Mammal Survey (Day- and night-time)	✓	✓	✓	✓	✓	✓
Camera Trapping for Mammal Survey		✓	✓	✓	✓	✓
Avifauna Survey (Day- and night-time)	✓	✓	✓	✓	✓	✓
Ardeid Night Roost and Flight Path Surveys ²	✓	✓	✓	✓	✓	✓
Herpetofauna Survey (Day and night-time)	✓	✓	✓	✓	✓	✓
Butterfly and Odonates Survey (Day-time)	✓	✓	✓	✓	✓	✓
Freshwater Aquatic Assemblages Survey (Day- and night-time) ³	✓	✓	✓	✓	✓	✓
Firefly Survey	✓	✓	✓	✓	✓	✓

Notes:

1. Monthly *In-situ* water quality monitoring throughout the whole survey period, and laboratory analysis of water quality for suspended solids (from July to August, November to December 2024 and January 2025) within the WCA were conducted during the baseline ecological survey period. The according findings are not presented in this Appendix.
2. Findings from ardeid night roost survey conducted within the WCA and the 300m Study Area are presented in this Appendix.
3. No freshwater aquatic assemblages survey was scheduled within the WCA.

2.3 Ecological Surveys

Habitat and Vegetation Survey

A preliminary habitat map was prepared based on the latest government aerial photographs and satellite images. Following the preparation of a preliminary habitat map, habitats within the WCA and Study Area were verified by field ground-truthing. Identified habitats were defined and characterised by assessing the size, vegetation type and community structure.

Vegetation survey was carried out on foot and was set across representative patches of each identified habitat type. A focused vegetation survey was also carried out within the WCA. Floral species observed during the surveys were identified to species level, with their relative abundance recorded. The dominant plant species was likewise noted to indicate habitat quality. Special attention was given to rare and protected plant species and their locations relevant to the WCA.

Nomenclature and conservation status of plant species follow Corlett *et al.* (2000), AFCD (2003, 2007, 2008, 2009, 2011, 2012), and Qin *et al.* (2017).

Terrestrial Mammal Survey

Day and night mammal surveys were carried out monthly focusing on areas which could potentially be utilised by terrestrial mammals. Mammal surveys included both direct observation and active searching for signs of mammal occurrence (including potential roost, footprints and droppings). Dusk and night-time surveys were also conducted to survey nocturnal species and to supplement the findings from day-time surveys. One camera trap was also set-up along western fringe of the WCA to survey secretive mammals.

Bat surveys were also carried out at potential roosting, commuting, foraging and drinking sites using ultrasonic bat detector. Acoustic records were analysed to confirm bat species within the WCA and the surrounding the Study Area. Recordings were analysed using Kaleidoscope Analysis Software to permit, as far as possible, identification of species from call structure. The known call structure and peak frequency of Hong Kong bat species are currently limited to Horseshoe Bats and Leaf-nosed Bats (Shek and Lau 2006); there is not yet a reference for the call structure of other Hong Kong bats, so identification of these species has been made as far as possible based on literature from elsewhere in the region, e.g. Tong (2016).

Quantification of signs and tracks of mammals is difficult, therefore only a list of identified mammals during the surveys is provided. Nomenclature for mammals follows AFCD Hong Kong Biodiversity Information Hub (HKBIH) while distribution, rarity and conservation status refer from RLCV (Jiang *et al.* 2016), the latest IUCN Red List and other scientific research studies (e.g., Fellowes *et al.* 2002 and Or and Chan 2025).

Avifauna Survey

Avifauna surveys were conducted monthly within the survey period. Birds in each habitat were surveyed visually and aurally, during daytime, dusk and night time. Day-time bird surveys commenced 30 minutes before sunrise and lasted for approximately 2 hours where birds were more likely active. With the aid of a pair of binoculars, all birds seen and heard through birdcalls within 10m from either side of the survey transects were identified and counted with special reference to behaviours such as feeding, roosting and breeding. The locations of avifauna species of conservation importance encountered were also recorded and photographic records were taken wherever possible. Dusk and night-time surveys were also carried out to detect presence of nocturnal species.

Nomenclature of species follows the updated List of Hong Kong Birds published by the Hong Kong Bird Watching Society.

Ardeid Night Roost Survey and Pre-Roost Survey

The Ko Po Road Night Roost, identified during the EIA, was surveyed throughout the survey period to detect presence of roosting species.

An additional night roost, the potential additional Ko Po Road Night Roost, was noted in July 2024, located approximately 390 meters from the KPR ANR and about 144 meters from the WCA. An additional vantage point was then proposed to include the potential night roost in the ardeid night roost and pre-roost surveys in August 2024.

A potential ardeid night roost, located within the WCA, was also observed in November 2024. Pre-roost and night roost surveys were conducted in December 2024 and January 2025 to

check roosting activity within the WCA.

The surveys at night roost and pre-roost site covered the peak period of ardeid activities, starting approximately one hour before sunset and lasted until nightfall when observation of ardeid was no longer possible. The exact time of sunset on the date of survey were referred from the website of The Hong Kong Observatory. The location and extent of the roost and/or pre-roost, including the tree species used, returning time, abundance and species composition of ardeids were recorded.

Herpetofauna Survey

Daytime and night-time herpetofauna surveys were conducted monthly through active searching of all potential habitats for amphibians and reptiles. Microhabitats (e.g., leaf litters, stones, crevices or rotten log) were examined or uncovered deliberately to reveal the presence of amphibians and reptiles hiding under these covers. Active searching for eggs and tadpoles of amphibians in aquatic habitats were also conducted to indicate breeding activities. All life form of amphibians, including adult, tadpole, juvenile and egg, were recorded to indicate the breeding potential in the Study Area. Auditory detection of species-specific calls was also used to survey frogs and toads.

Nomenclature also follows AFCD HKBIH while distribution, rarity and conservation status refer from RLCV (Jiang *et al.* 2016), the latest IUCN Red List and other scientific research studies (e.g., Fellowes *et al.* 2002, and Or and Chan 2025).

Butterfly and Odonates (i.e., Dragonflies and Damselflies) Survey

Surveys for butterflies and odonates were conducted monthly through direct observation. The surveys were carried out at suitable weather condition to avoid overcast weather when the butterflies and dragonflies are less active and less easy to be detected. For butterflies, active searching for larvae and pupae within 5m of the transects were conducted. For odonates, special attention was given to aquatic habitats such as watercourses. Odonates occurring outside 10m from either side of the transects were recorded.

Nomenclature also follows AFCD HKBIH while distribution, rarity and conservation status refer from RLCV (Jiang *et al.* 2016), Butterfly Working Group (2011 and 2018), the latest IUCN Red List and other scientific research studies (e.g., Fellowes *et al.* 2002, and Or and Chan 2025).

Firefly Survey

Firefly Surveys were conducted monthly through direct observation under suitable weather conditions (i.e. with no heavy rain or wind). The surveys commenced immediately after sunset and lasted for approximately 2 hours. Potential habitats along the transects as well as locations with less artificial lighting were prioritised.

Nomenclature of fireflies follow Yiu (2017 and 2023).

3 Survey Findings

3.1 Habitat and Vegetation

A total of eleven habitats were recorded within the Study Area. Only three habitat types, namely Pond, Marsh/ Reed and Village/ Orchard, were recorded within the WCA.

Ponds occupied the largest area within the WCA. Marsh/ Reed recorded within the WCA is dominated by banana tree *Musa x paradisiaca* and bounded by a mixture of mangrove associate *Acanthus ilicifolius*, herb *Lygodium japonicum*, grass *Panicum maximum* while aquatic area is grown with herb *Cyperus malaccensis* var. *brevifolius*.

The bunds around Ponds within the WCA are classified as Village/Orchard where a high density of cultivated fruit trees, *Artocarpus heterophyllus* and *Dimocarpus longan*, were recorded. Fruit trees *Mangifera indica* and *Musa x paradisiaca* are also abundant. Apart from the fruit trees, the canopy also consists of *Melia azedarach* trees. The northern fringes of the WCA are abundant with exotic *Leucaena leucocephala* trees. The exotic shrub *Dracaena sanderiana* is the dominant understorey while the ground cover is mainly composed of herbs *Panicum maximum* and *Cyrtococcum patens*.

One plant species of conservation importance, *Aquilaria sinensis* was recorded within this habitat. Three seedlings of *Aquilaria sinensis* were recorded close to the footpath at the southern bund of Pond 1. All flora species recorded within the WCA is presented in **Table A-2**, and a habitat map showing the habitat types recorded during the ecological baseline survey is presented in **Figure A-1**.

Table A-2 All floral species recorded within the WCA

Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Acacia confusa</i>	台灣相思	Exotic	Tree	-	Cultivated or Naturalised		**	
<i>Acanthus ilicifolius</i>	老鼠簕	Native	Shrub	-	Common			**
<i>Achyranthes aspera</i>	土牛膝, 倒扣草	Native	Herb	-	Common	*	**	
<i>Acrostichum aureum</i>	鹵蕨	Native	Herb	-	Restricted	**		*
<i>Ageratum conyzoides</i>	藿香薊, 勝紅薊	Exotic	Herb	-	Cultivated or Naturalised		**	
<i>Albizia lebbbeck</i>	大葉合歡	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Alocasia macrorrhizos</i>	海芋	Native	Herb	-	Common		**	
<i>Annona squamosa</i>	番荔枝	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Aporosa dioica</i>	銀柴, 大沙葉	Native	Tree	-	Common		*	



Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Aquilaria sinensis</i>	土沉香, 牙香樹, 白木香	Native	Tree	VU (IUCN); VU (TSLCHP); NT (AFCD 2003); V (CPRDB); Cap.586	Common		*	
<i>Artocarpus heterophyllus</i>	菠蘿蜜	Exotic	Tree	-	Cultivated or Naturalised		****	
<i>Averrhoa carambola</i>	楊桃	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Axonopus compressus</i>	地毯草	Exotic	Herb	-	Cultivated or Naturalised		**	
<i>Barleria lupulina</i>	有刺鴨咀花	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Bauhinia variegata</i>	宮粉羊蹄甲	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Bidens alba</i>	白花鬼針草	Exotic	Herb	-	Cultivated or Naturalised		**	
<i>Bischofia polycarpa</i>	重陽木	Exotic	Tree	-	Cultivated or Naturalised	*	*	
<i>Boehmeria nivea</i> var. <i>tenacissima</i>	青葉芋麻	Native	Herb	-	Restricted		*	
<i>Brachiaria mutica</i>	巴拉草, 爬拉草	Exotic	Herb	-	Cultivated or Naturalised			*
<i>Bridelia tomentosa</i>	土蜜樹, 逼迫仔	Native	Shrub/Tree	-	Common	*	**	
<i>Broussonetia papyrifera</i>	構樹	Native	Tree	-	Common		**	
<i>Caryota mitis</i>	短穗魚尾葵, 小魚尾葵	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Celtis sinensis</i>	朴樹	Native	Tree	-	Common		**	*
<i>Centotheca lappacea</i>	假淡竹葉	Native	Herb	-	Common		**	
<i>Cinnamomum burmannii</i>	陰香	Native	Tree	-	Common		*	
<i>Citrus reticulata</i>	柑橘	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Clausena lansium</i>	黃皮	Exotic	Tree	-	Cultivated or Naturalised		**	
<i>Cleistocalyx nervosum</i>	水翁	Native	Tree	-	Common	**	**	
<i>Cocculus orbiculatus</i>	木防己	Native	Vine	-	Common	*	**	
<i>Colocasia esculenta</i>	芋	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Commelina diffusa</i>	節節草	Native	Herb	-	Common	*		
<i>Crateva unilocularis</i>	樹頭菜	Exotic	Tree	-	Cultivated or Naturalised		*	

Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Cunninghamia lanceolata</i>	杉木	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Cyclosorus parasiticus</i>	華南毛蕨	Native	Herb	-	Common		*	
<i>Cyperus malaccensis</i> var. <i>brevifolius</i>	短葉荳蔻, 鹹水草	Native	Herb	-	Common	*		**
<i>Cyrtococcum patens</i>	弓果黍	Native	Herb	-	Common	***	****	
<i>Delonix regia</i>	鳳凰木	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Desmos chinensis</i>	假鷹爪, 酒餅葉	Native	Shrub	-	Common		**	
<i>Dimocarpus longan</i>	龍眼	Exotic	Tree	NT (IUCN), VU (TSLCHP)	Cultivated or Naturalised		***	
<i>Dracaena fragrans</i>	巴西鐵樹	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Dracaena sanderiana</i>	辛氏龍樹, 富貴竹	Exotic	Shrub	-	Cultivated or Naturalised	****	****	
<i>Eichhornia crassipes</i>	鳳眼藍, 大 水萍	Exotic	Herb	-	Cultivated or Naturalised	*		
<i>Elephantopus scaber</i>	地膽草	Native	Herb	-	Common		*	
<i>Epipremnum aureum</i>	綠蘿, 芋葉 藤	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Eranthemum pulchellum</i>	可愛花	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Ficus hispida</i>	對葉榕, 牛 乳樹	Native	Shrub/Tree	-	Common		**	
<i>Ficus lyrata</i>	大琴葉榕	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Ficus microcarpa</i>	榕樹, 細葉 榕	Native	Tree	-	Common		*	
<i>Ficus pumila</i>	薜荔, 文頭 郎	Native	Shrub	-	Common		*	
<i>Ficus subpisocarpa</i>	筆管榕	Native	Tree	-	Common	*	*	
<i>Ficus virens</i>	黃葛樹, 大 葉榕	Native	Tree	-	Common		*	
<i>Flueggea virosa</i>	白飯樹, 金 柑藤	Native	Shrub	-	Common		*	
<i>Gymnanthemum amygdalinum</i>	南非葉	Exotic	Shrub	-	-		*	
<i>Hedyotis hedyotideae</i>	牛白藤	Native	Shrub	-	Common		*	
<i>Hibiscus tiliaceus</i>	黃槿	Native	Shrub	-	Common			*
<i>Hymenocallis littoralis</i>	水鬼蕉, 蜘蛛蘭	Exotic	Herb	-	Cultivated or Naturalised		*	



Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Ilex asprella</i>	梅葉冬青, 秤星樹	Native	Shrub	-	Common		*	
<i>Ipomoea cairica</i>	五爪金龍	Exotic	Herb	-	Cultivated or Naturalised	**	**	*
<i>Kalanchoe pinnata</i>	落地生根	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Kyllinga polyphylla</i>	水蜈蚣, 香根水蜈蚣	Exotic	Herb	-	Cultivated or Naturalised	*		
<i>Lantana camara</i>	馬纓丹, 如意草	Exotic	Shrub	-	Cultivated or Naturalised	**	**	
<i>Leucaena leucocephala</i>	銀合歡	Exotic	Shrub/Tree	-	Cultivated or Naturalised	**	***	
<i>Ligustrum sinense</i>	山指甲	Exotic	Shrub/Tree	-	Cultivated or Naturalised		*	
<i>Litchi chinensis</i>	荔枝	Exotic	Tree	EN (TSLCHP)	Cultivated or Naturalised		**	
<i>Litsea glutinosa</i>	潺槁樹	Native	Tree	-	Common		**	
<i>Litsea monopetala</i>	假柿木薑子, 假柿樹	Native	Tree	-	Restricted		*	
<i>Livistona chinensis</i>	蒲葵	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Ludwigia hyssopifolia</i>	草龍	Native	Herb	-	Restricted	*		*
<i>Lygodium japonicum</i>	海金沙	Native	Herb	-	Common	*	**	**
<i>Macaranga tanarius</i> var. <i>tomentosa</i>	血桐	Native	Tree	-	Common	*	**	*
<i>Mangifera indica</i>	芒果	Exotic	Tree	-	Cultivated or Naturalised	**	**	
<i>Melia azedarach</i>	楝, 苦楝, 森樹	Exotic	Tree	-	Cultivated or Naturalised	**	**	
<i>Mikania micrantha</i>	微甘菊	Exotic	Herb	-	Cultivated or Naturalised	**	**	
<i>Momordica charantia</i> var. <i>abbreviata</i>	短角苦瓜	Exotic	Vine	-	Cultivated or Naturalised		*	
<i>Morus alba</i>	桑	Native	Shrub/Tree	-	Common		*	
<i>Murraya paniculata</i>	九里香	Exotic	Tree	-	Cultivated or Naturalised		*	
<i>Musa x paradisiaca</i>	大蕉, 甘蕉	Exotic	Herb	-	Cultivated or Naturalised	*	***	****
<i>Nerium oleander</i>	夾竹桃	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Neyraudia reynaudiana</i>	類蘆, 石珍茅	Native	Herb	-	Common	*		
<i>Oxalis corniculata</i>	酢漿草	Native	Herb	-	Common		*	
<i>Oxalis debilis</i> subsp. <i>corymbosa</i>	紅花酢漿草	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Pachira aquatica</i>	瓜栗	Exotic	Tree	-	Cultivated or Naturalised		*	



Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Paederia scandens</i>	雞矢藤	Native	Herb	-	Common		**	
<i>Panicum maximum</i>	大黍	Exotic	Herb	-	Cultivated or Naturalised	**	****	**
<i>Panicum repens</i>	鋪地黍, 枯骨草	Native	Herb	-	Common		*	
<i>Paspalum conjugatum</i>	兩耳草	Native	Herb	-	Common		*	
<i>Passiflora foetida</i>	龍珠果	Exotic	Vine	-	Cultivated or Naturalised		*	
<i>Persicaria chinensis</i>	火炭母	Native	Herb	-	Common		*	
<i>Phragmites australis</i>	蘆葦	Native	Herb	-	Common	*		
<i>Phyllanthus urinaria</i>	葉下珠, 珍珠草	Native	Herb	-	Common		*	
<i>Podocarpus macrophyllus</i>	羅漢松	Native	Tree	VU (TSLCHP)	Restricted or Cultivated		*	
<i>Praxelis clematidea</i>	假臭草	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Psychotria asiatica</i>	九節, 山大刀	Native	Tree/Shrub	-	Common		*	
<i>Pteris semipinnata</i>	半邊旗	Native	Herb	-	Common		*	
<i>Rhaphiolepis indica</i>	石斑木, 車輪梅, 春花	Native	Shrub/Tree	-	Common		*	
<i>Rhapis excelsa</i>	棕竹	Native	Shrub	-	Common		*	
<i>Ruellia coerulea</i>	蘭花草	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Sageretia thea</i>	雀梅藤	Native	Shrub	-	Common		*	
<i>Sansevieria trifasciata</i>	虎尾蘭	Exotic	Herb	-	Cultivated or Naturalised		**	
<i>Sapium sebiferum</i>	烏柏	Native	Tree	-	Common		*	
<i>Saurauia tristyla</i>	水東哥, 米花樹	Native	Shrub/Tree	-	Common		*	
<i>Schefflera arboricola</i>	鵝掌藤	Exotic	Tree/Shrub	-	Cultivated or Naturalised		*	
<i>Schefflera heptaphylla</i>	鵝掌柴, 鴨腳木	Native	Shrub/Tree	-	Common		*	
<i>Scoparia dulcis</i>	野甘草	Exotic	Herb/Shrub	-	Cultivated or Naturalised		*	
<i>Senna bicapsularis</i>	雙莢決明	Exotic	Shrub	-	Cultivated or Naturalised		*	
<i>Sida acuta</i>	黃花稔	Native	Herb	-	Common		*	
<i>Sida rhombifolia</i>	白背黃花稔	Native	Shrub	-	Common		*	
<i>Solanum americanum</i>	少花龍葵	Exotic	Herb	-	Cultivated or Naturalised		*	
<i>Sonchus arvensis</i>	莕荳菜	Native	Herb	-	Common		*	

Scientific Name	Chinese Name	Origin ¹	Growth Form ¹	Conservation and Protection Status ¹	Status in HK ¹	Habitat ^{2,3}		
						Within WCA		
						PD	V/O	MS
<i>Sonneratia caseolaris</i>	海桑	Exotic	Tree	-	Cultivated or Naturalised		*	*
<i>Strophanthus divaricatus</i>	羊角拗	Native	Liana/Shrub	-	Common		**	
<i>Synedrella nodiflora</i>	金腰箭, 苞殼菊	Exotic	Herb	-	Cultivated or Naturalised	*		
<i>Syzygium jambos</i>	蒲桃	Exotic	Tree	-	Cultivated or Naturalised	*	**	
<i>Typha angustifolia</i>	水燭	Exotic	Herb	-	Cultivated or Naturalised	*		
<i>Urena lobata</i>	肖梵天花, 地桃花, 鬍頭婆	Native	Shrub	-	Common	*	**	
<i>Urena procumbens</i>	梵天花, 狗腳跡	Native	Shrub	-	Common		*	
<i>Vernonia cinerea</i>	夜香牛	Native	Herb	-	Common		*	
<i>Wedelia trilobata</i>	三裂葉蟛蜞菊	Exotic	Herb	-	Cultivated or Naturalised		**	
<i>Zanthoxylum nitidum</i>	兩面針	Native	Shrub	-	Common		*	
Total of species recorded:					119	30	106	13

Notes:

1. Origin and Status refer to:

- AFCD (2003). Conservation Status: LC = Least Concern; NT = Near Threatened; VU = Vulnerable;
- AFCD (2007);
- AFCD (2008);
- AFCD (2009);
- AFCD (2011);
- AFCD (2012);
- Barretto et al. (2011);
- Cap. 96 = Forests and Countryside Ordinance, including the associated Chapter 96A Forestry Regulation;
- Cap. 586 = Protection of Endangered Species of Animal and Plants Ordinance;
- Corlett et al. (2000);
- CPRDB (China Plant Red Data Book). Status is retrieved from AFCD (2003). Status: V = Vulnerable;
- IUCN (2024). Conservation Status: NT = Near Threatened; VU = Vulnerable;
- Qin et al. (2017) (TSLCHP: Threatened Species List of China's Higher Plants). Conservation Status: VU = Vulnerable.

In this study, plant species is regarded as plant species of conservation importance if it is protected under Cap. 96A, Cap. 586, documented as rare/protected species in AFCD (2003), or its wild population (i.e. not cultivated/exotic specimens) has conservation status under international or regional conservation inventory (e.g. IUCN Red List of Threatened Species, China Red Data Book, Threatened Species of China's Higher Plants).

2. Habitats: PD = Pond; V/O = Village/Orchard; MS = Marsh.

3. Code for abundance:

**** = Common, *** = Frequent, ** = Occasional, * = Scarce

Species considered as of conservation importance in this study are indicated in bold type, cultivated or planted species with conservation status are not included.

3.2 Terrestrial Mammal Survey

A total of eight mammal species were recorded within the WCA during the baseline ecological survey. Among them, seven of them are regarded as species of conservation importance (see **Table A-3**).



Table A-3 Maximum Count of Mammals Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³	
			Within WCA	
			IF	V/O
Short-nosed Fruit Bat <i>Cynopterus sphinx</i>	NT(RLCV); Cap.170	Very widely distributed in urban and countryside areas throughout Hong Kong.		3
Intermediate Horseshoe Bat <i>Rhinolophus affinis</i>	(LC); Cap.170	Widely distributed in countryside areas throughout Hong Kong.	✓	
Least Horseshoe Bat <i>Rhinolophus pusillus</i>	PRC (RC); Cap.170	Widely distributed in countryside areas throughout Hong Kong.	✓	
<i>Myotis</i> spp.	(LC); NT(RLCV); Cap.170	Fairly widely distributed in countryside areas throughout Hong Kong.	✓	
Chinese Noctule <i>Nyctalus plancyi</i>	PRC (RC); Cap.170	Fairly widely distributed in countryside areas throughout Hong Kong.	✓	
Japanese Pipistrelle <i>Pipistrellus abramus</i>	Cap.170	Widely distributed throughout Hong Kong.	2*	2
Lesser Bamboo Bat <i>Tylonycteris fulvida</i>	(LC); Cap.170	Fairly widely distributed in countryside areas throughout Hong Kong.	✓	
Domestic Water Buffalo <i>Bubalus bubalis</i>	-	Found in Kam Tin, and the southern part of Lantau Island.		1
Total no. of species recorded within the WCA			6	3

Notes:

- Conservation and protection status refers to Fellowes *et al.* (2002), IUCN (2025), RLCV (Jiang *et al.*, 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025), Cap. 170 and Cap. 586.
 - Conservation status by Fellowes *et al.* (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional 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.
 - Conservation status by RLCV (Jiang *et al.*, 2016): NT = Near Threatened.
 - Cap. 170 = Wild Animals Protection Ordinance.
 - Distribution and rarity follow the data of HKBIH (AFCD, 2025).
 - Habitat: DA = Developed Area; IF = In Flight; V/O = Village/Orchard.
 - Species considered as of conservation importance in this study are indicated in bold type.
 - ✓ - Occurrence detected in the acoustic records. Quantification of bats from acoustic records is difficult, only species list is provided.
- * - Both sighting and acoustic records were observed.

3.3 Avifauna Survey

A total of 43 avifauna species were recorded within the WCA, with 16 of them regarded as species of conservation importance (see **Table A-4**).

Table A-4 Maximum Count of Bird Species Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³			
			Within WCA			
			V/O	PD	IF	MS
Northern Shoveler <i>Spatula clypeata</i>	RC	Abundant winter visitor. Found in Deep Bay area.		5		
Eurasian Teal <i>Anas crecca</i>	RC; HR	Common winter visitor. Found in Deep Bay area, Shuen Wan, Tai Lam Chung Reservoir, Victoria Harbour, urban parks.		38		
Greater Coucal ⁴	NKPWA(II)		1			

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³			
			Within WCA			
			V/O	PD	IF	MS
<i>Centropus sinensis</i>		Common resident. Widely distributed in Hong Kong.				
Asian Koel <i>Eudynamys scolopaceus</i>	-	Common resident. Widely distributed in Hong Kong.	1			
Large Hawk-cuckoo <i>Hierococcyx sparveroides</i>	-	Locally common spring and summer visitor. Widely distributed in woodland throughout in Hong Kong.		1		
Spotted Dove <i>Spilopelia chinensis</i>	-	Abundant resident. Widely distributed in Hong Kong.	1	1	2	
White-breasted Waterhen <i>Amaurornis phoenicurus</i>	-	Common resident. Widely distributed in wetland throughout Hong Kong.	1	1		
Little Grebe⁴ <i>Tachybaptus ruficollis</i>	LC	Common resident. Found in Deep Bay area.		2		
Common Sandpiper <i>Actitis hypoleucos</i>	-	Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong.		4		
Great Cormorant <i>Phalacrocorax carbo</i>	PRC	Common winter visitor. Widely distributed in coastal areas throughout Hong Kong.	17	50	10	
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	(LC)	Common resident and migrant. Widely distributed in Hong Kong.	4	4	4	
Chinese Pond Heron <i>Ardeola bacchus</i>	PRC (RC)	Common summer visitor. Widely distributed in Hong Kong.	2	4	2	
Grey Heron <i>Ardea cinerea</i>	PRC; MR	Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.	16	3	5	
Great Egret <i>Ardea alba</i>	PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in Hong Kong.	2	3	4	
Little Egret <i>Egretta garzetta</i>	PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong.	2	3	3	2
Black Kite <i>Milvus migrans</i>	(RC); CITES(II); NKPWA(II); Cap.586	Common resident and winter visitor. Widely distributed in Hong Kong.		1	1	
White-throated Kingfisher <i>Halcyon smyrnensis</i>	(LC); NKPWA(II)	Common resident. Widely distributed in coastal areas throughout Hong Kong.		1	1	
Common Kingfisher <i>Alcedo atthis</i>	-	Common passage migrant and winter visitor. Widely distributed in wetland habitat throughout Hong Kong.	1	1	1	
Pied Kingfisher <i>Ceryle rudis</i>	(LC); HR(B)	Common resident. Widely distributed in lakes and ponds throughout Hong Kong.		2	2	
Long-tailed Shrike <i>Lanius schach</i>	MR(B)	Common resident. Widely distributed in open areas throughout Hong Kong.	1			
Black Drongo	MR(B)			1		

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³			
			Within WCA			
			V/O	PD	IF	MS
<i>Dicrurus macrocercus</i>		Common autumn passage migrant and winter visitor. Widely distributed in open area throughout Hong Kong.				
Red-billed Blue Magpie <i>Urocissa erythroryncha</i>	-	Common resident. Widely distributed in woodland edges throughout Hong Kong.	1			
Collared Crow <i>Corvus torquatus</i>	LC; NT(RLCV); VU(IUCN);MR(B)	Locally common resident. Found in Inner Deep Bay area, Nam Chung, Kei Ling Ha, Tai Mei Tuk, Pok Fu Lam, Chek lap Kok, Shuen Wan, Lam Tsuen.		2		
Large-billed Crow <i>Corvus macrorhynchos</i>	-	Common resident. Widely distributed in Hong Kong.	1			
Japanese Tit <i>Parus minor</i>	-	Common resident. Widely distributed in Hong Kong.	2	1		
Chinese Bulbul <i>Pycnonotus sinensis</i>	-	Abundant resident. Widely distributed in Hong Kong.	3			
Red-whiskered Bulbul <i>Pycnonotus jocosus</i>	-	Abundant resident. Widely distributed in Hong Kong.	3	1	6	
Barn Swallow <i>Hirundo rustica</i>	-	Abundant passage migrant and uncommon winter visitor. Widely distributed in Hong Kong.		3		
Yellow-bellied Prinia <i>Prinia flaviventris</i>	-	Common resident. Widely distributed in Hong Kong.	1			
Dusky Warbler <i>Phylloscopus fuscatus</i>	-	Abundant winter visitor and migrant. Widely distributed in shrubland and waterside vegetation throughout Hong Kong.			2	
Yellow-bellied Prinia <i>Prinia flaviventris</i>	-	Common resident. Widely distributed in Hong Kong.		1	2	
Plain Prinia <i>Prinia inornata</i>	-	Locally common resident. Widely distributed in grassland throughout Hong Kong.		1	1	
Common Tailorbird <i>Orthotomus sutorius</i>	-	Common resident. Widely distributed in Hong Kong.	2	1		
Masked Laughingthrush <i>Pterorhinus perspicillatus</i>	-	Abundant resident. Widely distributed in shrubland throughout Hong Kong.	3	4	6	
Crested Myna <i>Acridotheres cristatellus</i>	-	Abundant resident. Widely distributed in Hong Kong.	2		4	
Black-collared Starling <i>Gracupica nigricollis</i>	-	Common resident. Widely distributed in Hong Kong.	1	3		
Oriental Magpie Robin <i>Copsychus saularis</i>	-	Abundant resident. Widely distributed in Hong Kong.		9		
Daurian Redstart <i>Phoenicurus aureus</i>	-	Common winter visitor. Widely distributed in Hong Kong.	1			

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³			
			Within WCA			
			V/O	PD	IF	MS
Amur Stonechat <i>Saxicola stejnegeri</i>	-	Common passage migrant and winter visitor. Widely distributed in open fields throughout Hong Kong.		1		
Eurasian Tree Sparrow <i>Passer montanus</i>	-	Abundant resident. Widely distributed in Hong Kong.	3			
Scaly-breasted Munia <i>Lonchura punctulata</i>	-	Abundant resident. Widely distributed in Hong Kong.		4		
Grey Wagtail <i>Motacilla cinerea</i>	-	Common passage migrant and winter visitor. Widely distributed in hill streams throughout Hong Kong.	1			
White Wagtail <i>Motacilla alba</i>	-	Resident, common passage migrant and winter visitor. Widely distributed in Hong Kong.	2	1		
Total no. of species recorded within the WCA			26	31	17	1

Notes:

- Conservation and protection status refers to Fellowes *et al.* (2002), IUCN (2025), RLCV (Jiang *et al.*, 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025), Cap. 170 and Cap. 586.
 - Conservation status by Fellowes *et al.* (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern; PGC = Potential 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.
 - Conservation status by IUCN (2025): VU = Vulnerable; EN = Endangered.
 - Conservation status by RLCV (Jiang *et al.*, 2016): NT = Near Threatened; EN = Endangered.
 - Protection status by CITES (2025): II = Listed in Appendix II of CITES.
 - Protection status by NKPWA (2021): I = Class I of NKPWA; II = Class II of NKPWA.
 - Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
 - Hong Kong Status by Or and Chan (2025): HR = High Risk; MR = Moderate Risk; Letter "B" in parentheses indicate that the assessment is on the basis of restrictedness in breeding population.
 - Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
- Distribution and rarity follow the data of the latest Hong Kong Bird Report published by HKBWS.
- Habitat: IF = In Flight; MS = Marsh; PD = Pond; V/O = Village/Orchard.
- Little Grebe and Greater Coucal were recorded in Pond 2 and village/orchard environ just outside the WCA. Species considered as of conservation importance in this study are indicated in bold type.

3.4 Ardeid Night Roost Survey and Pre-Roost Survey (within the WCA)

Only finding of the potential Ardeid Night Roost within the WCA is presented here. This potential roost was observed in November 2024 in which a few ardeids used the pond bunds in the WCA. The substrate of the potential Ardeid Night Roost within the WCA is dominated by *Melia azedarach* trees. The survey was conducted within the WCA in December 2024 and January 2025 to confirm the roost status. A maximum of 16 and 17 ardeids were recorded in December 2024 and January 2025, when were active months for this roost within the WCA. Flight height of the returning ardeids is generally lower ranging from 5 to 10m. The number and species of night roosting ardeids within the WCA is presented in **Table A-5**, and the flight path survey findings are presented in **Figure A-2**.

Table A-5 Number and Species of Night Roosting Ardeids within WCA

Month	Species	Abundance of Ardeids in Each Flight Path ^{1,2}	Total
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		1	2	3	4	5	Number
Dec-24	Great Egret	1	4	1	9	1	16
Jan-25	Chinese Pond Heron	5	-	-	-	-	5
	Great Egret	7	-	-	-	1	8
	Grey Heron	1	-	-	-	-	1
	Black-crowned Night Heron	-	-	3	-	-	3

Notes:

- Cells with “-“ indicate that ardeid species is not recorded.

3.5 Ko Po Road Ardeid Night Roost (Outside the WCA)

The Ko Po Road Night Roost, noted in 2021, was surveyed during the EIA stage and observed to be utilized by Chinese Pond Heron, Great Egret and Little Egret roosted at the canopy of a group of *Ficus microcarpa* and *Leucaena leucocephala*. During the baseline ecological survey, these three ardeid species were also observed along with few Grey Heron and Black-crowned Night Heron. During the pre-roost period, majority of the aggregates gathering in front of the night roost were Great Egret but the most abundant species returning to roost were Little Egret. Ardeids returning were observed to come from seven various directions but mostly from the southeast direction (Flight Path No.6). The maximum number of ardeids roosting from June to August 2024, and November 2024 to January 2025 range from 6 to 282, with active period start from late August 2024 to December 2024, and gradually decline in January 2025. Flight height of the returning ardeids range from 3 to 40m. The number and species of night roosting ardeids at the Ko Po Road Ardeid Night Roost is presented in **Table A-6**, and the flight path survey findings are presented in **Figure A-3**.

Table A-6 Number and Species of Night Roosting Ardeids within Ko Po Road Ardeid Night Roost

Month	Species	Abundance of Ardeids in Each Flight Path							Total Number
		1	2	3	4	5	6	7	
Jun-24	Chinese Pond Heron	-	-	-	1	-	-	-	1
	Little Egret	2	-	-	-	-	3	-	5
Jul-24	Chinese Pond Heron	-	-	-	3	-	-	-	3
	Little Egret	-	-	-	1	-	-	-	1
	Grey Heron	-	-	-	1	-	-	-	1
	Great Egret	-	-	-	2	-	-	-	2

Month	Species	Abundance of Ardeids in Each Flight Path							Total Number
		1	2	3	4	5	6	7	
	Black-crowned Night Heron	-	-	-	2	-	-	-	2
Aug-24	Chinese Pond Heron	4	9	6	3	30	17	-	69
	Little Egret	7	29	13	9	39	43	-	140
	Great Egret	-	1	-	-	-	1	-	2
Nov-24	Chinese Pond Heron	1	14	-	-	21	23	1	60
	Little Egret	3	65	3	3	19	87	11	191
	Great Egret	1	4	-	3	-	23	-	31
Dec-24	Chinese Pond Heron	-	2	1	-	4	4	-	11
	Little Egret	3	2	1	9	18	74	-	107
	Great Egret	7	9	1	10	8	34	-	69
Jan-25	Chinese Pond Heron	1	-	-	15	-	3	-	19
	Little Egret	20	-	-	21	-	65	-	106

Notes:

- Cells with "-" indicate that ardeid species is not recorded.

3.6 Potential additional ardeid night roost at Ko Po Road (Outside WCA)

Located north and connected to an array of *Ficus microcarpa* trees along Chi Ho Road, roosting substrate of the additional potential Ko Po Road Ardeid Night Roost likewise generally consisted of *Ficus microcarpa*. The roost is mainly utilised by Chinese Pond Heron with 148 individuals recorded throughout the survey period albeit a few Little Egret were also observed. Ardeid roosting was observed in August 2024, with maximum number of ardeids roosting in August 2024, and November 2024 to January 2025 range from 3 to 85, with active period start from late August 2024 to November 2024, and decline in December 2024. The returning ardeid were observed from five different directions but majority came from the northern area of the Kam Tin River (i.e. Flight Path No. 1 and 2). Flight height of the returning ardeids is generally lower ranging from 3 to 20m. The number and species of night roosting ardeids at the potential additional Ko Po Road Ardeid Night Roost is presented in **Table A-7**, and the flight path survey findings are presented in **Figure A-4**.

Table A-7 Number and Species of Night Roosting Ardeids within Potential Additional

Ardeid Night Roost at Ko Po Road

Month	Species	Abundance of Ardeids in Each Flight Path					Total Number
		1	2	3	4	5	
Aug-24	Chinese Pond Heron	28	3	4	4	-	39
	Little Egret	7	2	-	1	-	10
Nov-24	Chinese Pond Heron	31	26	19	6	-	82
	Little Egret	1	-	1	1	-	3
Dec-24	Chinese Pond Heron	-	-	-	-	1	1
	Little Egret	-	1	-	1	-	2
Jan-25	Chinese Pond Heron	6	12	1	7	-	26

Notes:

- Cells with “-” indicate that ardeid species is not recorded.

3.7 Herpetofauna Survey

A total of nine amphibian species and six reptile species were recorded within the WCA. Among these, only two amphibian and one reptile species were regarded as species of conservation importance (see **Tables A-8 and A-9**).

Table A-8 Maximum Count of Amphibians Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³
			Within WCA
			V/O
Asian Common Toad <i>Duttaphrynus melanostictus</i>	-	Widely distributed in Hong Kong	7
Spotted Narrow-mouthed Frog⁴ <i>Kalophrynus interlineatus</i>	NT(RLCV)	Widely distributed from low to moderate altitudes in northern and central New Territories	1
Asiatic Painted Frog <i>Kaloula pulchra</i>	-	Widely distributed in Hong Kong	3
Butler's Pigmy Frog <i>Microhyla butleri</i>	-	Widely distributed in Hong Kong	5
Ornate Pigmy Frog <i>Microhyla fissipes</i>	-	Widely distributed in Hong Kong	30
Paddy Frog <i>Fejervarya multistriata</i>	-	Widely distributed throughout Hong Kong	1
Günther's Frog <i>Sylvirana guentheri</i>	NT(RLCV)	Widely distributed throughout Hong Kong	2
Brown Tree Frog <i>Polypedates megacephalus</i>	-	Widely distributed throughout Hong Kong	30#
Greenhouse Frog	-		13

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³
			Within WCA
			V/O
<i>Eleutherodactylus planirostris</i>		Widely distributed throughout Hong Kong	
Total no. of species recorded within the WCA			9

Notes:

- Conservation and protection status refers to Fellowes *et al.* (2002), IUCN (2025), RLCV (Jiang *et al.*, 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025), Cap. 170 and Cap. 586.
 - Conservation status by RLCV (Jiang *et al.*, 2016): NT = Near Threatened.
 - Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
- Distribution and rarity follow the data of HKBIH (AFCD, 2025).
- Habitat: V/O = Village/Orchard.
- Spotted Narrow-mouthed Frog was recorded in village/orchard environ just outside the WCA. Species considered as of conservation importance in this study are indicated in bold type.
Tadpoles of the species were found.

Table A-9 Maximum Count of Reptiles Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³	
			Within WCA	
			V/O	PD
Red-eared Slider <i>Trachemys scripta</i>	-	Widely distributed and commonly found in reservoirs or ponds in urban parks.		3
Brown Forest Skink <i>Sphenomorphus incognitus</i>	-	Distributed in streams in the New Territories.	1	
Four-clawed Gecko <i>Gehyra mutilata</i>	VU(RLCV)	Widely distributed throughout Hong Kong.	1	
Chinese Gecko <i>Gekko chinensis</i>	-	Widely distributed throughout Hong Kong.	1	
Bowring's Gecko <i>Hemidactylus bowringii</i>	-	Distributed throughout Hong Kong	2	
Taiwan Kukri Snake <i>Oligodon formosanus</i>	-	Widely distributed throughout Hong Kong.	1	
Total no. of species recorded			5	1

Notes:

- Conservation and protection status refers to Fellowes *et al.* (2002), IUCN (2025), RLCV (Jiang *et al.*, 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025); Cap. 170 and Cap. 586.
 - Conservation status by Fellowes *et al.* (2002): PRC = Potential Regional 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.
 - Conservation status by RLCV (Jiang *et al.*, 2016): NT = Near Threatened; VU = Vulnerable; EN = Endangered.
 - Protection status by CITES (2025): II = Listed in Appendix II of CITES.
 - Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
 - Distribution and rarity follow the data of HKBIH (AFCD, 2025).
 - Habitat: V/O = Village/Orchard; PD: Pond.
- Species considered as of conservation importance in this study are indicated in bold type.

3.8 Butterfly and Odonates Survey

A total of 25 butterfly species were recorded within the WCA, while 14 odonate species were recorded. Only two odonate species were regarded as species of conservation importance (see **Tables A-10 and A-11**).

Table A-10 Maximum Count of Butterfly Species Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³
			Within WCA
			V/O
Formosan Swift <i>Borbo cinnara</i>	-	Common	1
Tawny Rajah <i>Charaxes bernardus</i>	-	Common	1
Common Indian Crow <i>Euploea core</i>	-	Common	1
Blue-spotted Crow <i>Euploea midamus</i>	-	Very Common	1
Angled Castor <i>Ariadne ariadne</i>	-	Common	1
White-edged Blue Baron <i>Euthalia phemius</i>	-	Common	1
Great Egg-fly <i>Hypolimnias bolina</i>	-	Common	2
Grey Pansy <i>Junonia atlites</i>	-	Common	1
Lemon Pansy <i>Junonia lemonias</i>	-	Common	1
Common Archduke <i>Lexias pardalis</i>	-	Suspected Species	1
Common Sailer <i>Neptis hylas</i>	-	Very Common	1
Short-banded Sailer <i>Phaedyra columella</i>	-	Common	1
Black Prince <i>Rohana parisatis</i>	-	Common	1
Common Palmfly <i>Elymnias hypermnestra</i>	-	Common	4
Common Evening Brown <i>Melanitis leda</i>	-	Common	1
Dark Evening Brown <i>Melanitis phedima</i>	-	Uncommon	1
Dark-brand Bush Brown <i>Mycalesis mineus</i>	-	Very Common	1
Common Five-ring <i>Ypthima baldus</i>	-	Very Common	1
Common Bluebottle <i>Graphium sarpedon</i>	-	Very Common	1
Great Mormon <i>Papilio memnon</i>	-	Very Common	1
Common Mormon <i>Papilio polytes</i>	-	Very Common	1
Lemon Emigrant	-	Common	1

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³
			Within WCA
			V/O
<i>Catopsilia pomona</i>			
Common Grass Yellow <i>Eurema hecabe</i>	-	Very Common	2
Great Orange Tip <i>Hebomoia glaucippe</i>	-	Common	2
Indian Cabbage White <i>Pieris canidia</i>	-	Very Common	1
Total no. of species recorded within the WCA			25

Notes:

1. Conservation and protection status refers to Fellowes *et al.* (2002), IUCN (2025), RLCV (Jiang *et al.*, 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025), Cap. 170 and Cap. 586.
2. Distribution and rarity follow the data of Chan *et al.* (2011).
3. Habitat: V/O = Village/Orchard.

Species considered as of conservation importance in this study are indicated in bold type.

Table A-11 Maximum Count of Odonate Species Recorded within the WCA

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³	
			Within WCA	
			V/O	PD
Yellow Featherlegs <i>Copera marginipes</i>	-	Abundant		1
Dingy Dusk-hawker <i>Gynacantha subinterrupta</i>	LC	Uncommon	1	
Common Flangetail <i>Ictinogomphus pertinax</i>	-	Common		2
Blue Dasher <i>Brachydiplax chalybea</i>	-	Common		1
Asian Amberwing <i>Brachythemis contaminata</i>	-	Abundant		6
Russet Percher <i>Neurothemis fulvia</i>	-	Common		1
Red-faced Skimmer <i>Orthetrum chrysis</i>	-	Abundant		1
Mangrove Skimmer <i>Orthetrum poecilops</i>	GC; VU(IUCN)	Uncommon	1	
Common Red Skimmer <i>Orthetrum pruinsum</i>	-	Abundant		1
Green Skimmer <i>Orthetrum sabina</i>	-	Abundant		2
Wandering Glider <i>Pantala flavescens</i>	-	Abundant		2
Pied Skimmer <i>Pseudothemis zonata</i>	-	Common	1	3
Variegated Flutterer	-	Common		7

Species	Conservation and Protection Status ¹	Status in Hong Kong ²	Habitat ³	
			Within WCA	
			V/O	PD
<i>Rhyothemis variegata</i>				
Saddlebag Glider <i>Tamea virginia</i>	-	Abundant		1
Total no. of species recorded within the WCA			3	12

Notes:

- Conservation and protection status refers to Fellowes et al. (2002), IUCN (2025), RLCV (Jiang et al., 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Or and Chan (2025), Cap. 170 and Cap. 586.
 - Conservation status by Fellowes et al. (2002): LC = Local 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.
 - Conservation status by IUCN (2025): NT = Near Threatened; VU = Vulnerable.
 - Distribution and rarity follow the data of HKBIH (AFCD, 2025).
 - Habitat: PD = Pond; V/O = Village/Orchard.
- Species considered as of conservation importance in this study are indicated in bold type.

3.9 Firefly Survey

No fireflies were recorded throughout the survey period.

3.10 Locations of Species of Conservation Importance

Locations of the flora and fauna species of conservation importance recorded within the WCA and its close proximity during the ecological baseline survey are shown in **Figure A-5**.

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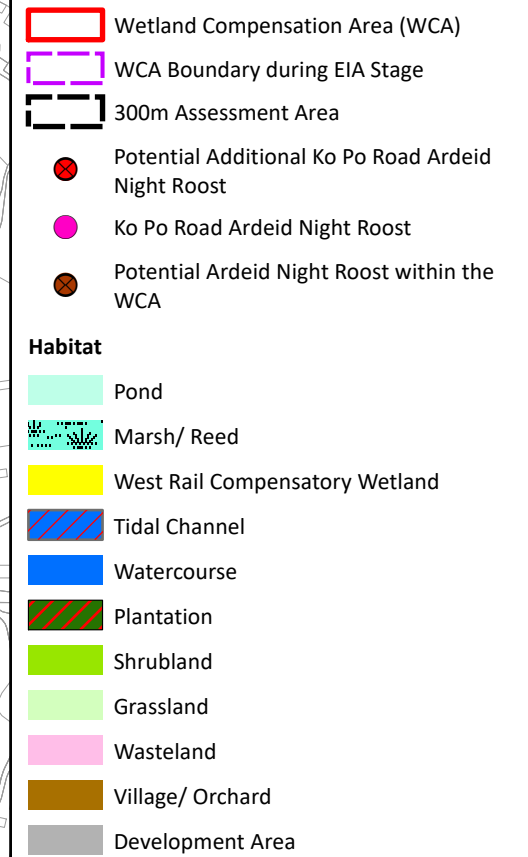
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FIGURES OF APPENDIX A



REV.	AMENDMENT	BY	CHK. APP.	DATE



Project Title:

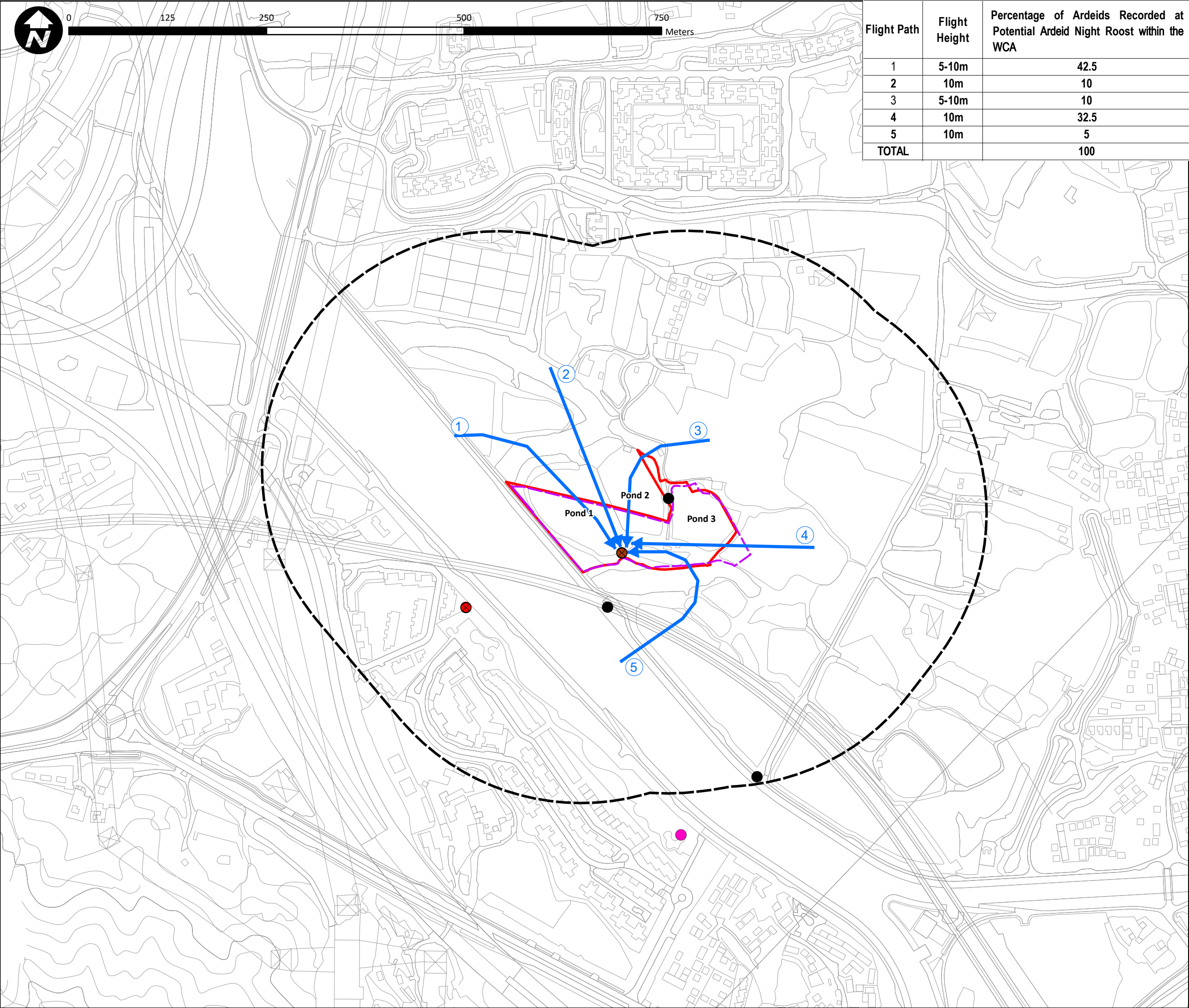
Northern Link - Ecological Baseline Monitoring of
Wetland Compensation Area

Figure Title:

Habitat map and locations of ardeid night roosts recorded within and outside the WCA

Drawn by:	PC	Scale:	1:4,500 on A3
Checked By:	IY	Date:	26 Feb 2026
Approved by:	IY		
Figure Number:	Figure A-1		Revision: 0

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Flight Path	Flight Height	Percentage of Ardeids Recorded at Potential Ardeid Night Roost within the WCA
1	5-10m	42.5
2	10m	10
3	5-10m	10
4	10m	32.5
5	10m	5
TOTAL		100

- Wetland Compensation Area (WCA)
- WCA Boundary during EIA Stage
- 300m Assessment Area
- ➔ Flight Path
- ANR survey vantage point
- Ko Po Road Ardeid Night Roost
- Potential Additional Ko Po Road Ardeid Night Roost
- Potential Ardeid Night Roost within the WCA

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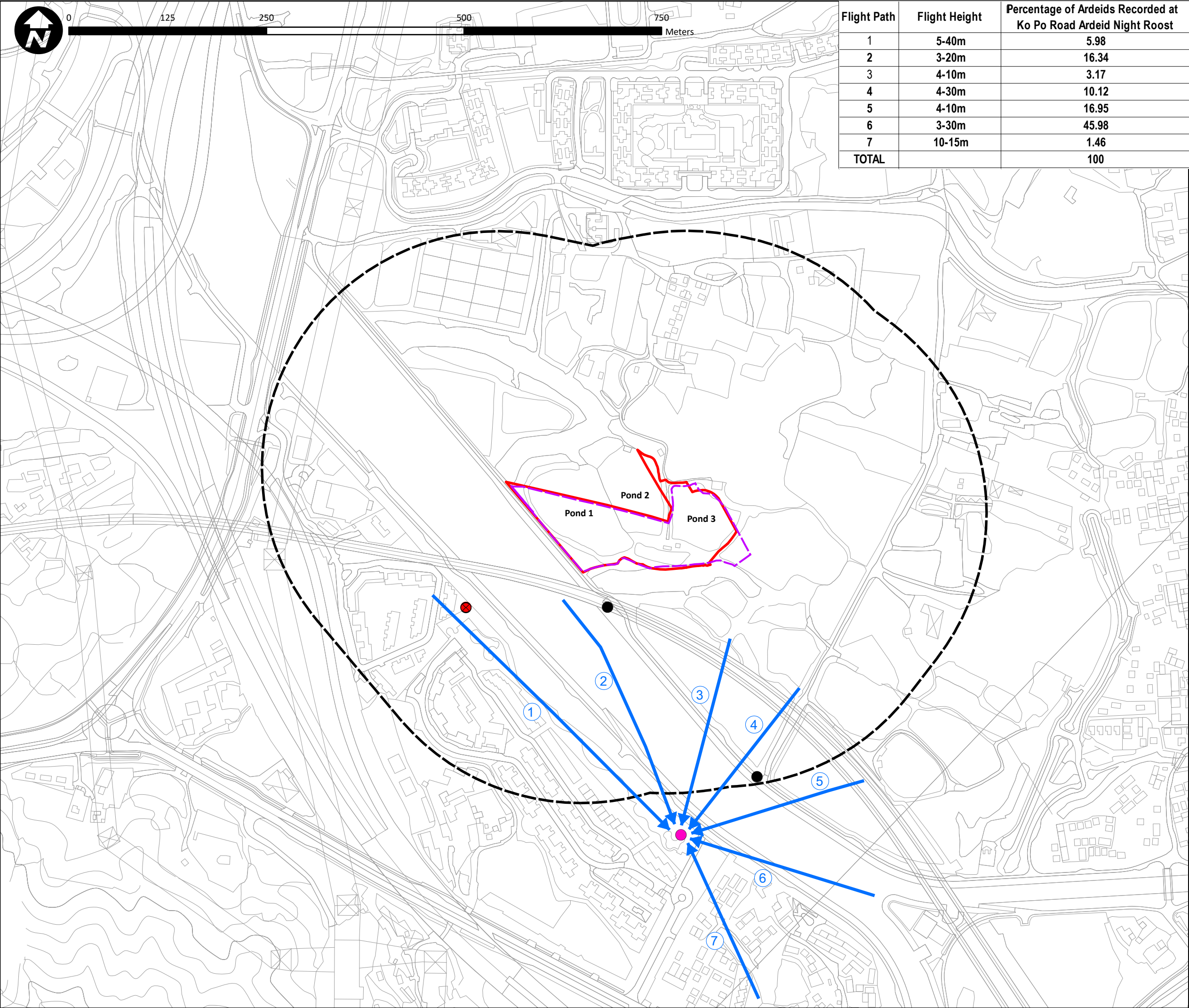
Northern Link - Ecological Baseline Monitoring of Wetland Compensation Area

Figure Title:

Representative Flight Paths of Roosting Ardeids in Potential Ardeid Night Roost within the WCA from December 2024 to January 2025

Drawn by:	PC	Scale:	1:4,500 on A3
Checked By:	IY	Date:	27 Feb 2026
Approved by:	IY		
Figure Number:	Figure A-2		Revision: 0

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Flight Path	Flight Height	Percentage of Ardeids Recorded at Ko Po Road Ardeid Night Roost
1	5-40m	5.98
2	3-20m	16.34
3	4-10m	3.17
4	4-30m	10.12
5	4-10m	16.95
6	3-30m	45.98
7	10-15m	1.46
TOTAL		100

Wetland Compensation Area (WCA)

WCA Boundary during EIA Stage

300m Assessment Area

Flight Path

ANR survey vantage point

Ko Po Road Ardeid Night Roost

Potential Additional Ko Po Road Ardeid Night Roost

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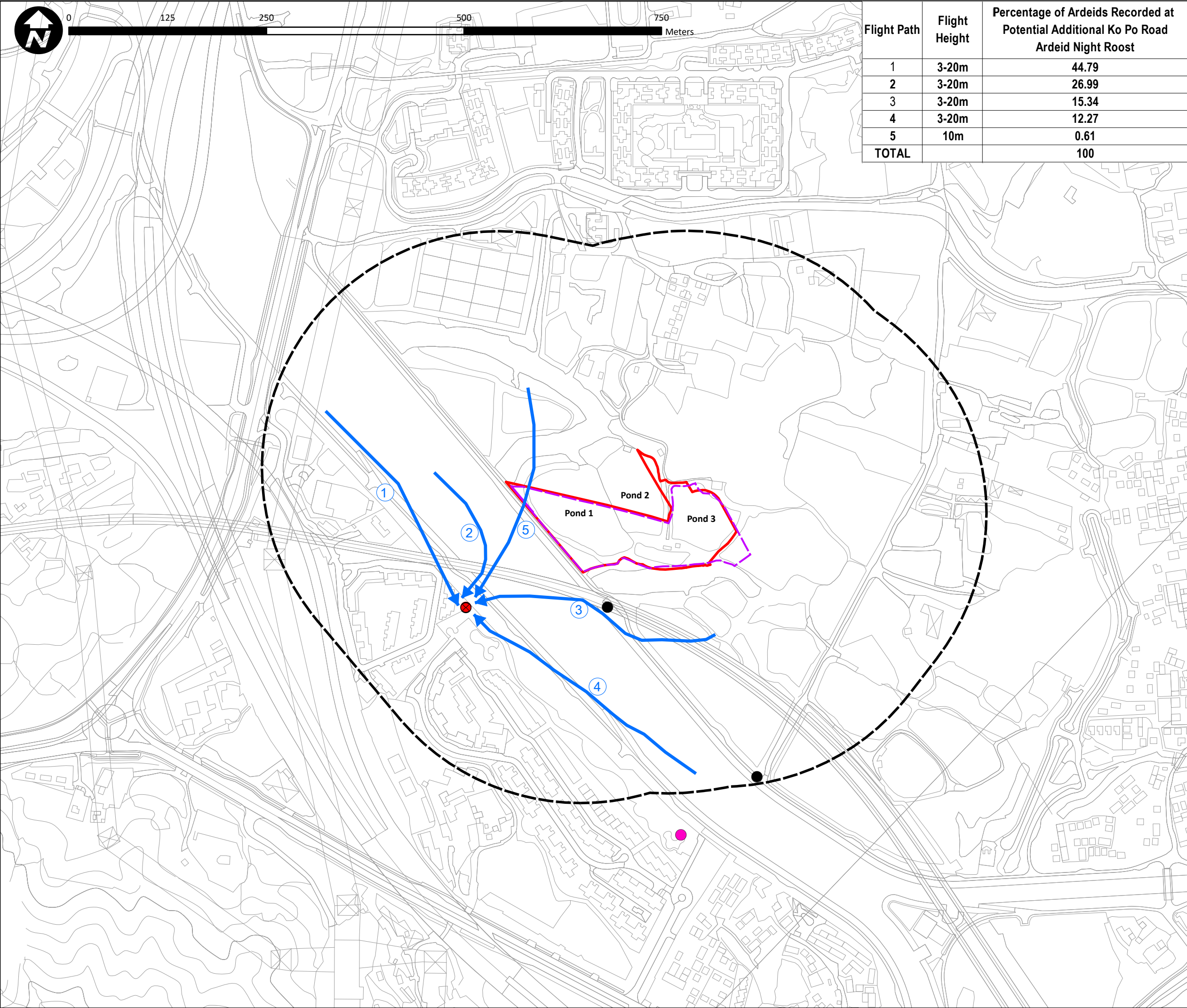
Project Title:

Northern Link - Ecological Baseline Monitoring of Wetland Compensation Area

Figure Title:
Representative Flight Paths of Roosting Ardeids in Ko Po Road Ardeid Night Roost from June to August 2024, and November 2024 to January 2025

Drawn by:	PC	Scale:	1:4,500	on A3
Checked By:	IY	Date:	27 Feb 2026	
Approved by:	IY			
Figure Number:	Figure A-3			Revision: 0

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Flight Path	Flight Height	Percentage of Ardeids Recorded at Potential Additional Ko Po Road Ardeid Night Roost
1	3-20m	44.79
2	3-20m	26.99
3	3-20m	15.34
4	3-20m	12.27
5	10m	0.61
TOTAL		100

- Wetland Compensation Area (WCA)
- WCA Boundary during EIA Stage
- 300m Assessment Area
- Flight Path
- ANR survey vantage point
- Ko Po Road Ardeid Night Roost
- Potential Additional Ko Po Road Ardeid Night Roost

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Project Title:

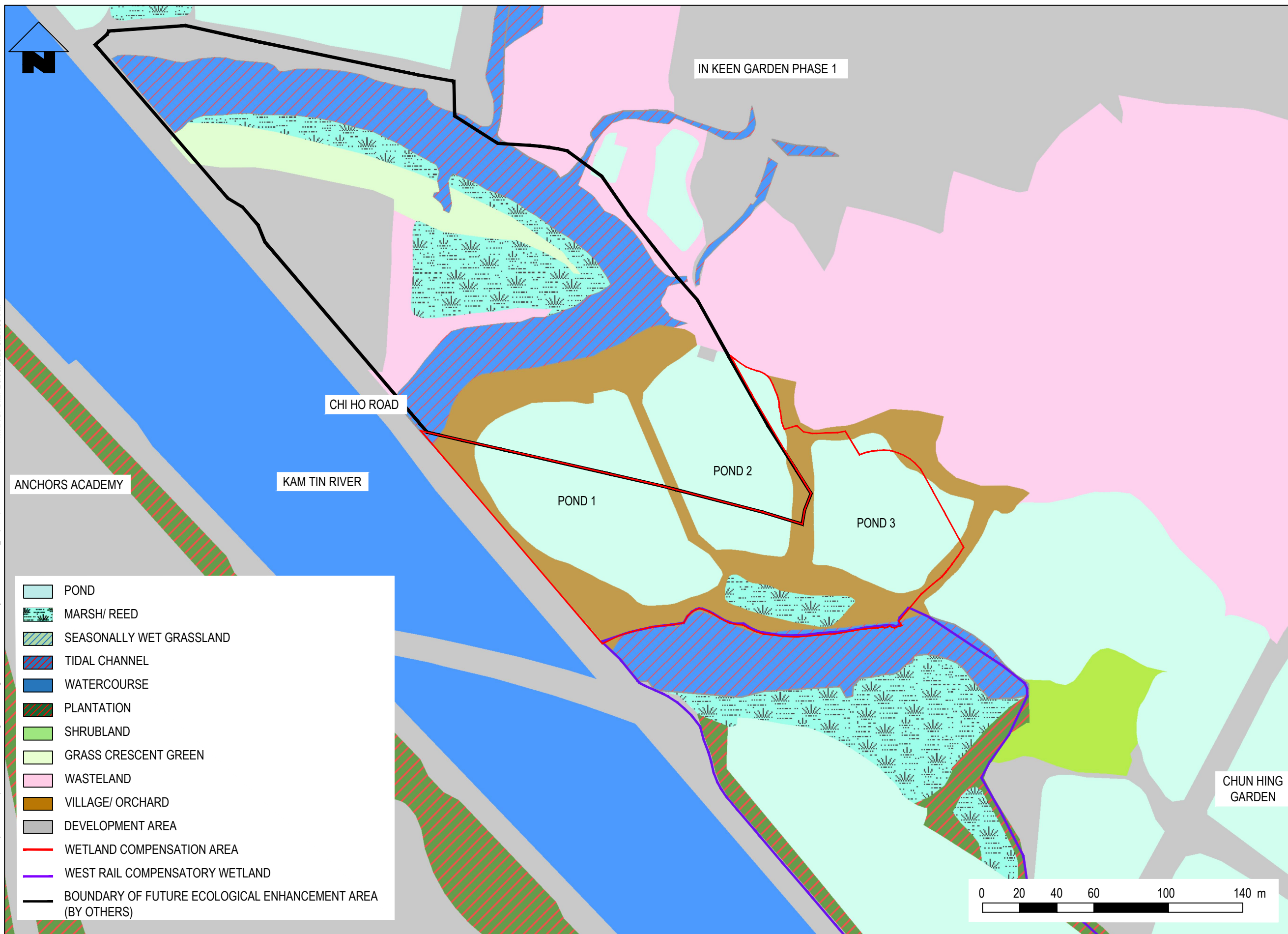
Northern Link - Ecological Baseline Monitoring of Wetland Compensation Area

Figure Title:

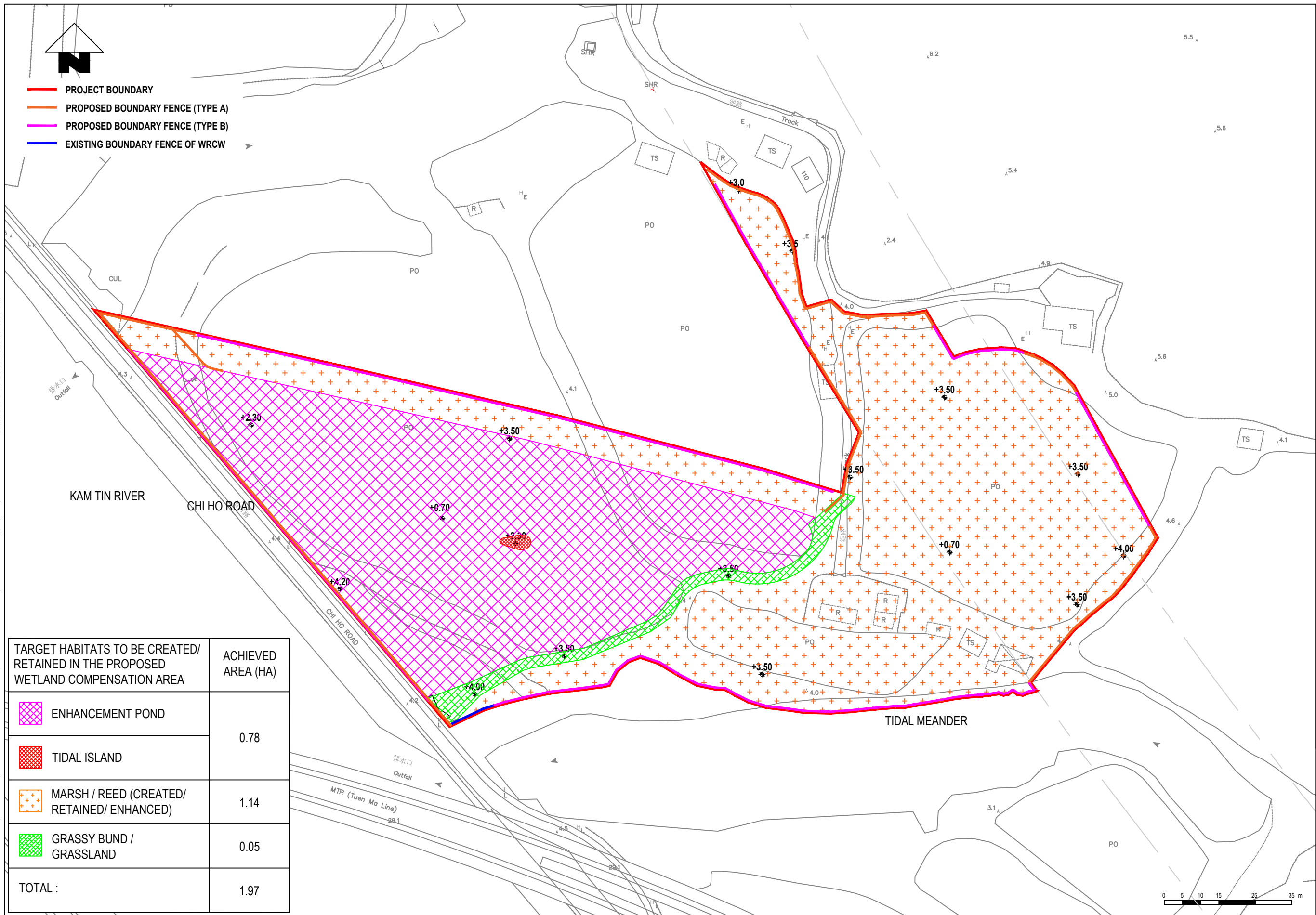
Representative Flight Paths of Roosting Ardeids in Potential Additional Ko Po Road Ardeid Night Roost in August 2024, and November 2024 to January 2025

Drawn by:	PC	Scale:	1:4,500 on A3
Checked By:	IY	Date:	27 Feb 2026
Approved by:	IY		
Figure Number:	Figure A-4		Revision: 0

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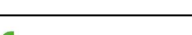


TARGET HABITATS TO BE CREATED/ RETAINED IN THE PROPOSED WETLAND COMPENSATION AREA		ACHIEVED AREA (HA)
 ENHANCEMENT POND	0.78	
 TIDAL ISLAND		
 MARSH / REED (CREATED/ RETAINED/ ENHANCED)	1.14	
 GRASSY BUND / GRASSLAND	0.05	
TOTAL :	1.97	

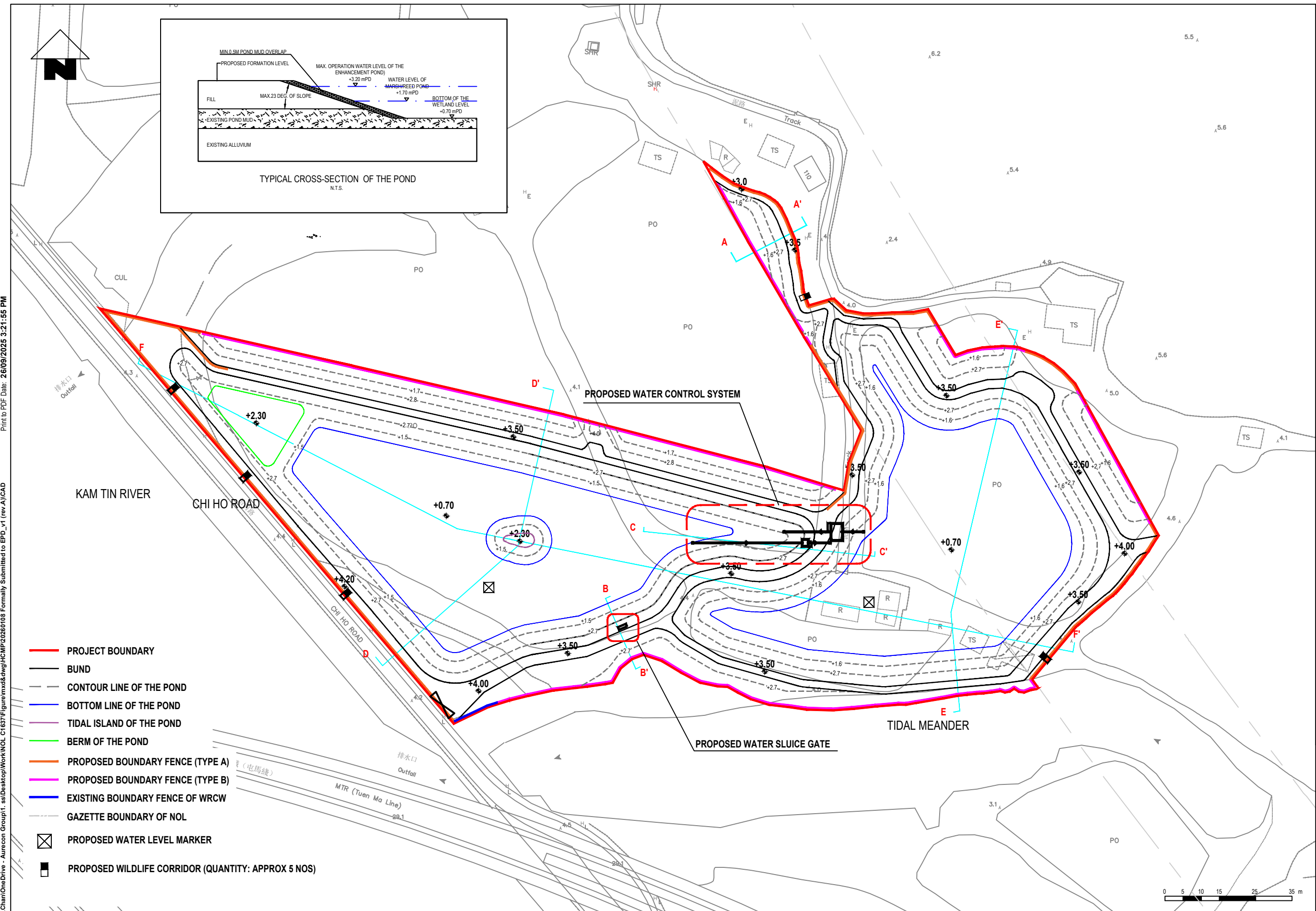
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ORIGINATOR  Gammon In association with	
MODEL REF. 1637-B-WCA-GCL-C24-029_rev_A.dwg	

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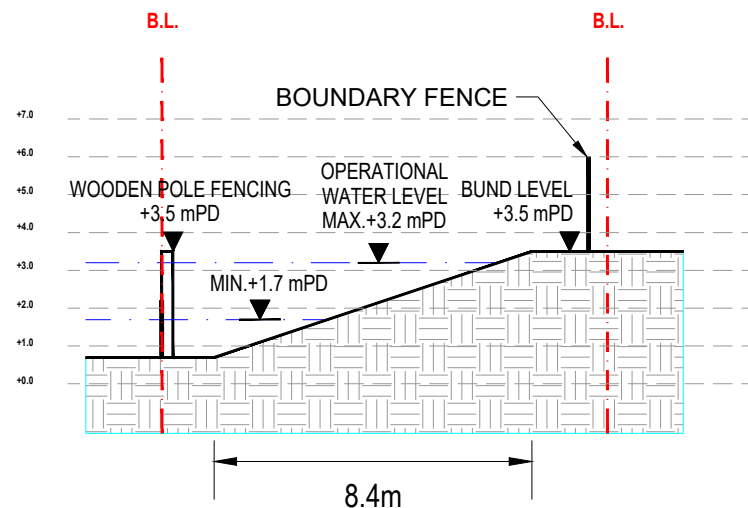
NOTES:

1. The actual extend of cut and fill slope shall be determined on site and match with existing profile

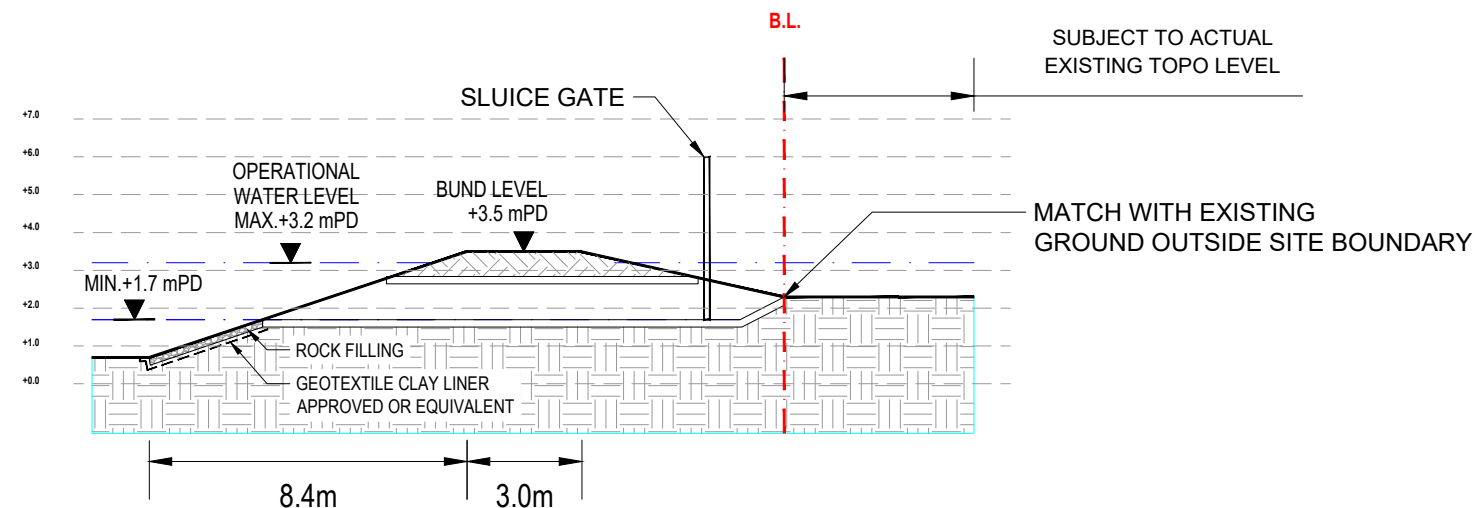
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					A	FIRST ISSUE	PC	08/JAN/25	PJL		

	
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ORIGINATOR  Gammon In association with	
MODEL REF. 1637-B-WCA-GCL-C24-030_rev_A.dwg	

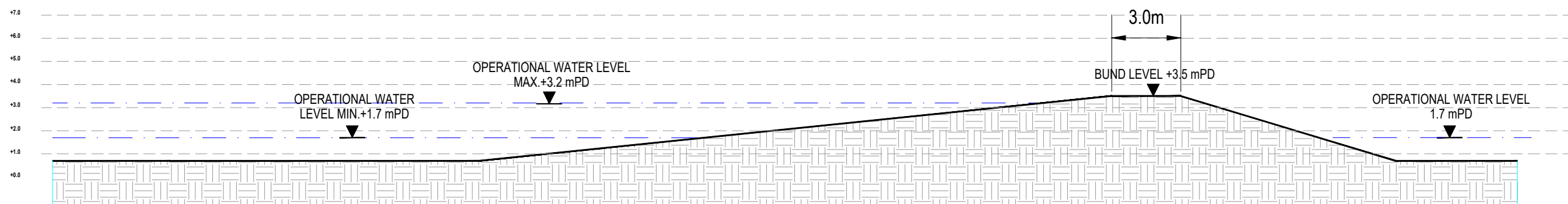
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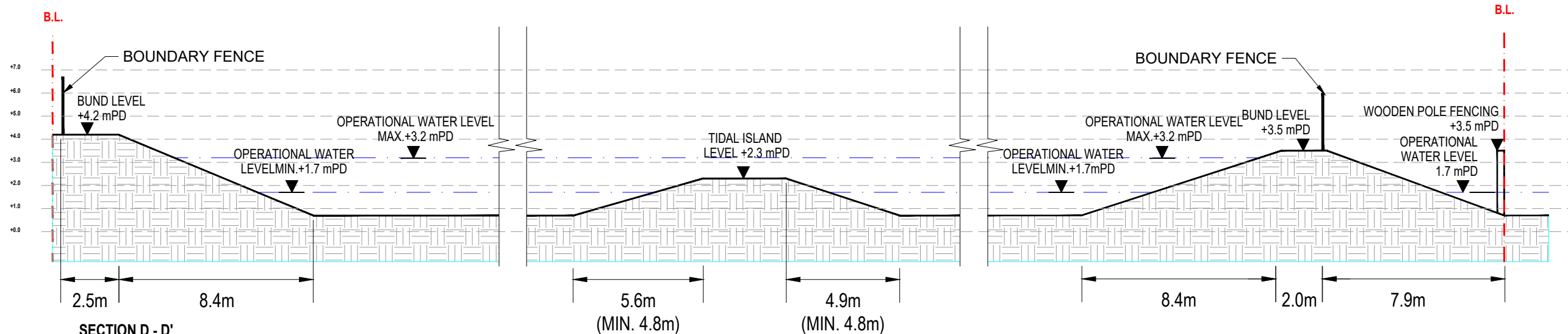
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SECTION B - B'
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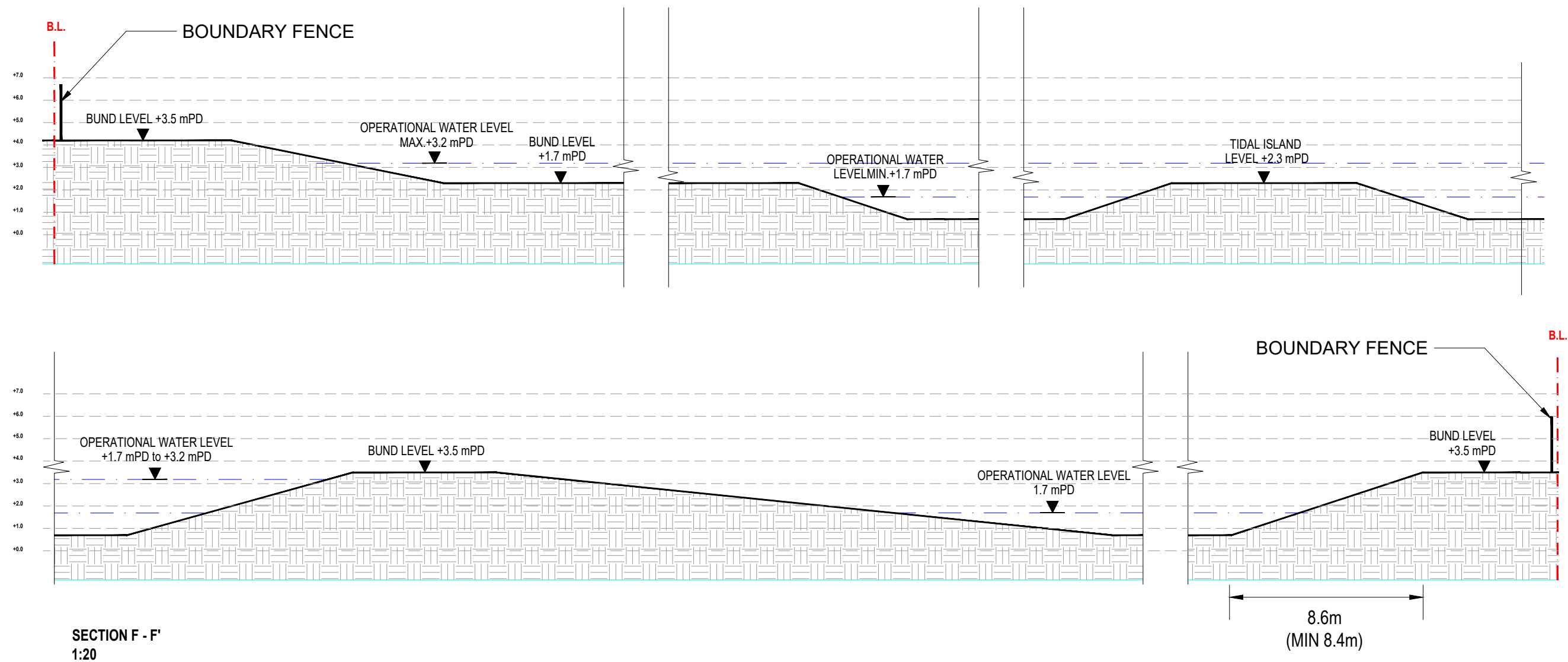
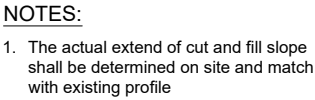


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NOTES:

1. The actual extend of cut and fill slope shall be determined on site and match with existing profile

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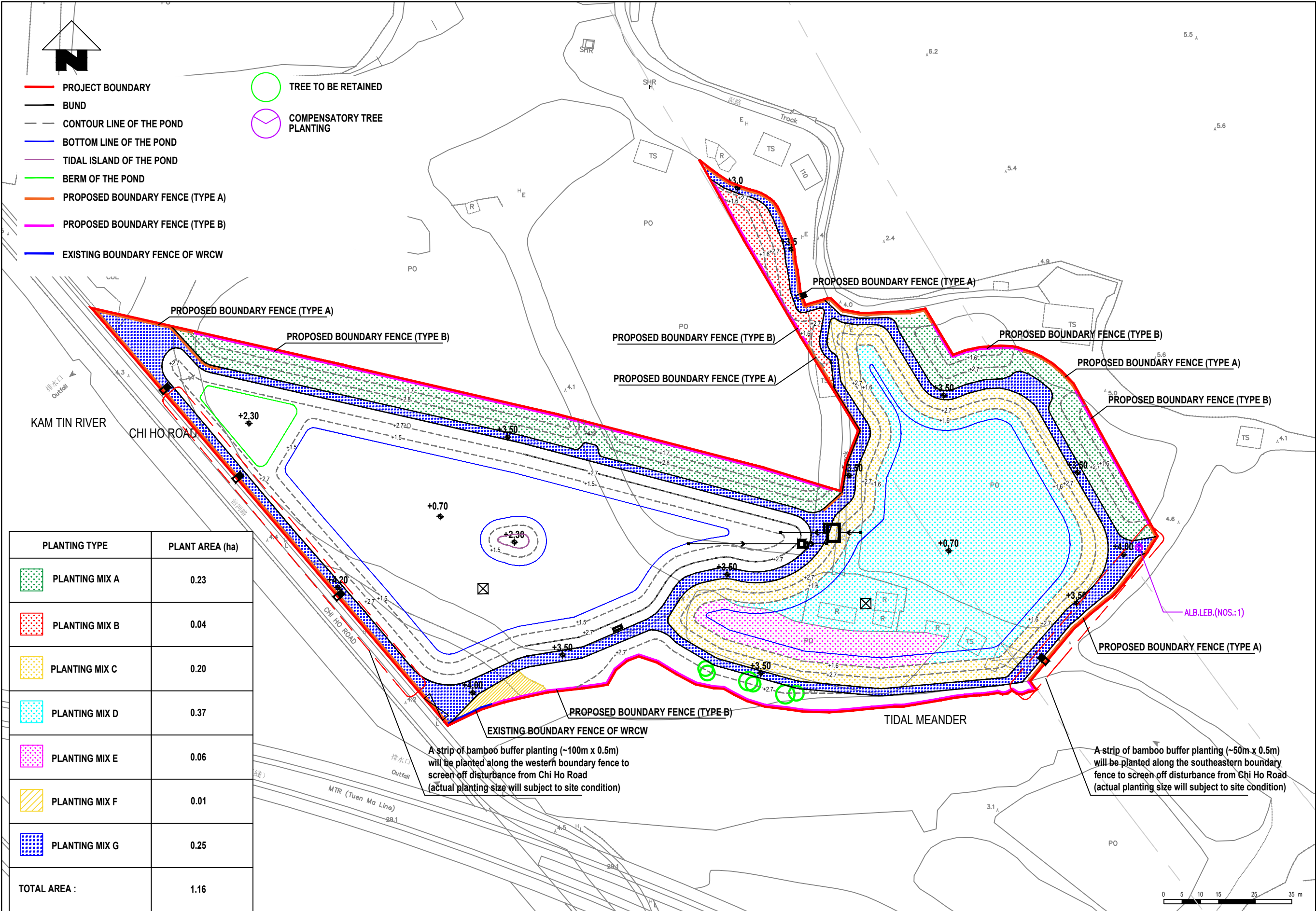
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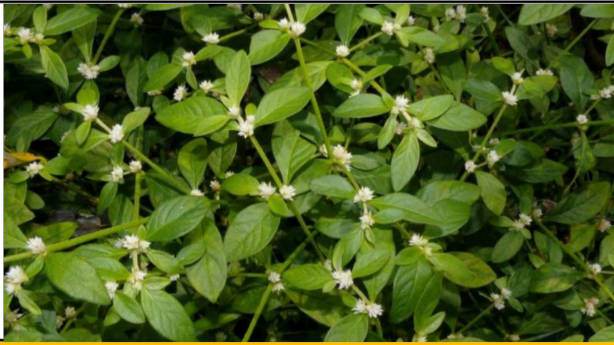
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<i>Alocasia macrorrhizos</i> 海芋 (E)	<i>Alternanthera sessilis</i> 蝦鉗菜 (蓮子草) (N)	<i>Colocasia esculenta</i> 芋 (E)	<i>Cyperus involucratus</i> 風車草 (E)
			
<i>Cyperus malaccensis</i> 茼草 (N)	<i>Phragmites australis</i> 蘆葦 (N)		
			
<i>Cynodon dactylon</i> 狗牙根 (絆根草) (N)	<i>Paspalum notatum</i> 百喜草 (E)	<i>Paspalum distichum</i> 雙穗雀稗 (N)	
			EMERGENT WETLAND PLANTS
<i>Bacopa monnieri</i> 假馬齒莧 (N)	<i>Commelina diffusa</i> 節節草 (N)	<i>Ludwigia adscendens</i> 水龍 (N)	HYDROSEEDING GRASS
			GROUNDCOVER WETLAND PLANTS
			FLOATING PLANTS
			NATIVE (N) / EXOTIC (E)

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
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SCALE	/	DRAWING NO. 1637/B/WCA/GCL/C24/035
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