Proposed Public Utility Installation (Low Voltage Underground Cable) and Associated Excavation and Filling of Land at Government Land in D.D. 96, near Lok Ma Chau Village, San Tin

Ecological Impact Assessment

PREPARED FOR

CLP Power Hong Kong Limited

DATE
27 January 2025

REFERENCE
0745426

DOCUMENT DETAILS

DOCUMENT TITLE	**Proposed Public Utility Installation (Low Voltage Underground Cable) and Associated Excavation and Filling of Land at Government Land in D.D. 96, near Lok Ma Chau Village, San Tin**
DOCUMENT SUBTITLE	Ecological Impact Assessment
PROJECT NUMBER	0745426
Date	27 January 2025
Version	2.0
Author	Pang, Chuh
Client name	CLP Power Hong Kong Limited

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
Version	1.0	Harmony Chuh, Mike Pang	Raymond Chow	Terence Fong	4 September 2024	
	2.0	Harmony Chuh, Mike Pang	Raymond Chow	Terence Fong	27 January 2025	

SIGNATURE PAGE

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0745426

Terence Fong
Partner

ERM-Hong Kong, Limited
[redacted]

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1. INTRODUCTION

CLP Power Hong Kong Limited (CLP) has commissioned ERM-Hong Kong, Limited (ERM) to undertake ecological survey and ecological impact assessment for the "Proposed Public Utility Installation (Low Voltage Underground Cable) and Associated Excavation and Filling of Land at Government Land in D.D. 96, near Lok Ma Chau Village, San Tin " ("the Project"). The objective of the Project is to improve the electricity supply reliability at Lok Ma Chau Village. CLP is proposing low voltage (LV) cable laying near Lok Ma Chau Village, which is situated within Conservation Area (CA), Wetland Conservation Area (WCA), Wetland Buffer Area (WBA) and Priority Sites for Enhanced Conservation.

This Ecological Impact Assessment (EcoIA) provides detailed information regarding the ecology of the Study Area, which is defined as a 300m radius from the Project Site, i.e. proposed cable route (see ***Figure 1.1***). The ecological impact assessment is based on literature review as well as the recent verification ecological baseline survey, with particular attention paid to the habitat adjacent to the proposed cable route.

2. ENVIRONMENTAL LEGISLATION AND GUIDELINES

Reference has been made to the *Technical Memorandum on Environmental Impact Assessment Process* (EIAO-TM) issued under the *Environmental Impact Assessment Ordinance* (EIAO) in the evaluation of potential ecological impacts, particularly *Annex 8 Criteria for Evaluating Ecological Impact* and *Annex 16 Guidelines for Ecological Assessment.* The following Guidance Notes have also been taken to account:

- GN 6/2010 Some Observations on Ecological Assessment from the Environmental Impact Assessment Ordinance Perspective;
- GN 7/2023 Ecological Baseline Survey for Ecological Assessment; and
- GN 10/2023 Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys.

In addition, the following legislation and guidelines provide the framework for conducting ecological surveys and the protection of species and habitats of ecological importance for ecological assessment in Hong Kong:

- Forests and Countryside Ordinance (Cap. 96);
- Town Planning Ordinance (Cap. 131);
- Wild Animals Protection Ordinance (Cap. 170);
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586);
- Hong Kong Planning Standards and Guidelines Chapter 10 (HKPSG);
- Technical Circular (Works) No. 4/2020 Tree Preservation.

3. LITERATURE REVIEW

A desktop review was conducted to search for relevant scientific papers, reports and previous Environmental Impact Assessment (EIA) reports for the purpose of identifying any available ecological information, including habitats and species of conservation concern in the area. Based on recent aerial photos and relevant previous studies, habitats and species of conservation importance recorded previously were identified. General studies (if any), which may not necessarily focus on the Study Area and Project Site, were also reviewed and relevant information was extracted from the report(s).

3.1 SITE OF CONSERVATION IMPORTANCE

The Study Area, situated near Lok Ma Chau Village, falls within CA, WCA, WBA and Priority Sites for Enhanced Conservation (See ***Figure 3.1***).

3.1.1 CONSERVATION AREA

The large areas of continuous fishponds (both active and abandoned) and Shenzhen River within the Study Area are zoned as CA under the draft San Tin Technopole Outline Zoning Plan (OZP) No. S/STT/1 and draft Lok Ma Chau Loop OZP No. S/LMCL/2 (***Figure 3.1***). The proposed cable route falls within this zone.

The planning intention of this zone is to conserve the ecological value of wetland and fishponds which form an integral part of the wetland ecosystem in the Deep Bay Area. The "no-net-loss in wetland" principle is adopted for any change in use within this zone. The primary intention is to discourage new development unless it is required to support the conservation of the ecological integrity of the wetland ecosystems or the development is an essential infrastructure project with overriding public interest.

There is a general presumption against development in this zone. In general, only developments that are needed to support the conservation of the existing natural landscape or scenic quality of the area or are essential infrastructure projects with overriding public interest may be permitted.

3.1.2 WETLAND CONSERVATION AREA

Fishponds continuous and adjoining to the Deep Bay Area are designated under TPB PG-No. 12C as the WCA, with the aim of protecting the integrity of the Deep Bay wetland ecosystems. Any development in the WCA should normally comply with the "No-Net-Loss in Wetland" principle. Other than permitted essential conservation or infrastructural works, no developments involving pond filling or other works detrimental to the ecological function of the wetland are allowed within the WCA.

The proposed cable route is mostly laid along the WCA, as shown in ***Figure 3.1***.

3.1.3 WETLAND BUFFER AREA

The WBA is also designated under TPB PG-No. 12C to include a buffer of about 500m on the landward side of the WCA. The planning intention is to protect the ecological integrity of wetlands within the WCA and prevent any development that would have a

negative off-site disturbance impact on the WCA. Developments within the WBA are required to demonstrate that ecological impacts on the WCA will be minimised and any negative ecological impacts will be fully mitigated through positive measures.

The southern and south-eastern portion of the Study Area and part of the proposed cable route fall within the WBA, as shown in ***Figure 3.1***.

3.1.4 PRIORITY SITES FOR ENHANCED CONSERVATION – DEEP BAY WETLAND OUTSIDE RAMSAR SITE

In 2004, the Government adopted the New Nature Conservation Policy (NNCP) to regulate, protect and manage natural resources that are important for the conservation of biological diversity of Hong Kong in a sustainable manner, taking into account social and economic considerations, for the benefit and enjoyment of the present and future generations of the community. This policy also aims to enhance the conservation of ecologically important sites, in particular those in private ownership. Twelve "Priority Sites" for Enhanced Conservation have been identified under NNCP, among which Deep Bay Wetland outside Ramsar Site was listed as one of the 12 sites. The major habitat type of this site is fishpond. Although fishpond is a man-made habitat and intensively modified by human, it maintains certain characteristics of natural wetland that attract lots of waterbirds and other wildlife, making it a semi-natural habitat for the wildlife there.

As shown in ***Figure 3.1***, a section of proposed cable alignment falls within the Priority Site for Enhanced Conservation of Deep Bay Wetland outside Ramsar Site.

3.2 PREVIOUSLY RECORDED SPECIES OF CONSERVATION IMPORTANCE

A literature review has been conducted to characterise the existing ecological conditions of the Project Site and Study Area and to identify habitats and species of conservation concern in the area. A number of relevant studies including but not limited to the followings were reviewed.

- EIA – 302/2023 – San Tin / Lok Ma Chau Development Node (AECOM, 2024)(1)
- DIR – 284/2021 – Installation of the Proposed 132kV Cable Circuits Connecting with Ho To West Substation and Existing 132kV Fanling to Mai Po Cable Circuits (ERM, 2021)(2)
- EIA – 212/2013 – Development of Lok Ma Chau Loop (Arup, 2013)(3)
- EIA – 161/2008 – Construction of a Secondary Boundary Fence and new sections of Primary Boundary Fence and Boundary Patrol Road (Mott Macdonald, 2009)(4)

(1) AECOM Asia Company Limited (AECOM) (2024). EIA Report for First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation
(2) ERM (2021). DIR for Installation of the Proposed 132kV Cable Circuits Connecting with Ho To West Substation and Existing 132kV Fanling to Mai Po Cable Circuits
(3) Arup (2013). EIA Report for Development of Lok Ma Chau Loop
(4) Mott Macdonald (2009). EIA Report for Construction of a Secondary Boundary Fence and new sections of Primary Boundary Fence and Boundary Patrol Road

- CE60/2005(TP) – Land Use Planning for the Closed Area – Feasibility Study (Arup, 2010)[5]
- EIA – 071/2001 – Sheung Shui to Lok Ma Chau Spur Line (BV, 2002)[6]
- Draft San Tin Technopole OZP No. S/STT/1
- Draft Lok Ma Chau Loop OZP No. S/LMCL/2
- TPB PG-No. 12C - Application for Developments within Deep Bay Area under Section 16 of the Town Planning Ordinance
- Protection of Wetlands in Hong Kong, AFCD *(*AFCD, 2000*)* [7]
- Hong Kong Biodiversity, an AFCD Biodiversity Newsletter (AFCD, 2007) [8]
- Monthly Waterbird Monitoring Summer Report 2018-2023 (HKBWS, 2023)[9]
- Monthly Waterbird Monitoring Winter Report 2018-2023 (HKBWS, 2023)[10]
- The Avifauna of Hong Kong[11]
- A Field Guide to the Terrestrial Mammals of Hong Kong (AFCD, 2007)[12]
- Fish farmers highlight opportunities and warnings for urban carnivore conservation (McMillan et al., 2019)[13]
- Spraints Demonstrate Small Population Size and Reliance on Fishponds for Eurasian Otter (*Lutra lutra*) in Hong Kong (McMillan et al., 2022) [14]

The ecological survey periods and surveyed flora/ fauna groups that are presented in the above studies are tabulated in ***Table 3-1***; a map showing their study areas, whenever defined, is provided in ***Figure 3.2***.

(5) Arup (2010). CE60/2005(TP) – Land Use Planning for the Closed Area – Feasibility Study
(6) BV (2002). EIA Report for Sheung Shui to Lok Ma Chau Spur Line
(7) AFCD (2000). Legislative Council Paper NO. CB(2) 397/00-01 (03) – Protection of Wetlands in Hong Kong. Information reviewed.
(8) AFCD (2007).Camera Trap Survey of Hong Kong Terrestrial Mammals in 2002-06. Issue no. 15, December 2007.
(9) HKBWS (2023).Mai Po Inner Deep Bay Ramsar Site Summer Waterbird Monitoring Programme 2017-2023.
(10) HKBWS (2023).Mai Po Inner Deep Bay Ramsar Site Winter Waterbird Monitoring Programme 2017- 2023.
(11) Carey et. al., (2001) The Avifauna of Hong Kong. Hong Kong Bird Watching Society, Hong Kong
(12) Shek, C.T. (2007). A Field Guide to the Terrestrial Mammals of Hong Kong
(13) McMillan, S. E., Wong, T. C., Hau, B. C. H., Yau, E. Y. H. and Bonebrake, T. C. (2019). Fish farmers highlight opportunities and warnings for urban carnivore conservation. *Conservation Science and Practice*, 1(8).
(14) McMillan, S. E., Wong, A. T. C., Tang, S. S. Y., Yau, E. Y. H., Gomersall, T., Wong, P. Y. H., …Bonebrake, T. C. (2022). Spraints Demonstrate Small Population Size and Reliance on Fishponds for Eurasian Otter (*Lutra lutra*) in Hong Kong. Conservation Science and Practice, 5(1).

Special attention was paid to ecologically sensitive areas, and species of conservation importance (i.e. species protected by local legislation, endemic to Hong Kong or South China, listed in international conventions for conservation of habitat/wildlife, listed in IUCN Red Data Book or those of the South China region and considered as rare in the territory or having special conservation importance by scientific studies etc.). The information gathered from the literature review was evaluated and the information gaps concerning assessment of the potential ecological impacts arising from the Project on the terrestrial environment were identified.

TABLE 3-1: PREVIOUS STUDIES RELEVANT TO THE STUDY AREA

Study	Survey Period	Flora and Fauna Groups Surveyed
AFCD, 2007	2002 – 2006	Mammals
AECOM, 2024	Nov 2021 – Oct 2022	Fauna & Flora
ERM, 2021	Mar 2013 – Apr 2013 Aug, Sep, Nov 2019 Jan 2020 – Mar 2020	Fauna & Flora
Arup, 2013	Jun 2009 – May 2010	Fauna & Flora
Mott Macdonald, 2009	Nov 2007 – Oct 2008	Fauna & Flora
BV, 2002	Sep 2000 – Nov 2001	Fauna & Flora
McMillan et al., 2019	2017-2018 (Interview survey)	Otter
McMillan et al., 2022	2018 – 2019	Otter
HKBWS, 2023	Apr 2018 – Sept 2022	Avifauna
HKBWS, 2023	Oct 2018 – Mar 2023	Avifauna

3.2.1 FLORA SPECIES OF CONSERVATION IMPORTANCE RECORDED IN PREVIOUS STUDIES

Based on the reviewed literatures, no flora species of conservation importance was reported within the Study Area.

3.2.2 FAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED IN PREVIOUS STUDIES

3.2.2.1 MAMMALS

Based on the reviewed literature, six (6) mammal species of conservation importance were recorded in the Study Area from previous surveys/ approved EIA studies. Although Study Area does not overlap with the core area of Eurasian Otter population in Hong

Kong, the species had been recorded in the vicinity of Study Area[15][16]. Details of the mammal species of conservation importance is shown in ***Table 3-1***.

TABLE 3-1: MAMMAL OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Mammal				
Eurasian Otter	*Lutra lutra*	歐亞水獺	Cap.170; Cap.586; Fellowes: RC; RLCV(EN); CSMPS(II); CITES(I)	McMillan et al., 2019; McMillan et al., 2022
Small Indian Civet	*Viverricula indica*	小靈貓	Cap. 170, Cap. 586, RLCV(VU), CSMPS (II), CITES(III)	AFCD, 2007
Himalayan Leaf-nosed Bat	*Hipposideros armiger*	大蹄蝠	Cap.170; Fellowes: (LC)	AECOM, 2024
Japanese Pipistrelle	*Pipistrellus abramus*	東亞家蝠	Cap.170	AECOM, 2024
Lesser Bamboo Bat	*Tylonycteris pachypus*	扁顱蝠	Cap.170; Fellowes: (LC)	AECOM, 2024
Pallas's Squirrel	*Callosciurus erythraeus*	赤腹松鼠	Cap.170	AECOM, 2024
Short-nosed Fruit Bat	*Cynopterus sphinx*	短吻果蝠	Cap.170	AECOM, 2024

Note:
Conservation Status:
- Cap. 170: Protected under Wild Animals Protection Ordinance
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- RLCV – Red List of China's Vertebrate (2016): VU = Vulnerable, EN= Endangered
- CSMPS– China State Major Protection Status: Appendix (II)
- CITES – Under Appendix (I), Appendix (II) and Appendix (III) of Convention on International Trade in Endangered Species of Wild Flora and Fauna
- Fellowes – Fellowes et al. (2002): RC = Regional Concern, LC = Local 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.

3.2.2.2 AVIFAUNA

A significant diversity of waterbirds, both resident and migratory were recorded in wetland habitats within the Study Area, including fishponds, watercourse etc. Many of the recorded species are known to forage and roost in wetlands, with ardeid, duck and

(15) McMillan, S. E., Wong, T. C., Hau, B. C. H., Yau, E. Y. H. and Bonebrake, T. C. (2019). *Op.cit.*
(16) McMillan, S. E., Wong, A. T. C., Tang, S. S. Y., Yau, E. Y. H., Gomersall, T., Wong, P. Y. H., …Bonebrake, T. C. (2022). *Op.cit.*

wader species being the dominant species group within the Study Area. A total of sixty-two (62) avifauna species of conservation importance were recorded in the Study Area and its vicinity from previous surveys/ approved EIA studies. Details of the avifauna species of conservation importance are shown in

TABLE 3-2: AVIFAUNA OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

.

TABLE 3-2: AVIFAUNA OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Avifauna				
Little Grebe	*Tachybaptus ruficollis*	小䴙䴘	Fellowes: LC	HKBWS, 2023
Great Cormorant	*Phalacrocorax carbo*	普通鸕鷀	Fellowes: PRC	HKBWS, 2023
Grey Heron	*Ardea cinerea*	蒼鷺	Fellowes: PRC	ERM, 2021; HKBWS, 2023
Purple Heron	*Ardea purpurea*	草鷺	Fellowes: RC	HKBWS, 2023
Great Egret	*Ardea alba*	大白鷺	Fellowes: PRC (RC)	AECOM, 2024; HKBWS, 2023
Intermediate Egret	*Ardea intermedia*	中白鷺	Fellowes: RC	HKBWS, 2023
Little Egret	*Egretta garzetta*	小白鷺	Fellowes: PRC (RC)	AECOM, 2024; ERM, 2021; HKBWS, 2023
Eastern Cattle Egret	*Bubulcus coromandus*	牛背鷺	Fellowes: (LC)	HKBWS, 2023
Grater Coucal	*Centropus sinensis*	褐翅鴉鵑	CSMPS(II)	AECOM, 2024
Chinese Pond Heron	*Ardeola bacchus*	池鷺	Fellowes: PRC (RC)	AECOM, 2024; HKBWS, 2023
Striated Heron	*Butorides striata*	綠鷺	Fellowes: (LC)	HKBWS, 2023
Black-crowned Night Heron	*Nycticorax nycticorax*	夜鷺	Fellowes: (LC)	HKBWS, 2023
Yellow Bittern	*Ixobrychus sinensis*	黃葦鳽	Fellowes: (LC)	ERM, 2021; HKBWS, 2023
Cinnamon Bittern	*Ixobrychus cinnamomeus*	栗葦鳽	Fellowes: LC	HKBWS, 2023
Eurasian Spoonbill	*Platalea leucorodia*	白琵鷺	Cap.586; Fellowes: LC; CSMPS(II); CITES(II)	HKBWS, 2023

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Black-faced Spoonbill	*Platalea minor*	黑臉琵鷺	Fellowes: PGC; RLCV(EN); CSMPS(II); IUCN(EN)	HKBWS, 2023
Eurasian Wigeon	*Mareca penelope*	赤頸鴨	Fellowes: RC	HKBWS, 2023
Eurasian Teal	*Anas crecca*	綠翅鴨	Fellowes: RC	HKBWS, 2023
Northern Pintail	*Anas acuta*	針尾鴨	Fellowes: RC	HKBWS, 2023
Northern Shoveler	*Spatula clypeata*	琵嘴鴨	Fellowes: RC	HKBWS, 2023
Tufted Duck	*Aythya fuligula*	鳳頭潛鴨	Fellowes: LC	HKBWS, 2023
Slaty-breasted Rail	*Gallirallus striatus*	灰胸秧雞	Fellowes: RC	HKBWS, 2023
Eurasian Coot	*Fulica atra*	骨頂雞	Fellowes: RC	HKBWS, 2023
Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	水雉	Fellowes: LC	HKBWS, 2023
Greater Painted-snipe	*Rostratula benghalensis*	彩鷸	Fellowes: LC	HKBWS, 2023
Black-winged Stilt	*Himantopus himantopus*	黑翅長腳鷸	Fellowes: RC	AECOM, 2024; HKBWS, 2023
Pied Avocet	*Recurvirostra avosetta*	反嘴鷸	Fellowes: RC	HKBWS, 2023
Northern Lapwing	*Vanellus vanellus*	鳳頭麥雞	Fellowes: LC	HKBWS, 2023
Little Ringed Plover	*Charadrius dubius*	金眶鴴	Fellowes: (LC)	ERM 2021, HKBWS, 2023
Greater Sand Plover	*Charadrius leschenaultii*	鐵嘴沙鴴	Fellowes: RC	HKBWS, 2023
Eurasian Curlew	*Numenius arquata*	白腰杓鷸	Fellowes: RC	HKBWS, 2023
Common Redshank	*Tringa totanus*	紅腳鷸	Fellowes: RC	HKBWS, 2023
Marsh Sandpiper	*Tringa stagnatilis*	澤鷸	Fellowes: RC	HKBWS, 2023
Common Greenshank	*Tringa nebularia*	青腳鷸	Fellowes: RC	HKBWS, 2023
Wood Sandpiper	*Tringa glareola*	林鷸	Fellowes: LC	AECOM, 2024; ERM, 2021; HKBWS, 2023

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Terek Sandpiper	*Xenus cinereus*	翹嘴鷸	Fellowes: RC	HKBWS, 2023
Grey-tailed Tattler	*Tringa brevipes*	灰尾漂鷸	Fellowes: LC	HKBWS, 2023
Red-necked Stint	*Calidris ruficollis*	紅頸濱鷸	Fellowes: LC	HKBWS, 2023
Temminck's Stint	*Calidris temminckii*	青腳濱鷸	Fellowes: LC	HKBWS, 2023
Long-toed Stint	*Calidris subminuta*	長趾濱鷸	Fellowes: LC	HKBWS, 2023
Sharp-tailed Sandpiper	*Calidris acuminata*	尖尾濱鷸	Fellowes: LC; IUCN(VU)	HKBWS, 2023
Black-headed Gull	*Chroicocephalus ridibundus*	紅嘴鷗	Fellowes: PRC	HKBWS, 2023
Western Osprey	*Pandion haliaetus*	鶚	Cap.586; Fellowes: RC; CSMPS(II); CITES(II)	HKBWS, 2023
Black Kite	*Milvus migrans*	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	AECOM, 2024; HKBWS, 2023
Black-winged Kite	*Elanus caeruleus*	黑翅鳶	Cap.586; Fellowes: LC; CSMPS(II); CITES(II)	HKBWS, 2023
Chinese Sparrowhawk	*Accipiter soloensis*	赤腹鷹	Cap.586; CSMPS(II); CITES(II)	HKBWS, 2023
Eastern Marsh Harrier	*Circus spilonotus*	白腹鷐	Cap.586; Fellowes: LC; CSMPS(II); CITES(II)	HKBWS, 2023
Eastern Buzzard	*Buteo japonicus*	普通鵟	Cap.586; CSMPS(II); CITES(II)	HKBWS, 2023
Grey-faced Buzzard	*Butastur indicus*	灰臉鵟鷹	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	ERM, 2021
Greater Spotted Eagle	*Clanga clanga*	烏雕	Cap.586, Fellowes: GC, RLCV(EN), CSMPS(II), IUCN(VU), CITES(II)	HKBWS, 2023
Common Kestrel	*Falco tinnunculus*	紅隼	Cap.586; CSMPS(II); CITES(II)	HKBWS, 2023
Pied Kingfisher	*Ceryle rudis*	斑魚狗	Fellowes: (LC)	HKBWS, 2023

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
White-throated Kingfisher	*Halcyon smyrnensis*	白胸翡翠	Fellowes: (LC)	HKBWS, 2023
Red-billed Starling	*Spodiopsar sericeus*	絲光椋鳥	Fellowes: GC	AECOM, 2024; HKBWS, 2023
White-cheeked Starling	*Spodiopsar cineraceus*	灰椋鳥	Fellowes: PRC	AECOM 2024
White-shouldered Starling	*Sturnia sinensis*	灰背椋鳥	Fellowes: (LC)	AECOM 2024
Red-throated Pipit	*Anthus cervinus*	紅喉鷚	Fellowes: LC	AECOM 2024
Collared Crow	*Corvus torquatus*	白頸鴉	Fellowes: LC, IUCN(VU)	HKBWS, 2023
Besra/Japanese Sparrowhawk	*Accipiter gularis*	日本松雀鷹	Cap.586; CSMPS(II); CITES(II)	HKBWS, 2023
Pied Harrier	*Circus melanoleucos*	鵲鷂	Cap.586; Fellowes: LC; CSMPS(II); CITES(II)	HKBWS, 2023
Eurasian Hobby	*Falco subbuteo*	燕隼	Cap.586; Fellowes: (LC); CSMPS(II); CITES(II)	HKBWS, 2023
Crested Serpent Eagle	*Spilornis cheela*	蛇鵰	Cap.586; Fellowes: (LC); CSMPS(II); CITES(II)	HKBWS, 2023

Note:
Conservation Status:

- All birds in Hong Kong are protected under Cap. 170 – Protected under Wild Animals Protection Ordinance
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- Fellowes – Fellowes et al. (2002): PGC = Potential Global Concern, GC = Global Concern, PRC = Potential Regional Concern, RC = Regional Concern, LC = Local 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.
- RLCV – Red List of China's Vertebrate (2016): EN: Endangered
- CSMPS– China State Major Protection Status: Appendix (I) or Appendix (II)
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2024). EN = Endangered; VU= Vulnerable
- CITES – Under Appendix (I) and Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

3.2.2.3 HERPETOFAUNA

Based on the reviewed literature, the recorded reptile species are all common within the Study Area. Among the recorded amphibian species, only Chinese Bullfrog and Two-striped Grass Frog were recorded in the fishpond area within the Study Area. Details of the herpetofauna species of conservation importance are shown in ***Table 3-3***.

TABLE 3-3: HERPETOFAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Herpetofauna				
Chinese Bullfrog	*Hoplobatrachus rugulosus*	虎紋蛙	Fellowes: PRC; RLCV(EN); CSMPS(II)	AECOM, 2024; Arup, 2010
Two-striped Grass Frog	*Hylarana taipehensis*	台北蛙	Fellowes: LC	Arup, 2013; Arup 2010

Note:
Conservation Status:
- Fellowes – Fellowes et al. (2002): PRC = Potential Regional Concern, LC = Local Concern.
- RLCV – Red List of China's Vertebrate (2016): EN: Endangered
- CSMPS – China State Major Protection Status: Appendix (II)

3.2.2.4 BUTTERFLY AND ODONATE

Based on the reviewed literature, eight (8) butterfly and odonate species of conservation importance were recorded in the Study Area from previous surveys/ approved EIA studies. Details of the butterfly and odonate species of conservation importance are shown in ***Table 3-4***.

TABLE 3-4: BUTTERFLY AND ODONATE SPECIES OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status/Rarity	Previous Study
Butterflies and Odonates				
Metallic Cerulean	*Jamides alecto*	素雅灰蝶	Listed as Very Rare	AECOM, 2024
Small Cabbage White	*Pieris rapae*	菜粉蝶	Listed as Rare	AECOM, 2024
Swallowtail	*Papilio xuthus*	柑橘鳳蝶	Listed as Rare	AECOM, 2024
Sapphire Flutterer	*Rhyothemis triangularis*	三角麗翅蜻	Fellowes: LC	ERM, 2021; Arup, 2010
Coastal Glider	*Macrodiplax cora*	高翔濘蜻	Fellowes: LC	ERM, 2021
Ruby Darter	*Rhodothemis rufa*	紅胭蜻	Fellowes: LC	ERM, 2021
Blue Chaser	*Potamarcha congener*	濕地狹翅蜻	Fellowes: LC	AECOM, 2024

Common Name	Scientific Name	Chinese Name	Conservation Status/Rarity	Previous Study
Scarlet Basker	*Urothemis signata*	赤斑曲鈎脈蜻	Fellowes: LC	AECOM, 2024

Note:
Conservation Status:
- Fellowes – Fellowes et al. (2002): LC = Local Concern.
- Rarity is based on AFCD assessment (2011): A Review of the Local Restrictedness of Hong Kong Butterflies

3.2.2.5 AQUATIC FAUNA

Based on reviewed EIA studies, the only aquatic fauna species of conservation importance recorded within the Study Area is Freshwater Crab *Somanniathelphusa zanklon*. Details of the aquatic fauna species of conservation importance is shown in ***Table 3-5***.

TABLE 3-5: AQUATIC FAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Aquatic Fauna				
Freshwater Crab	*Somanniathelphusa zanklon*	鐮刀束腰蟹	GC; IUCN(EN)	Arup, 2013

Note:
Conservation Status:
- Fellowes – Fellowes et al. (2002): GC = Globel Concern
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2024). EN = Endangered

3.2.2.6 FIREFLY

Based on reviewed EIA studies, no firefly species of conservation importance was recorded within the Study Area.

3.2.3 EVALUATION & IDENTIFICATION OF INFORMATION GAP

The information gathered from the literature review were evaluated to identify any information gaps. While the baseline ecological information of the Study Area was mostly covered and assessed in previous studies, a verification survey was conducted to verify the desktop findings in the Study Area for subsequent impact assessment.

4. VERIFICATION ECOLOGOCAL BASELINE SURVEY

The Study Area comprises an area within 300m from the cable route. With reference to the reviewed data in ***Section 3.*** It is considered that the Project Site and its vicinity have been covered and studied comprehensively by previous EIA studies and other research.

The previous studies and research have demonstrated a relatively high and constant use of the areas surrounding the proposed cable route by birds, esp. by waterbirds at the fishponds and agricultural lands.

In order to supplement and establish a set of project specific baseline data, a verification survey, including day and night surveys, was carried out on 1st August 2024 with particular focus on habitats and wildlife along and adjacent to the proposed cable route. A summary of the ecological baseline survey methodologies is provided in ***Table 4-1.*** Survey transects mainly followed the existing roads (***Figure 4.1*** refers), aiming to cover all types of habitats within the Study Area.

TABLE 4-1: SUMMARY OF THE ECOLOGICAL BASELINE SURVEY METHODOLOGIES

Survey Type	Methodology	Survey Date
Habitat and Vegetation	Habitat mapping and vegetation identification through ground truthing in major habitats, in order to ensure they reflected current conditions and to distinguish between habitats which could not always be reliably distinguished from aerial photos. Representative colour photos were taken for each habitat type (***Annex 1***) and any important ecological features identified.	1st August 2024
Avifauna	Quantitative (active searching along the survey transect) and Qualitative (recorded within Study Area); including day and night surveys. The presence and abundance of avifauna species at various habitats observed from transects was recorded visually and aurally. Any signs of breeding (e.g. nests, recently fledged juveniles) within the Study Area were also recorded if observed. Observations were made using 8×42 binoculars and photographic records taken, where possible (***Annex 3***).	
Mammal	Quantitative (active searching along the survey transect) and qualitative (recorded within Study Area); including day and night surveys. As mammals usually occur at low densities, in addition to direct observation, any observation of signs of mammal activity, such as tracks, scats or burrows were actively sought.	
Herpetofauna	Quantitative (active searching along the survey transect) and qualitative (recorded within Study Area); including day and night surveys.	

Survey Type	Methodology	Survey Date
	Active searching in potential hiding places such as among leaf litter, inside holes and under stones and logs were actively searched within the Study Area. Auditory detection of species specific calls was also used to survey frogs and toads.	
Butterfly and Odonates	Qualitative (recorded within Study Area) survey; including only day survey. Particular attention was given to food/ host plants for butterfly larvae and favoured habitats for both groups, such as shrubland for butterflies and streams for odonates (both adults and larvae)	
Aquatic fauna	Active searching at sizable streams and notable water bodies by direct observation for aquatic fauna, including but not limited to fish, and macroinvertebrates; including day and night surveys.	
Firefly	Qualitative (recorded within Study Area) survey; including night survey. Surveys commenced immediately after sunset and lasted for approximately 2 hours. Active searching on the potential habitats such as watercourses utilized by fireflies.	

5. EXISTING ECOLOGICAL BASELINE

The Project site is located within CA, WCA, WBA and Priority Sites for Enhanced Conservation. Seven (7) major habitat types have been identified in the Study Area, namely Shrubland, Village Area, Developed Area, Abandoned Agricultural Land, Wet Agricultural Land, Pond and Watercourse. Habitats present within the Study Area are shown ***Figure 5.1***. Due to inaccessibility and on-going development within the Lok Ma Chau Loop located at the north of the Study Area, ecological baseline within the area is limited.

5.1 HABITAT AND VEGETATION

Table 5-1 summarises the area of each habitat recorded in the Study Area. The representative habitat photos are in ***Annex 1***. A total of ninety-six (96) flora species were recorded within the Study Area. No flora species of conservation importance was recorded within the Study Area. The list of flora species recorded in the survey is provided in in ***Annex 2***. The following text elaborates the ecological conditions, flora and fauna recorded at each habitat during the ecological baseline survey.

TABLE 5-1: AREA OF EACH HABITAT IDENTIFIED IN THE STUDY AREA

Habitat	Area within Project Site, including works area (m^2)	% of Project Site	Area within Study Area (ha)	% of Study Area
Shrubland	-	-	7.3	26.0%
Village Area	122	100%	5.8	20.6%
Developed Area	-	-	2.1	7.5%
Abandoned Agricultural Land	-	-	2.0	7.1%
Wet Agricultural Land	-	-	1.4	5.0%
Pond	-	-	9.5	33.8%
Watercourse	-	-	~900m	-
TOTAL	**122**	**100%**	**28.1**	**100%**

5.1.1 HABITATS WITHIN THE STUDY AREA

5.1.1.1 SHRUBLAND

Shrubland is mainly located along foothills within the Study Area. This habitat occupied approximately 7.3ha which is equivalent to 26% of the Study Area. A total of 55 plant species were recorded in shrubland habitat. Plant species present are mainly common shrub and herb species such as *Aporosa dioica*, *Bridelia tomentosa, Cyclosorus interruptus, Dicranopteris pedata, Panicum maximum* and *Miscanthus floridulus*. Tree species commonly recorded included *Celtis sinensis, Ficus hispida, Macaranga tanarius*

var. tomentosa and *Sterculia lanceolata.* No flora species of conservation importance was recorded.

5.1.1.2 VILLAGE AREA

Village Area refers to areas occupied by village houses, and the associated small-scale orchards, access paths to fishponds and main roads close to the villages (***Figure 5.1***). This habitat is the second largest habitat in the Study Area, occupying approximately 5.8 ha which is equivalent to 20.6% of the Study Area.

There are fifty-two (52) plant species recorded in this habitat (***Annex 2***). Most of the plant species recorded are commonly grown for ornamental purpose or as orchards such as *Artocarpus heterophyllus, Carica papaya, Dimocarpus longan, Litchi chinensis*, *Musa x paradisiaca* and *Syzygium jambos*. No flora species of conservation importance was recorded in this habitat.

5.1.1.3 DEVELOPED AREA

Developed Area refers to degraded habitat associated with intensive human disturbances and construction activities, this habitat is only present within the Lok Ma Chau Loop at the north of Study Area (***Figure 5.1***). This habitat occupied approximately 2.1 ha which is equivalent to 7.5% of the Study Area. Based on review on recent satellite map in 2024, developed area within the Lok Ma Chau Loop is currently subject to establishment works and vegetation coverage at the Lok Ma Chau Loop is very limited.

5.1.1.4 ABANDONED AGRICULTURAL LAND

Patches of abandoned agricultural land were identified within the Study Area, it was derived from inactively managed agricultural land (***Figure 5.1***). This habitat occupied approximately 2ha which is equivalent to 7.1% of the Study Area.

There are twenty-seven (27) plant species recorded in this habitat (***Annex 2***). Without active management, vegetation was observed overgrown with the dominant species being marshy and wetland dependent species including *Alocasia macrorrhizos, Brachiaria mutica, Cyclosorus interruptus, Cyperus involucratus* and *Commelina diffusa*. No flora species of conservation importance was recorded in this habitat.

5.1.1.5 WET AGRICULTURAL LAND

Patches of wet agricultural land were identified within the Study Area (***Figure 5.1***). This habitat occupied approximately 1.4ha which is equivalent to 5% of the Study Area.

Under active management for agricultural activities, the wet agricultural land was majorly cultivated with crop species, namely *Ipomoea aquatica*. There are three (3) plant species recorded in this habitat (***Annex 2***). No flora species of conservation importance was recorded in this habitat.

5.1.1.6 POND

Ponds refers to active and inactive fishponds that are/were used for aquaculture. This habitat is the largest habitat in the Study Area, occupying most of the total area (approx. 9.5ha; 33.8% of the total area). Most of the fishponds within the Study Area

including those adjacent to the proposed cable alignment were observed to be active (***Figure 5.1***). Active fishponds are maintained with mostly open water and limited emergent vegetation. Ponds were occasionally drained to facilitate harvesting of fish or maintenance of ponds, however, these dried-out ponds were not observed near the Project Site. The composition and structure of vegetation is typical of fishponds in northern Hong Kong, with simple vegetation structure and low vegetative diversity dominated by grassy vegetation. Ponds are also present within the Lok Ma Chau Loop, where were managed with planting of *Phragmites australis* to provide suitable habitats for wildlife.

A total of twenty-six (26) plant species were recorded in or along fishponds. Plants frequently recorded on the pond bunds are grassy and herbaceous species such as *Cynodon dactylon*, *Hedyotis corymbose* and *Panicum maximum*, and sometimes fruit trees such as *Carica papaya* and *Musa x paradisiaca*. Most of the identified fishponds are active and associated with human interference. No flora species of conservation importance was recorded.

5.1.1.7 WATERCOURSE

The watercourse within the Study Area refers to natural watercourse forming part of Lok Ma Chau Meander (also known as Shenzhen River) [17] and the small single channel passing through the wet agricultural land and village area with flowing water. The total length of watercourse is about 900m within the Study Area.

As there is no physical boundary between these watercourses and their neighboring habitats (i.e. village area and pond), the vegetation composition of the riparian zone is similar to adjacent areas.

A total of twenty-five (25) plant species were recorded in or along channelized watercourse (excluding Shenzhen River). Common and weedy species such as *Brachiaria mutica* and *Panicum maximum*, wetland herbs like *Commelina diffusa* predominated the banks and stream beds of the watercourse. Ruderal shrubs and trees including *Lantana camara*, *Ficus hispida* and *Macaranga tanarius* var. *tomentosa* were also recorded. Due to accessibility, baseline condition of Shenzhen River has been extracted from other EIA study[18], the survey reported that riparian vegetation of the river was dominated by common grass and herb species such as *Brachiaria mutica, Commelina diffusa, Cyperus malaccensis* and *Panicum maximum*. Shrubs and trees (e.g. *Ficus hispida*, *Macaranga tanarius var. tomentosa* and *Lantana camara*) were recorded along the riverbank.

No flora species of conservation importance was recorded in this habitat.

5.1.2 HABITATS WITHIN THE PROJECT SITE

Works associated with the Project include the installation of LV cable within Lok Ma Chau. The proposed alignment is located along the existing hard paved road. The Project Site, including works area, therefore is located within village area only, which is currently subject to a relatively high level of disturbance due to its being used as pedestrian

(17) AECOM Asia Company Limited (AECOM) (2024). *Op.cit.*
(18) AECOM Asia Company Limited (AECOM) (2024). *Op.cit*

access within the Village Area. Photographic records of the Project Site are as presented in ***Annex 1***.

During the ecological verification survey, fourteen (14) plant species recorded in this habitat within the Project Site (***Annex 2***). Most of the recorded species along the Project Site were self-seeded species and with some planted fruits trees in the vicinity. No flora species of conservation importance were recorded within the Project Site.

5.2TERRESTRIAL WILDLIFE

Wildlife recorded during the ecological surveys are described below in ***Section 5.2.1*** to ***Section 5.2.5***. The photo of the recorded species of conservation importance are presented in ***Annex 3***. A full list of fauna species recorded during the verification surveys for the Project is found in ***Annexes 4 – 9***. The locations of species of conservation importance in the Study Area are shown in ***Figure 5.1***.

5.2.1 MAMMALS

The survey identified two (2) mammal species within the Study Area. The recorded mammal species are of conservation importance, namely, Chinese Noctule and Japanese Pipistrelle. Their conservation and protection status in Hong Kong are presented in ***Table 5-2*** below.

TABLE 5-2:MAMMAL SPECIES OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Mammal				
Chinese Noctule	*Nyctalus plancyi*	中華山蝠	Cap.170; Fellowes: PRC (RC)	Pond
Japanese Pipistrelle	*Pipistrellus abramus*	東亞家蝠	Cap.170	Village Area, Pond

Note:
Conservation Status:
- Cap. 170: Protected under Wild Animals Protection Ordinance

5.2.2 AVIFAUNA

The survey identified twenty-five (25) bird species. Most of the bird species recorded are common and widespread in Hong Kong. A total of seven (7) bird species of conservation importance, namely Greater Coucal, Chinese Pond Heron, Great Egret, Intermediate Egret, Little Egret, Grey Heron and Black Kite were recorded within the Study Area. Their protection and/or conservation status are presented in ***Table 5-3.*** The photo of the recorded species of conservation importance are in ***Annex 3***.

TABLE 5-3: AVIFAUNA OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Avifauna				
Greater Coucal	*Centropus sinensis*	褐翅鴉鵑	CSMPS(II)	Abandoned Agricultural Land, Pond
Chinese Pond Heron	*Ardeola bacchus*	池鷺	Fellowes: PRC (RC)	Wet Agricultural Land, Pond
Grey Heron	*Ardea cinerea*	蒼鷺	Fellowes: PRC	In-flight
Great Egret	*Ardea alba*	大白鷺	Fellowes: PRC (RC)	In-flight
Intermediate Egret	*Ardea intermedia*	中白鷺	Fellowes: RC	In-flight
Little Egret	*Egretta garzetta*	小白鷺	Fellowes: PRC (RC)	Wet Agricultural Land, Pond
Black Kite	*Milvus migrans*	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	In-flight

Note:
Conservation Status:
- All birds in Hong Kong are protected under Cap. 170 – Protected under Wild Animals Protection Ordinance
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- Fellowes – Fellowes et al. (2002): 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.
- CSMPS– China State Major Protection Status: Appendix (II)
- CITES – Under Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

5.2.3 HERPETOFAUNA

Three (3) amphibian and one (one) reptile species were recorded during the survey within the Study Area. No species of conservation importance was recorded within the Study Area.

5.2.4 BUTTERFLIES AND ODONATES

Eight (8) odonate and three (3) butterfly species were recorded during the survey within the Study Area. None of them are of conservation importance.

5.2.5 AQUATIC FAUNA

Two (2) common fish species were recorded within the Study Area during the survey. No aquatic fauna species of conservation importance was recorded within the Study Area.

5.2.6 FIREFLY

No firefly species were recorded within the Study Area during the survey.

6. ECOLOGICAL EVALUATION

In this section the ecological importance of the habitats identified within the Study Area are evaluated in accordance with the *EIAO TM Annex 8* criteria. The evaluation is based upon the information of literature review and verification ecological baseline survey presented in the ***Sections 3 – 5***.

6.1 STUDY AREA

A total of seven major terrestrial habitats have been identified within the Study Area, including Shrubland, Village Area, Developed Area, Abandoned Agricultural Land, Wet Agricultural Land, Pond and Watercourse. The ecological importance evaluation of each habitat type within the Study Area is presented in ***Table 6-1*** to ***Table 6-7***.

TABLE 6-1: ECOLOGICAL EVALUATION OF SHRUBLAND

Criteria	**Shrubland**
Naturalness	Semi-natural habitat at early-stage of natural succession.
Size	Approx. 7.3ha within the Study Area
Diversity	Low to moderate in diversity of plant species and structural complexity. Low diversity of fauna species.
Rarity	No flora and fauna species of conservation importance recorded during the surveys.
Re-creatability	Re-creatable
Fragmentation	Not fragmented.
Ecological Linkage	Weak ecological linkage with adjacent habitats
Potential Value	Low
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.
Age	N/A
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	**Low**

TABLE 6-2: ECOLOGICAL EVALUATION OF VILLAGE AREA

Criteria	**Village Area**
Naturalness	Anthropogenic habitat with high level of human disturbance.
Size	Approx. 5.8ha within the Study Area

Criteria	Village Area
Diversity	Low to moderate in diversity of plant species, low structural complexity, and low diversity of fauna species.
Rarity	No flora species of conservation importance recorded during the surveys. Fauna Species of conservation importance recorded during the surveys include: Mammal –Japanese Pipistrelle
Re-creatability	Readily re-creatable.
Fragmentation	N/A
Ecological Linkage	Weak ecological linkage with adjacent habitats
Potential Value	Low
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.
Age	N/A
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	**Low**

TABLE 6-3: ECOLOGICAL EVALUATION OF DEVELOPED AREA

Criteria	Developed Area
Naturalness	Anthropogenic habitat, received disturbance from existing development works within Lok Ma Chau Loop
Size	Approx. 2.1ha within the Study Area
Diversity	Low in diversity of plant species and structural complexity Subjected to intensive disturbance, wildlife usage to the habitat is considered to be low
Rarity	Highly degraded habitat and not a preferable habitat for any species of conservation importance
Re-creatability	Re-creatable
Fragmentation	Not fragmented
Ecological Linkage	Weak ecological linkage with adjacent habitats
Potential Value	Low
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.

Criteria	Developed Area
Age	N/A
Abundance/ Richness of Wildlife	Low considering the existing highly disturbed nature
Overall Ecological Importance	**Low**

TABLE 6-4: ECOLOGICAL EVALUATION OF ABANDONED AGRICULTURAL LAND

Criteria	Abandoned Agricultural Land
Naturalness	Anthropogenic habitat, derived from agricultural lands
Size	Approx. 2ha within the Study Area
Diversity	Low in diversity of plant species and structural complexity Low diversity of fauna species
Rarity	No flora and fauna species of conservation importance recorded during the surveys Fauna Species of conservation importance recorded during the surveys include Avifauna – Greater Coucal
Re-creatability	Re-creatable
Fragmentation	Not fragmented.
Ecological Linkage	Ecologically linked to adjacent wet agricultural land
Potential Value	Ecological value could be enhanced through active vegetation management for creating more space for wildlife hiding in particular for birds
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.
Age	N/A
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	**Low**

TABLE 6-5: ECOLOGICAL EVALUATION OF WET AGRICULTURAL LAND

Criteria	Wet Agricultural Land
Naturalness	Anthropogenic habitat for agricultural purposes
Size	Approx. 1.4ha within the Study Area
Diversity	Low in diversity of plant species and structural complexity. Low diversity of fauna species.

Criteria	Wet Agricultural Land
Rarity	No flora and fauna species of conservation importance recorded during the surveys Fauna Species of conservation importance recorded during the surveys include Avifauna – Chinese Pond Heron and Little Egret
Re-creatability	Re-creatable
Fragmentation	Not fragmented.
Ecological Linkage	Ecologically linked to adjacent abandoned agricultural land
Potential Value	Ecological value could be enhanced by more ecologically friendly management methods
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded
Age	N/A
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	**Low**

TABLE 6-6: ECOLOGICAL EVALUATION OF POND

Criteria	Pond
Naturalness	Anthropogenic habitat with human disturbance
Size	Approx. 9.5ha within the Study Area
Diversity	Low diversity of plant species and low to moderate structural complexity in the riparian zones Moderate diversity of terrestrial fauna species, especially birds
Rarity	No flora species of conservation importance recorded during the surveys. Mammal – Chinese Noctule, Japanese Pipistrelle Avifauna – Greater Coucal, Chinese Pond Heron, Little Egret
Re-creatability	Re-creatable
Fragmentation	Not fragmented
Ecological Linkage	Ecologically linked to adjacent fishponds
Potential Value	Ecological value could be enhanced by more ecologically friendly management methods

Criteria	Pond
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded. Potential breeding ground for water bird species.
Age	N/A
Abundance/ Richness of Wildlife	Moderate abundance and richness for terrestrial fauna species, especially birds
Overall Ecological Importance	**Moderate**

TABLE 6-7: ECOLOGICAL EVALUATION OF WATERCOURSE

Criteria	Watercourse	
	Shenzhen River*	**Other Watercourse**
Naturalness	Moderate to High	Watercourse present in the Study Area is man-made (excluding Shenzhen River). Given a pedestrian road nearby, anthropogenic influence is present
Size	~570m	~330m
Diversity	Low flora and fauna diversity	Low in diversity of plant species and structural complexity. Low diversity of fauna species.
Rarity	A total of 4 fauna species of conservation importance were recorded from literature, including 3 avifauna species (Chinese Pond Heron, Greater Coucal, Little Egret), and 1 mammal species (Small Indian Civet)	No flora or fauna species of conservation importance recorded during the surveys.
Re-creatability	Difficult to be re-created	Not difficult to be re-created
Fragmentation	Not fragmented	Not fragmented
Ecological Linkage	Section within the Study Area is structurally and functionally linked to outer Shenzhen River, adjacent ponds and mitigation wetland in the Lok Ma Chau Loop, and form part of the waterbird flight-path	No ecological linkages to adjacent fishpond habitats and other habitat.
Potential Value	Moderate	Low
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.	No significant nursery or breeding ground recorded
Age	N/A	N/A

Criteria	Watercourse	
	Shenzhen River*	**Other Watercourse**
Abundance/ Richness of Wildlife	Low	Low abundance and richness for fauna species.
Overall Ecological Importance	**Moderate**	**Low**
Note: * - Ecological evaluation on Shenzhen River is extracted from EIA Study for San Tin / Lok Ma Chau Development Node		

6.2 PROJECT SITE

The Project Site, including works area, comprise of approximately 122m^2 of village area. The abundance and richness of wildlife were low due to the small size of the Project Site and its adjacency to an existing, regularly used pedestrian access. No flora or fauna species was recorded within the Project Site during ecological baseline survey. No tree felling/ pruning will be required. The evaluation of village area within the Project Site is presented in ***Table 6-8***.

TABLE 6-8: ECOLOGICAL EVALUATION OF PROJECT SITE

Criteria	Village Area within Project Site
Naturalness	Anthropogenic habitat with high level of human disturbance.
Size	Approx. 122m^2
Diversity	Low in diversity of plant species, structural complexity, and low diversity of fauna species.
Rarity	No flora and fauna species of conservation importance recorded during the surveys.
Re-creatability	Readily re-creatable.
Fragmentation	N/A
Ecological Linkage	Weak ecological linkage with adjacent habitats
Potential Value	Low
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.
Age	Various.
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	**Low**

7. ECOLOGICAL IMPACT ASSESSMENT

7.1 IDENTIFICATION OF POTENTIAL ECOLOGICAL IMPACTS

In view of the current habitat conditions of the Project Site and its vicinity and their ecological values, the potential ecological impacts associated with the LV cable laying near Lok Ma Chau Village (including but not limited to trench excavation, cable laying and backfilling works) during construction is predicted as follows. The potential impacts would cease immediately upon completion of the installation works, where there will be no operational impacts.

- Temporary habitat loss and habitat disturbance within the Project Site due to excavation of cable trenches;
- Indirect disturbances to the surrounding habitats and associated wildlife due to the construction works (e.g. increased human activities, generation of dust, waste and noise and inappropriate disposal of construction materials); and
- Indirect impacts (pollution) on adjacent waterbodies due to construction run-off.

7.2 ASSESSMENT OF ECOLOGICAL IMPACTS IN THE ABSENCE OF MITIGATION MEASURES

In the absence of mitigation measures, the identified ecological impacts due to installation of the proposed cable along the hard-paved footpath near Lok Ma Chau Village are evaluated in the following sections.

7.2.1 TEMPORARY HABITAT LOSS

Direct habitat loss arising from the Project would be limited to the cable trenches directly along the hard-paved footpath within village area, but all can be reinstated after construction works. The construction works include excavation by QPME (Quality Powered Mechanical Equipment) excavators and the hand tools, cable laying and reinstatement. The dimension of the cable trenches, which will be reinstated upon completion of construction, is approximately 61m in length, 1m in width and 1.2m in depth. The Project's work area will be restricted to 1m on either side of the proposed cable route, which will generally involve concrete breaking, removal of top soil layer, minimal vegetation clearance and temporary shoring if applicable. Primarily weedy species and fruit trees are present between the existing road/ paved surface and adjacent village area, which supports low diversity and low abundance of fauna. No tree felling or pruning will be involved.

In the absence of mitigation measures, the direct habitat loss caused by the Project is considered to be of **Very Low** to Village Area. As all the works areas will be reinstated upon completion of the cable laying, no permanent habitat loss is expected during operation of the Project. The assessment of potential direct impact on habitats within the Project Site in the absence of mitigation measures is detailed in ***Table 7-1***.

TABLE 7-1: TEMPORARY LOSS OF EXISTING HABITATS WITHIN THE PROJECT SITE

Criteria	Village Area
Habitat Quality	Low
Species	No flora and fauna species of conservation importance recorded during the surveys.
Size/Abundance	Small with a total area of 122m^2 (including works area). No tree removal and pruning will be involved.
Duration	Temporary, the works will be completed (including reinstatement) around 4 weeks
Reversibility	The trenches will be reinstated upon completion of construction
Magnitude	Very small
Overall Impact Severity	**Very Low**

7.2.2 INDIRECT DISTURBANCES TO SURROUNDING HABITATS AND ASSOCIATED WILDLIFE

The surrounding habitats (i.e. fishponds, wet agricultural land and abandoned agricultural land) adjacent to the Project Site could be indirectly impacted by the Project, due to construction-induced disturbances arising from the Project. Increased human activities (esp. during the construction phase) and construction activities would be the main source of disturbance accrued from the proposed works. Noise, dust, waste generation, lighting and visual disturbance, which may arise from the construction activities, are predicted to occur during construction. As the cable alignment will be located along the existing pavement/ road surface as far as possible, the excavation is not expected to cause direct disturbance or the physical damages to the surrounding habitats. Disturbance during operation phase is not anticipated.

Different terrestrial ecological resources, including avifauna species of conservation importance, have been identified to be located in the vicinity of the proposed cable route. These species could be indirectly impacted by the proposed construction works.

According to the baseline ecological survey and literature review, fauna (i.e. avifauna, bats and terrestrial mammals) inhabiting the nearby area are highly mobile and able to move to the other similar habitats, which are large in area and with higher habitat quality. Furthermore, the fauna recorded in the Study Area were less susceptible to the anthropogenic disturbances. Therefore, nuisances induced by the small-scale construction work along the Project Site would not have significant impact to surrounding wildlife. As observed during the baseline survey, waterbirds in the Study Area were generally not disturbed by frequent human activity, during active operation/

management of the fishponds by fishpond operators and farming works at wet agricultural lands. On the other hand, no night-time works will be conducted under the Project and hence impacts related to noise, dust, waste generation, lighting and visual disturbance towards nocturnal fauna are not anticipated. However, the excavation could pose risk to smaller fauna species such as small mammals and amphibians, where they could be trapped in open trenches.

In the absence of mitigation measures, the above-mentioned disturbance impact on surrounding habitats and associated wildlife due to noise, dust, waste generation and visual disturbance etc. caused by increased human activities is considered to be **Low to Moderate** significance.

7.2.3 INDIRECT IMPACT (POLLUTION) TO ADJACENT WATERBODIES

Site runoff from the works area may contain suspended solids and contaminants if uncontrolled. Potential sources of water pollution from uncontrolled site runoff may include runoff and erosion of exposed bare soil, earth and stockpiles, sediment released during excavation, fuel, oil, and lubricant from maintenance of construction mechanical equipment. Water pollution could be substantial if construction runoff is allowed to discharge without mitigation, resulting in adverse impacts through physical and biological disruption of the area's ecosystem. Taking into account the small scale of the construction works, in the absence of mitigation measures, the impact of potential water pollution caused by the Project is considered to be of **Low to Moderate** significance.

7.3 CUMULATIVE IMPACT

No concurrent project, of which the construction programme would have overlapped with this Project, is identified within the Study Area. And hence, cumulative impact is not anticipated for this Project.

8. MITIGATION AND PRECAUTIONARY MEASURES

Based on the ecological impacts predicted in ***Section 7***, mitigation measures to avoid, minimise or compensate (if necessary) for the potential significant impacts are detailed below. In line with the EIAO-TM, ways to avoid impacts were identified and followed wherever possible during the planning and design stage. If, despite taking all appropriate design measures of avoidance and minimisation, potential ecological impacts of greater than "**Low**" significance are still anticipated, further mitigation measures are considered necessary to reduce these impacts to an acceptable level. Moreover, to achieve a better ecological performance, precautionary measures are proposed under this project for certain potential ecological impacts that are not considered to be significant.

In order to minimise the potential disturbances arising the project, good site/ construction practice and housekeeping measures will be adopted. Mitigation measures and good construction practices are recommended below.

8.1 AVOIDANCE AND MINIMISATION

- During the planning stage, the Project Proponent has conducted site visits with contractors to minimise footprint/ impact on vegetation, tree and habitat loss at any stage of the Project. No tree felling or pruning will be caused by the Project.
- The cable laying work will be constructed section by section. The trench will be backfilled with soil stocking before moving to next section.

8.2 MITIGATION FOR INDIRECT DISTURBANCES TO SURROUNDING HABITATS AND ASSOCIATED WILDLIFE

- All construction activities will be carried out in daytime hours (i.e. 8:00 am to 5:00 pm) only, which is at least one hour after sunrise and over one hour before sunset;
- The construction works would be carried out using QPME excavators and hand tools to minimise the potential impacts;
- The boundary of the works area will be clearly marked by temporary fence. The works area boundaries will be regularly checked to ensure that they are not breached and that no adverse impacts occur to surrounding habitat and associated wildlife;
- Contractors will check the excavation trench each day, prior to commencing work, to ensure that no mammals, reptiles or amphibians are trapped in the trench;
- Avoid use of direct lighting on adjacent habitats to alignment (i.e. ponds, wet agricultural land and abandoned agricultural land) and controlling night-time lighting to reduce potential ecological impact.
- Adopt appropriate measures including controlled wastewater discharge to the nearby water bodies, in accordance with the guidelines stipulated in Environmental Protection Department (EPD)'s *Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)* during the construction works to properly control site run-off and drainage and to minimise potential water quality impacts;

- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping to the surrounding natural habitats;
- Prohibit and prevent open fires within the works area boundary during construction and provide temporary firefighting equipment in the work areas; and
- Good site practice will be enforced, and effective mitigation measures are required. Works site will be kept tidy at all times. Regular watering to minimise dust emissions from exposed site surfaces and construction activities would be provided. The dusty materials and the open stockpiles shall be avoided or fully covered by the tarpaulin or by other means to avoid being washed into adjacent waterbodies (i.e. ponds and watercourse). Accumulation of construction waste and general refuse will not be allowed.

8.3 RESIDUAL ECOLOGICAL IMPACTS AFTER IMPLEMENTATION OF PROPOSED MITIGATION MEASURE

Table 8-1 summarises the potential ecological impacts of the project, the impacts that require mitigation, the mitigation measures to be carried out and the residual impacts after mitigation. It can be seen that with the implementation of proposed mitigation measures described above, residual impacts of the Project could be reduced to **Low/ Negligible**.

TABLE 8-1: SUMMARY OF POTENTIAL ECOLOGICAL IMPACTS, REQUIRED MITIGATION MEASURES AND POST-MITIGATION ACCEPTABILITY OF THE PROJECT

Potential Impact	Predicted Significance of Impact in Absence of Mitigation Measures	Proposed Mitigation/ Precautionary Measures	Residual Impact
Direct Habitat Loss (Village Area)	**Very Low**	• Not required	**Very Low**
Indirect Disturbances to Surrounding Habitats and Associated Wildlife	**Low to Moderate**	• All construction activities will be carried out in daytime hours (i.e. 8:00 am to 5:00 pm) only, which is at least one hour after sunrise and over one hour before sunset; • The construction works would be carried out using QPME excavators and hand tools; • The boundary of the works area will be clearly marked by temporary fence. The works area boundaries will be regularly checked to ensure that they are not breached and that no adverse impacts occur to surrounding habitat and associated wildlife; • Contractors will check the excavation trench each day, prior to commencing work, to ensure that no mammals, reptiles or amphibians are trapped in the trench. • Avoid use of direct lighting on adjacent habitats to alignment (i.e. ponds, wet agricultural land and abandoned agricultural land) and controlling night-time lighting	**Low/ Negligible**

Potential Impact	Predicted Significance of Impact in Absence of Mitigation Measures	Proposed Mitigation/ Precautionary Measures	Residual Impact
		to reduce potential ecological impact.	
Indirect Impact (Pollution) to Adjacent Waterbodies	**Low to Moderate**	• Good site practice will be enforced, and effective mitigation measures are required. Works site will be kept tidy at all times. Regular watering to minimise dust emissions from exposed site surfaces and construction activities would be provided. The dusty materials and the open stockpiles shall be avoided or fully covered by the tarpaulin or by other means to avoid being washed into adjacent waterbodies (i.e. ponds and watercourse). Accumulation of construction waste and general refuse will not be allowed.	**Low/ Negligible**
Cumulative Impact	**Not anticipated**	• Not required	**Not anticipated**

9. SUMMARY OF ECOLOGICAL IMPACT ASSESSMENT

The main terrestrial ecological resources recorded within the proposed construction works section of the Study Area comprise of Shrubland, Village Area, Developed Area, Abandoned Agricultural Land, Wet Agricultural Land, Pond, Watercourse and their associated wildlife, where the Project Site will be restricted to hard-paved footpath in Lok Ma Chau Village. The majority of the habitats within the Study Area is considered to be anthropogenic with frequent disturbance from human activity from village area. The ecological value of the habitats is considered to be moderate for pond and low for the rest of the habitats.

The Village Area within the Project Site is considered to be of low level of ecological value, given that the habitat nature is anthropogenic with intensive human disturbance. The Project Site support a low diversity of flora and fauna species, where the proposed cable route has also been designed to avoid any tree felling and tree pruning. In the absence of mitigation measures, the temporary habitat loss within Project Site is considered to be of **Very Low** significance. The potential indirect disturbances to surrounding habitat and associated wildlife is considered to be of **Low to Moderate** significance, and indirect impact (pollution) on adjacent waterbodies is considered to be **Low to Moderate**.

In order to mitigate for the potential ecological impacts, the proposed works will be conducted in daytime hours (i.e. 8:00 am to 5:00 pm) and contractors will check the presence of wildlife in open trenches daily to minimise potential impact on wildlife. Good site practices and the measures in accordance with the Practice Notes for Professional Persons on "*Construction Site Drainage*" (ProPECC PN 1/94) will be applied to control surface runoff and the potential pollution to watercourse.

With the implementation of the proposed mitigation measures, residual ecological impacts of the Project would be of low/negligible significance and acceptable.

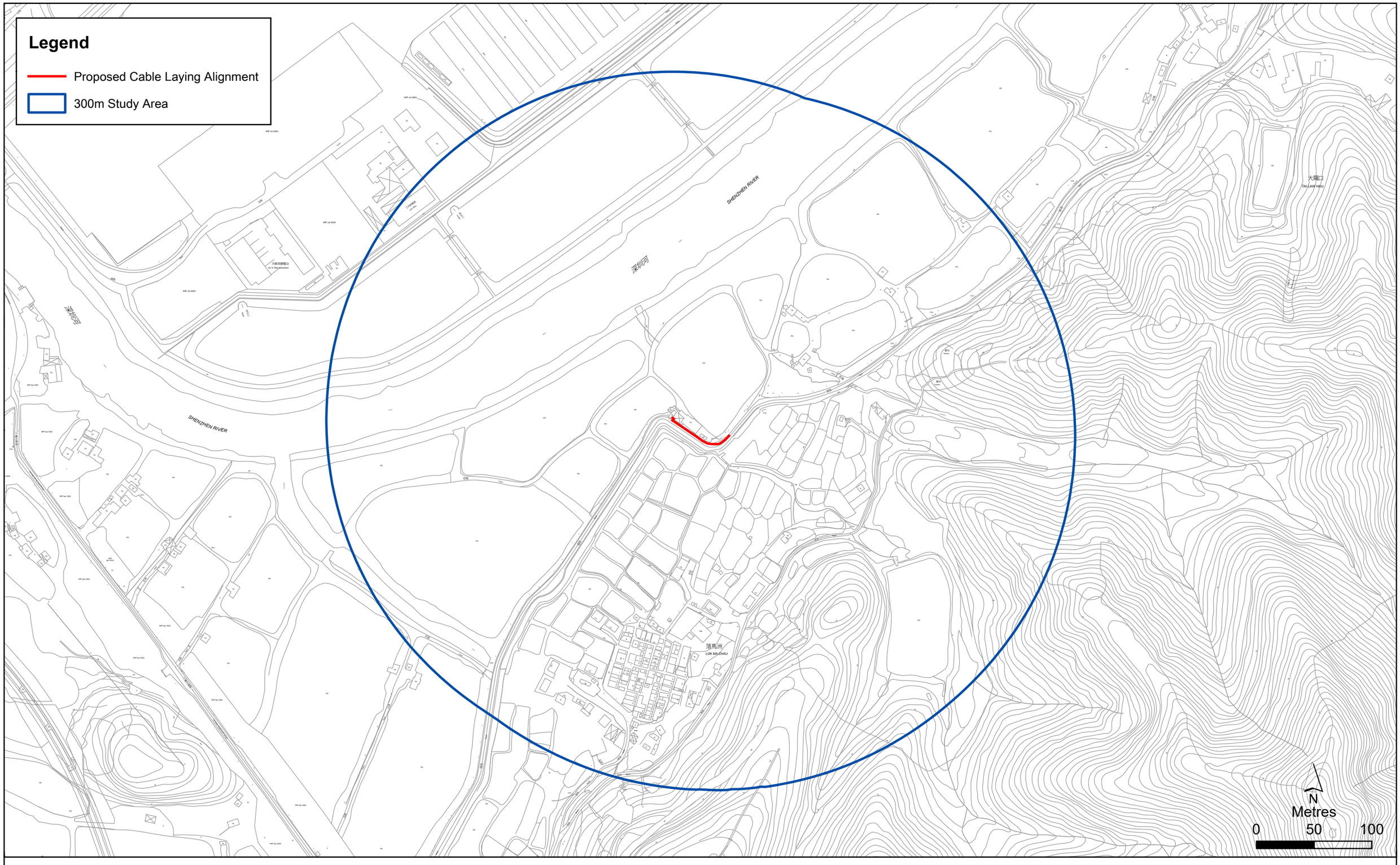


Figure 1.1

Project Site and Study Area

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Study_Area.mxd
Date: 1/9/2024

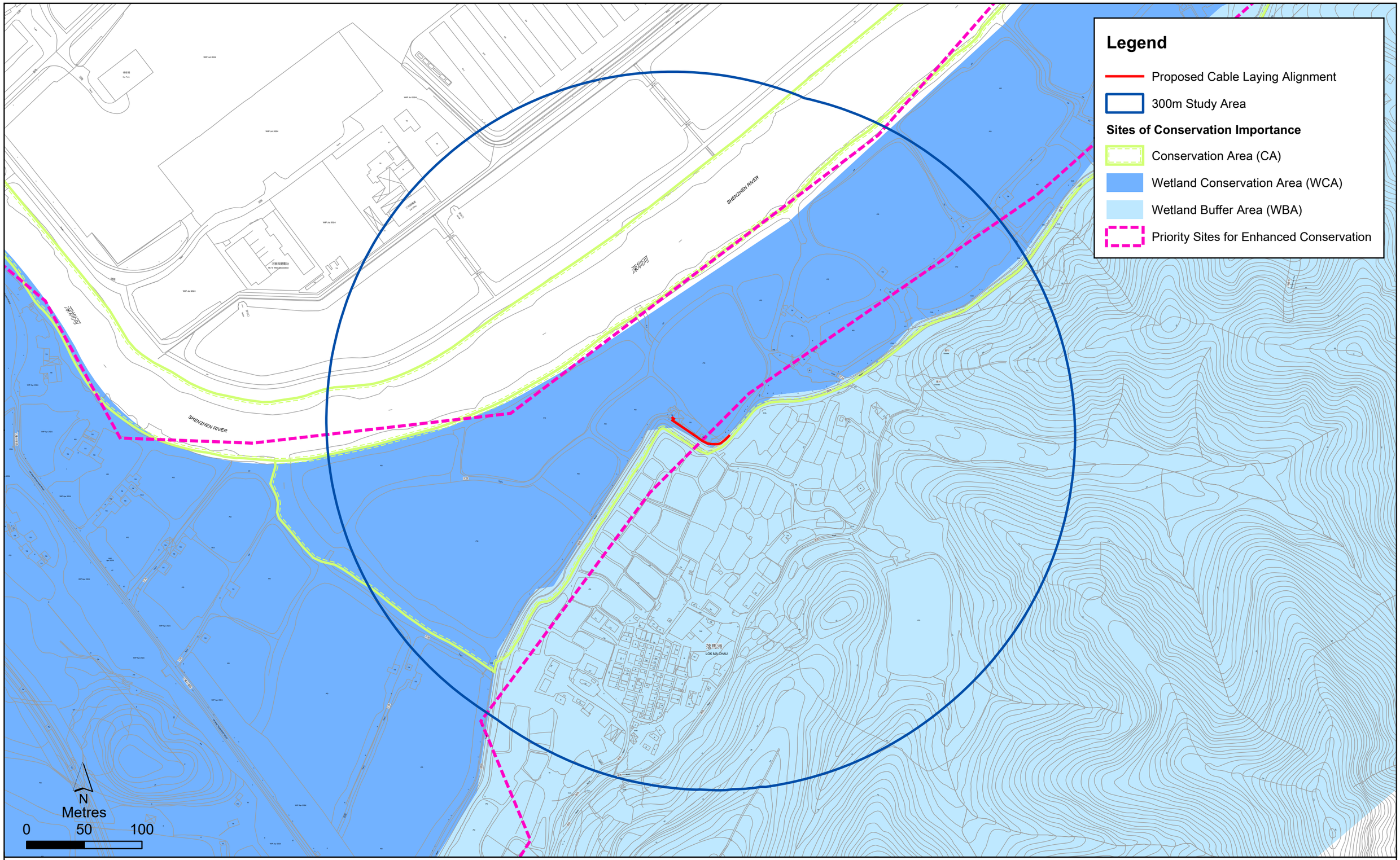


Figure 3.1

Sites of Conservation Importance

ERM

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Sites_of_conservation_importance.mxd
Date: 1/9/2024

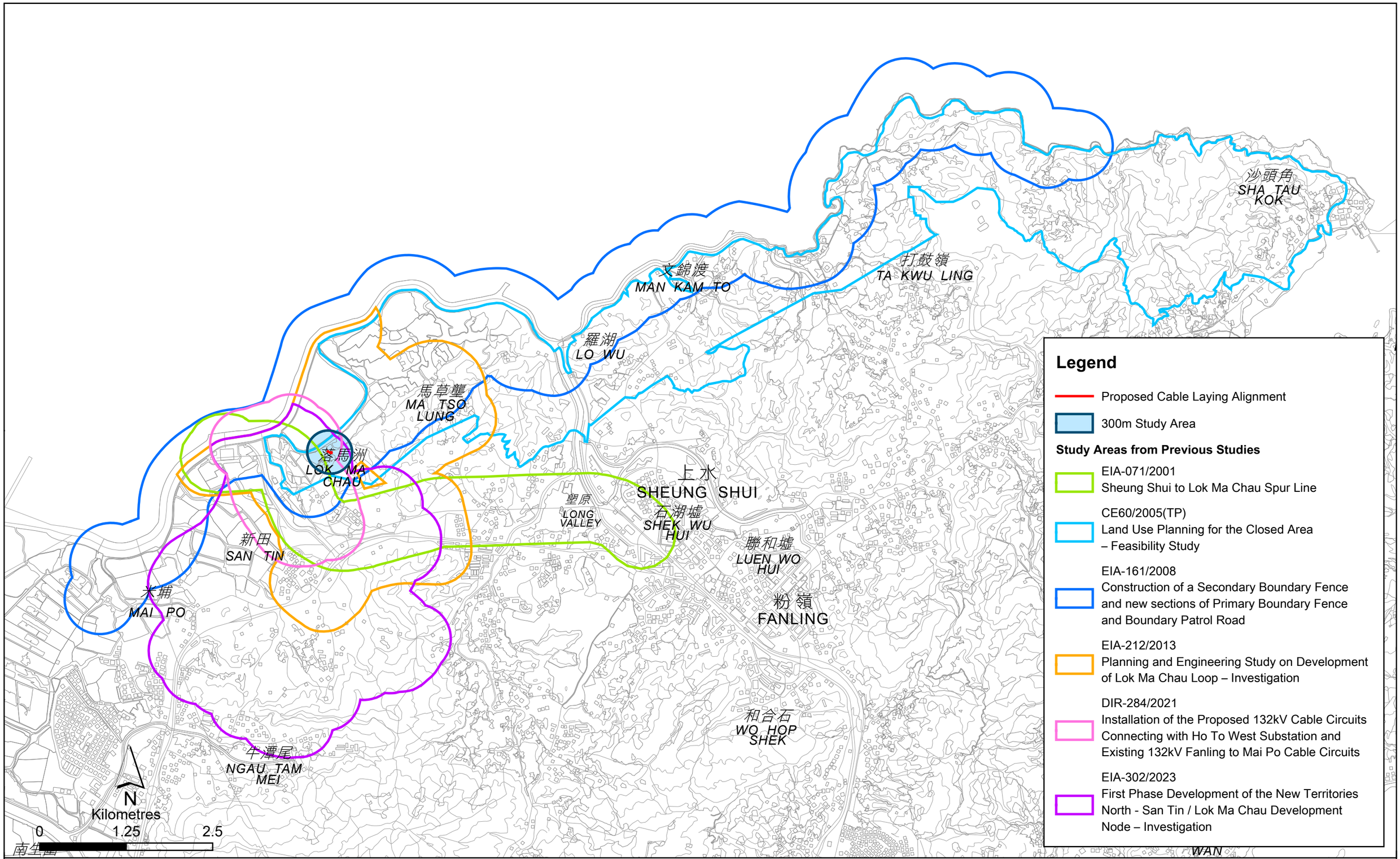


Figure 3.2

Previous Study Areas of Relevant Studies

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Previous_Studies.mxd
Date: 1/9/2024

Legend

- Proposed Cable Laying Alignment
- 300m Study Area

Species of Conservation Importance

Mammal

- Himalayan Leaf-nosed Bat
- Japanese Pipistrelle
- Lesser Bamboo Bat
- Pallas's Squirrel
- Small Indian Civet
- Short-nosed Fruit Bat

Avifauna

- Black Kite
- Black-winged Stilt
- Chinese Pond Heron
- Great Egret
- Greater Coucal
- Grey-faced Buzzard
- Little Egret
- Little Ringed Plover
- Red-billed Starling
- Red-throated Pipit
- White-cheeked Starling
- White-shouldered Starling
- Wood Sandpiper
- Yellow Bittern

Amphibian

- Chinese Bullfrog
- Two-striped Grass Frog

Butterfly

- Metallic Cerulean
- Small Cabbage White
- Swallowtail

Odonate

- Blue Chaser
- Coastal Glider
- Ruby Darter
- Sapphire Flutterer
- Scarlet Basker

Freshwater Invertebrate

- *Somanniathelphusa zanklon*

SHENZHEN RIVER

深圳河

LOK MA CHAU

N

Metres

0 50 100

Figure 3.3

Species of Conservation Importance from Literature Review within the Study Area

ERM

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Species_from_Literature_Review.mxd
Date: 2/9/2024

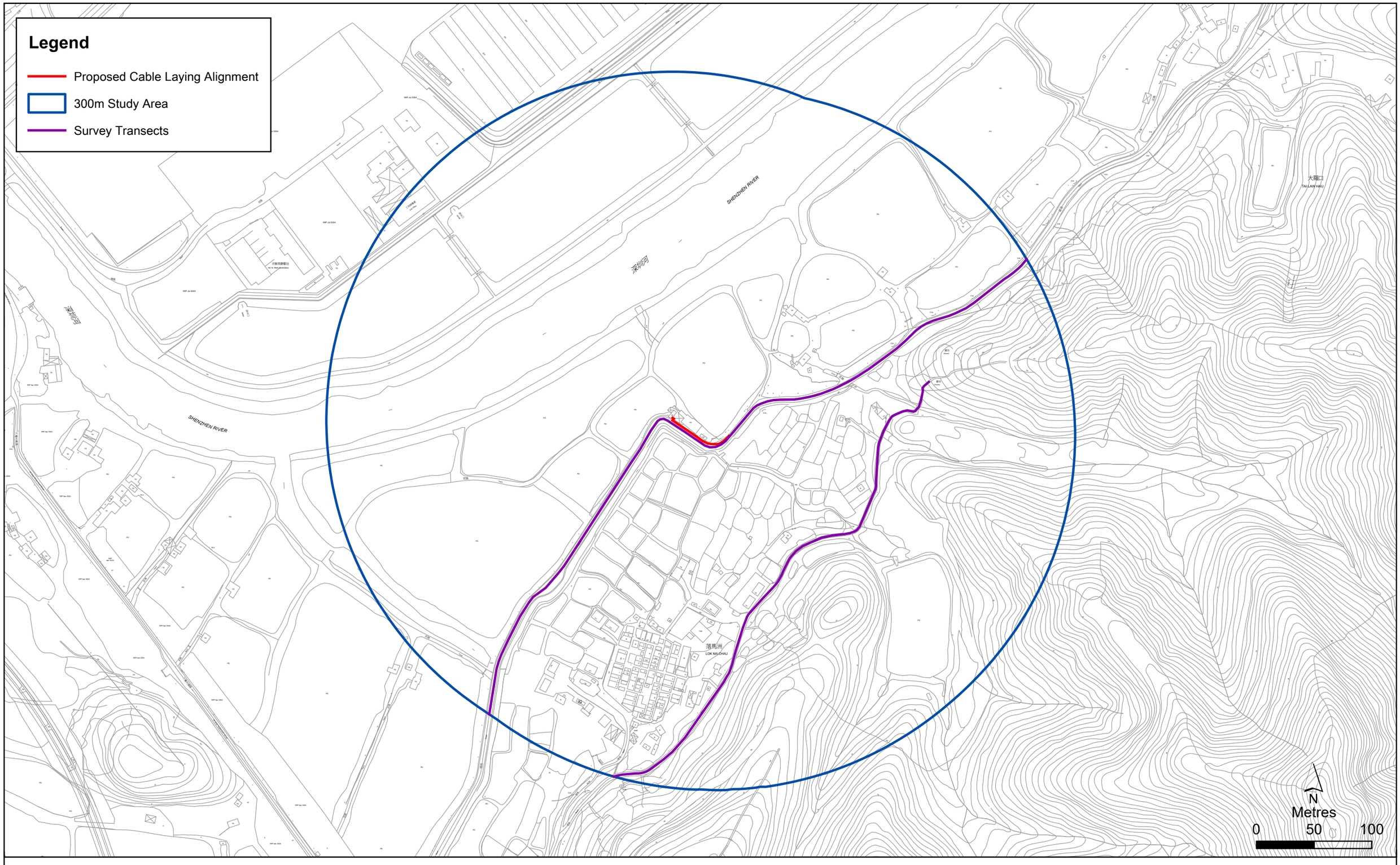


Figure 4.1

Survey Transects

ERM

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Survey_Transects.mxd
Date: 3/9/2024

Legend

- Proposed Cable Laying Alignment
- 300m Study Area

Species of Conservation Importance

Mammal

- Chinese Noctule
- Japanese Pipistrelle

Avifauna

- Chinese Pond Heron
- Greater Coucal
- Little Egret

Habitat

- Shrubland
- Village Area
- Developed Area
- Abandoned Agricultural Land
- Wet Agricultural Land
- Pond
- Watercourse

SHENZHEN RIVER

落馬洲
LOK MA CHAU

大隘口
TAI LAM HAU

N

Metres

0 50 100

Figure 5.1

Habitat Map and Species of Conservation Importance Recorded in Verification Survey

ERM

File: T:\GIS\CONTRACT\0745426\mxd\0745426_Habitat.mxd
Date: 1/9/2024

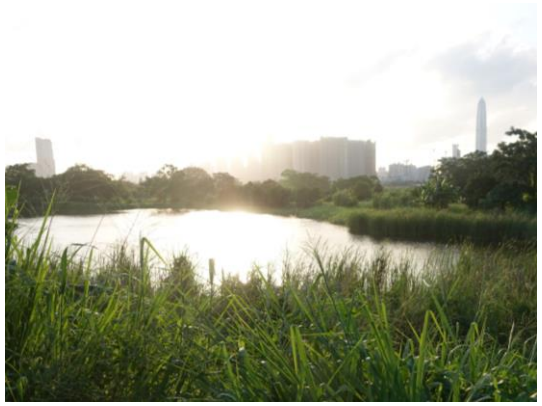
ANNEXES

Shrubland

Village Area

Abandoned Agricultural Land

Wet Agricultural Land



Pond

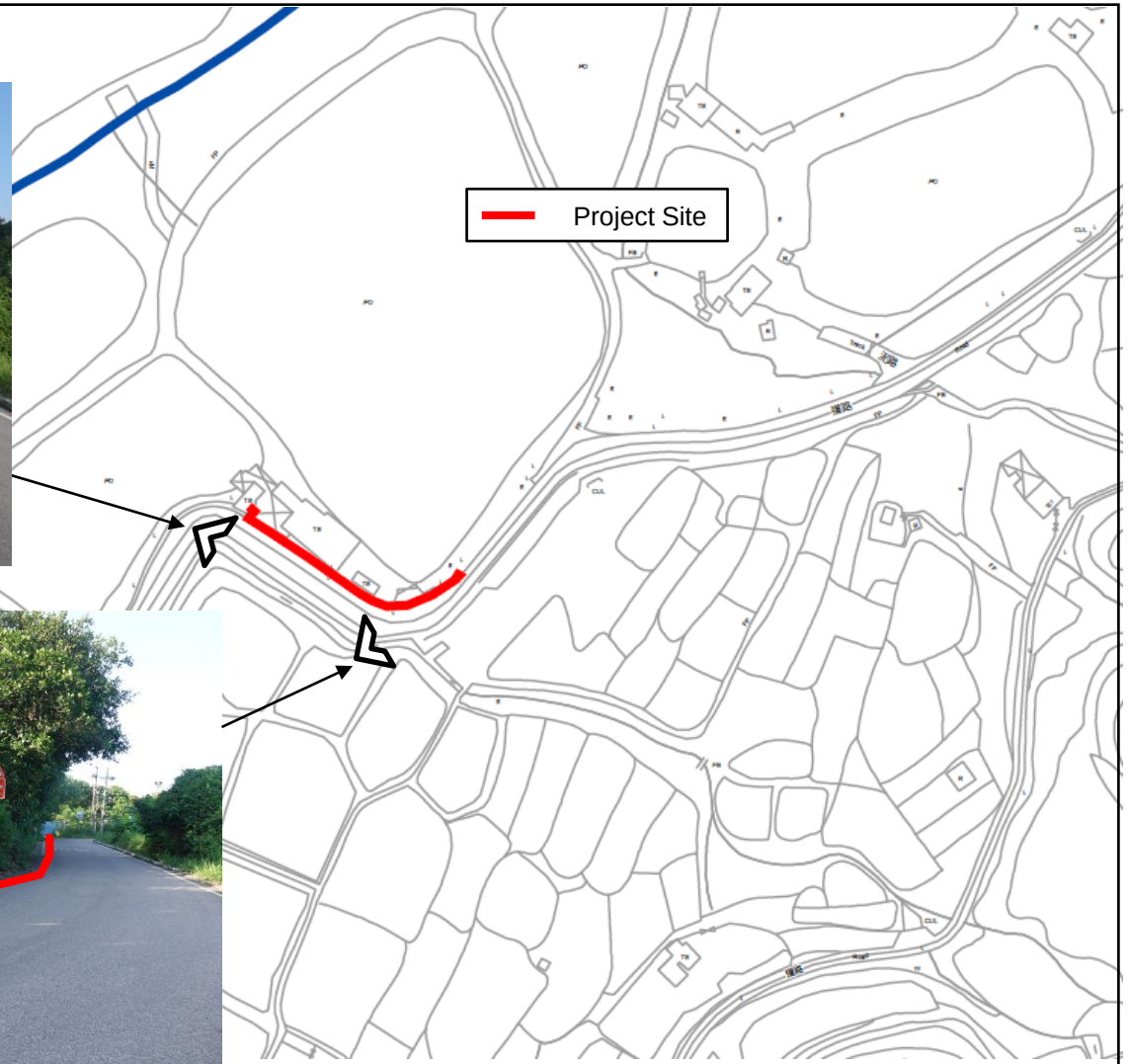
Watercourse

Annex 1

Representative Photos of Habitats within the Study Area

DATE: 15/8/2024

ERM



Annex 1

Representative Photos of Habitats within the Study Area

DATE: 15/8/2024

ERM

Annex 2 Presence of Plant Species Recorded Within the Study Area

Species Name	Chinese Name	Origin[1]	Growth Form	Status in Hong Kong[2]	Study Area						Project Site
					SL	VA	AGL	WAL	PO	WC	VA
Aeschynomene indica	合萌	N	Herb/Shrub	Very common					✓		
Ageratum houstonianum	熊耳草	E	Herb	Common						✓	
Aglaia odorata	米仔蘭	E	Shrub/Tree	Common	✓	✓					
Alangium chinense	八角楓	N	Shrub/Tree	Common	✓						
Albizia lebbeck	大葉合歡	E	Tree	Common	✓	✓					
Alocasia macrorrhizos	海芋	N	Herb	Very common	✓	✓	✓			✓	
Alpinia hainanensis	草豆蔻	N	Herb	Very common	✓		✓				
Alternanthera philoxeroides	空心蓮子草, 空心莧	E	Herb	Common			✓	✓	✓	✓	
Ampelopsis cantoniensis	廣東蛇葡萄	N	Climber	Very common					✓		
Annona squamosa	番荔枝	E	Tree	Very common		✓					
Aporosa dioica	銀柴	N	Tree	Very common	✓						
Artocarpus heterophyllus	菠蘿蜜	E	Tree	Very common		✓					
Asystasia micrantha	小花十萬錯	E	Herb	Very common	✓	✓	✓				
Averrhoa carambola	楊桃	E	Tree	Common		✓					
Bacopa monnieri	假馬齒莧	N	Herb	Common					✓	✓	
Bidens alba	白花鬼針草	E	Herb	Very common	✓	✓	✓	✓	✓	✓	
Bougainvillea spectabilis	簕杜鵑	E	Climber/Shrub	Common		✓					
Brachiaria mutica	巴拉草	E	Herb	Common			✓		✓	✓	
Bridelia tomentosa	土蜜樹	N	Shrub/Tree	Very common	✓	✓					✓
Calliandra haematocephala	朱纓花, 紅絨球	E	Shrub	Common		✓					
Carica papaya	番木瓜	E	Tree	Common		✓				✓	
Celosia argentea	青葙	N	Herb	Very common					✓		
Celtis sinensis	朴樹	N	Tree	Common	✓	✓	✓				
Chloris barbata	孟仁草	N	Herb	Very common		✓					
Clausena lansium	黃皮	E	Tree	Common		✓					✓
Commelina diffusa	節節草	N	Herb	Common			✓		✓	✓	
Cuscuta chinensis	菟絲子	N	Herb	Common	✓		✓		✓		
Cyclosorus interruptus	間斷毛蕨, 毛蕨	N	Herb	Common	✓		✓		✓	✓	
Cynodon dactylon	狗牙根	N	Herb	Very common	✓	✓				✓	
Cyperus involucratus	風車草	E	Herb	Restricted			✓			✓	✓
Dicranopteris pedata	芒萁	N	Herb	Very common	✓						
Dimocarpus longan	龍眼, 桂圓	E	Tree	Restricted		✓					✓
Dioscorea bulbifera	黃獨	N	Climber	Common	✓						
Duchesnea indica	蛇莓	N	Herb	Restricted	✓	✓					
Euphorbia hirta	大飛揚草	E	Herb	Very common	✓	✓	✓				✓
Euphorbia thymifolia	千根草, 小飛揚	N	Herb	Very common	✓	✓				✓	✓
Ficus hirta	粗葉榕	N	Shrub/Tree	Common	✓					✓	
Ficus hispida	對葉榕	N	Shrub/Tree	Very common	✓	✓	✓		✓	✓	
Ficus microcarpa	細葉榕	N	Tree	Common	✓	✓			✓		
Glochidion eriocarpum	毛果算盤子	N	Shrub/Tree	Very common	✓						
Hedyotis corymbosa	傘房花耳草	N	Herb	Very common	✓		✓		✓		
Hibiscus rosa-sinensis	朱槿	E	Shrub	Very common		✓					
Hylocereus undatus	量天尺, 霸王花, 火龍果	E	Herb	Common		✓					
Ipomoea aquatica	蕹菜，空心菜，通菜	E	Herb	Very common				✓			
Ipomoea obscura	小心葉薯, 紫心牽牛	N	Herb	Common		✓			✓	✓	
Kalanchoe pinnata	落地生根	E	Herb	Common		✓					✓
Lantana camara	馬纓丹, 如意草	E	Shrub	Very common	✓	✓	✓			✓	✓
Leucaena leucocephala	銀合歡	E	Shrub/Tree	Common	✓	✓	✓				
Lindernia crustacea	母草	N	Herb	Restricted	✓	✓	✓		✓		
Liriope spicata	山麥冬, 麥門冬	N	Herb	Very common	✓				✓		
Litchi chinensis	荔枝	E	Tree	Restricted	✓	✓					
Litsea glutinosa	潺槁樹	N	Tree	Very common	✓	✓					
Ludwigia erecta	美洲水丁香	E	Herb	Common			✓				
Ludwigia hyssopifolia	草龍	N	Herb	Common					✓	✓	
Lygodium japonicum	海金沙	N	Climber/Herb	Very common	✓						
Macaranga tanarius var. tomentosa	血桐	N	Tree	Common	✓	✓	✓		✓	✓	✓
Mangifera indica	芒果	E	Tree	Common	✓	✓				✓	
Manihot esculenta	木薯	E	Shrub	Common		✓					✓
Melastoma malabathricum	野牡丹	N	Shrub	Common	✓						
Melastoma sanguineum	毛蒞	N	Shrub	Common	✓						
Melia azedarach	苦楝	E	Tree	Common		✓			✓	✓	
Melicope pteleifolia	三椏苦	N	Shrub/Tree	Common	✓						
Melinis repens	紅毛草	E	Herb	Very common		✓					
Microcos nervosa	破布葉 , 布渣葉	N	Shrub/Tree	Common	✓	✓					
Microstegium ciliatum	剛莠竹	N	Herb	Very common	✓						
Mikania micrantha	薇甘菊	E	Climber/Herb	Very common	✓	✓	✓		✓	✓	
Mimosa pudica	含羞草	E	Herb	Very common	✓	✓	✓				
Miscanthus floridulus	五節芒	N	Herb	Common	✓		✓		✓		
Musa x paradisiaca	大蕉	E	Herb	Common		✓	✓			✓	
Paederia scandens	雞矢藤	N	Herb	Very common	✓	✓					✓
Panicum maximum	大黍	E	Herb	Very common	✓	✓	✓		✓	✓	
Pennisetum purpureum	象草	E	Herb	Very common					✓		

Annex 2 Presence of Plant Species Recorded Within the Study Area

Species Name	Chinese Name	Origin[1]	Growth Form	Status in Hong Kong[2]	Study Area						Project Site
					SL	VA	AGL	WAL	PO	WC	VA
Phragmites australis	蘆葦	N	Herb	Very common					✓		
Portulaca oleracea	馬齒莧	N	Herb	Very common			✓			✓	
Psidium guajava	番石榴	E	Tree	Common		✓					✓
Psychotria asiatica	山大刀，九節	N	Shrub/Tree	Very common	✓						
Pteris semipinnata	半邊旗	N	Herb	Very common	✓						
Pueraria lobata var. montana	葛麻姆	N	Climber	Common	✓	✓					
Rhapis excelsa	棕竹	N	Shrub	Common	✓						
Rhodomyrtus tomentosa	桃金娘，崗棯	N	Shrub	Very common	✓						
Rhus succedanea	野漆樹	N	Shrub/Tree	Common	✓						
Sansevieria trifasciata	虎尾蘭	E	Herb	Common		✓					
Sesbania cannabina	田菁	E	Herb	Common			✓			✓	
Smilax china	菝葜，金剛藤	N	Climber	Very common	✓						
Solanum torvum	水茄	E	Shrub	Common		✓			✓		
Spilanthes paniculata	金鈕扣	N	Herb	Common	✓						
Stephania longa	粪箕篤，千金藤	N	Climber	Common		✓					✓
Sterculia lanceolata	假蘋婆	N	Tree	Very common	✓						
Synedrella nodiflora	金腰箭	E	Herb	Very common	✓	✓					
Syzygium jambos	蒲桃	E	Tree	Common	✓	✓					✓
Tridax procumbens	羽芒菊	E	Herb	Very common		✓					
Urena lobata	肖梵天花, 地桃花	N	Shrub	Common		✓					
Uvaria macrophylla	紫玉盤	N	Climber/Shrub	Common	✓						
Vernonia cinerea	夜香牛	N	Herb	Very common	✓						
Wedelia trilobata	三裂葉蟛蜞菊	E	Herb	Common		✓			✓		
Zingiber spp.	薑屬	-	Herb	-			✓				
				96	**55**	**52**	**27**	**3**	**26**	**25**	**14**

Notes:

1. Origin of plant species refers to AFCD (2012). Check List of Hong Kong Plants 2012. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong.
2. Commonness follows:
   - Xing, F.W., Ng, S.C., Chau, L.K.C. 2000. Gymnosperms and angiosperms of Hong Kong. Memoirs of the Hong Kong Natural History Society 23: 21-136.
   - KFBG (2003) Flora of Hong Kong – Pteridophyta. Kadoorie Farm and Botanic Garden, Hong Kong
   - AFCD (2003) Rare and Precious Plants of Hong Kong. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong.
   - AFCD (2007) Flora of Hong Kong Vol. 1. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden, Chinese Academy of Sciences
   - AFCD (2008) Flora of Hong Kong Vol. 2. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden Chinese Academy of Sciences
   - AFCD (2009) Flora of Hong Kong Vol. 3. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden Chinese Academy of Sciences
   - AFCD (2011) Flora of Hong Kong Vol. 3. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden Chinese Academy of Sciences
3. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse

Little Egret

Chinese Pond Heron

Annex 3

Representative Photos of Species of Conservation Importance Recorded

DATE: 15/8/2024

Annex 4 Presence of Mammal Species Recorded Within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status[1]	Commonness[2]	Habitat[3] 300m Study Area					
						S	VA	AGL	WAL	P	WC
1	Chinese Noctule	*Nyctalus plancyi*	中華山蝠	Cap.170; Fellowes: PRC (RC)	Fairly widely distributed in countryside areas throughout Hong Kong.					✓	
2	Japanese Pipistrelle	*Pipistrellus abramus*	東亞家蝠	Cap.170	Widely distributed throughout Hong Kong.		✓			✓	
					TOTAL	**0**	**1**	**0**	**0**	**2**	**0**

Notes:

1. Conservation and Protection Status:
   a. Cap. 170 – Protected under Wild Animals Protection Ordinance
   b. Fellowes – Fellowes *et al.* (2002): 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.
2. Commonness as per AFCD database: Available at https://bih.gov.hk/en/home/index.html
3. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse
4. References:

AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.

Fellowes *et al* . 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. Memoirs of the Hong Kong Natural History Society 25:123-159.

Ministry of Ecology and Environment of the People's Republic of China, and Chinese Academy of Sciences. 2023. Red List of China's Vertebrates.

Wang, S. 1998. China Red Data Book of Endangered Animals: Mammalia. Science Press. Beijing. China. 417pp.

Annex 5 Maximum Count of Bird Species Recorded Within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status[1]	Distribution in Hong Kong[2]	Habitat[3] 300m Study Area						
						S	VA	AGL	WAL	P	WC	IF
1	Greater Coucal	*Centropus sinensis*	褐翅鴉鵑	CSMPS(II)	Common resident. Widely distributed in Hong Kong.			1		1		
2	Spotted Dove	*Spilopelia chinensis*	珠頸斑鳩	-	Abundant resident. Widely distributed in Hong Kong.		1					
3	White-breasted Waterhen	*Amaurornis phoenicurus*	白胸苦惡鳥	-	Common resident. Widely distributed in wetland throughout Hong Kong.			1	1	1		
4	Chinese Pond Heron	*Ardeola bacchus*	池鷺	Fellowes: PRC (RC)	Common resident. Widely distributed in Hong Kong.				1	1		
5	Grey Heron	*Ardea cinerea*	蒼鷺	Fellowes: PRC	Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar.							1
6	Great Egret	*Ardea alba*	大白鷺	Fellowes: PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in Hong Kong							1
7	Intermediate Egret	*Ardea intermedia*	中白鷺	Fellowes: RC	Resident and passage migrant. Found in Deep Bay area, Tai Long Wan, Starling Inlet, Tai O, Cape D'Aguilar.							1
8	Little Egret	*Egretta garzetta*	小白鷺	Fellowes: PRC (RC)	Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong.				1	1		
9	Black Kite	*Milvus migrans*	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	Common resident and winter visitor. Widely distributed in Hong Kong.							1
10	Black Drongo	*Dicrurus macrocercus*	黑卷尾	-	Common autumn passage migrant and winter visitor. Widely distributed in open area throughout Hong Kong.			1				
11	Red-billed Blue Magpie	*Urocissa erythrorynchа*	紅嘴藍鵲	-	Common resident. Widely distributed in woodland edges throught Hong Kong.					1		
12	Large-billed Crow	*Corvus macrorhynchos*	大嘴烏鴉	-	Common resident. Widely distributed in Hong Kong.							1
13	Chinese Bulbul	*Pycnonotus sinensis*	白頭鵯	-	Abundant resident. Widely distributed in Hong Kong					1		
14	Red-whiskered Bulbul	*Pycnonotus jocosus*	紅耳鵯	-	Abundant resident. Widely distributed in Hong Kong	2	3	23				
15	Sooty-headed Bulbul	*Pycnonotus aurigaster*	白喉紅臀鵯	-	Common resident. Widely distributed in open areas thorughout Hong Kong				1			
16	Barn Swallow	*Hirundo rustica*	家燕	-	Abundant passage migrant and uncommon winter visitor. Widely distributed in Hong Kong.				7			
17	Dusky Warbler	*Phylloscopus fuscatus*	褐柳鶯	-	Abundant winter visitor and migrant. Widely distributed in shrubland and waterside vegetation throughout Hong Kong			1				

Annex 5 Maximum Count of Bird Species Recorded Within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status[1]	Distribution in Hong Kong[2]	Habitat[3] 300m Study Area						
						S	VA	AGL	WAL	P	WC	IF
18	Yellow-bellied Prinia	*Prinia flaviventris*	黃腹鷦鶯	-	Common resident. Widely distributed in Hong Kong			1				
19	Common Tailorbird	*Orthotomus sutorius*	長尾縫葉鶯	-	Common resident. Widely distributed in Hong Kong	1						
20	Masked Laughingthrush	*Pterorhinus perspicillatus*	黑臉噪鸝	-	Abundant resident. Widely distributed in shrubland throughout Hong Kong		2					
21	Crested Myna	*Acridotheres cristatellus*	八哥	-	Abundant resident. Widely distributed in Hong Kong				2			
22	Common Myna	*Acridotheres tristis*	家八哥	-	Locally common resident. Found in Mai Po, Sheung Uk Tsuen, Sheung Shui, Kam Tin, Shek Kong, Ping Shan, Mong Tseng		10		1			
23	Black-collared Starling	*Gracupica nigricollis*	黑領椋鳥	-	Common resident. Widely distributed in Hong Kong		1					
24	Oriental Magpie Robin	*Copsychus saularis*	鵲鴝	-	Abundant resident. Widely distributed in Hong Kong		1			1		
25	White Wagtail	*Motacilla alba*	白鶺鴒	-	Resident, common passage migrant and winter visitor. Widely distributed in Hong Kong				8			
					TOTAL	**2**	**6**	**6**	**8**	**7**	**0**	**5**

Notes:

1. Conservation and Protection Status:
   a. Cap. 170: Protected under Wild Animals Protection Ordinance, all birds in Hong Kong are protected under Cap. 170
   b. Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
   c. Fellowes – Fellowes et al. (2002): 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.
   d. CSMPS – China State Major Protection Status: Appendix I/II
   e. CITES – Under Appendix (I), Appendix (II) or Appendix (III) of Convention on International Trade in Endangered Species of Wild Flora and Fauna
2. Distribution as per AFCD database. Available at https://bih.gov.hk/en/home/index.html:
3. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse
4. References:

AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.

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Annex 6 Relative Abundance of Amphibian Species Recorded Within Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation and Protection Status[1]	Rarity in Hong Kong[2]	Distribution in Hong Kong[3]	Habitat[4/5] 300m Study Area					
							S	VA	AGL	WAL	P	WC
1	Günther's Frog	*Sylvirana guentheri*	沼蛙	-	Least Concern	Widely distributed throughout HK			+			
2	Brown Tree Frog	*Polypedates megacephalus*	斑腿泛樹蛙	-	Least Concern	Widely distributed throughout Hong Kong				+		
3	Greenhouse Frog	*Eleutherodactylus planirostris*	溫室蟾	-	-	Widely distributed throughout Hong Kong		+				
						TOTAL	**0**	**1**	**1**	**1**	**0**	**0**

Notes:

1. Conservation and Protection Status:
2. Rarity as per AFCD. 2009. The Proposed Action Plan for the Conservation of Amphibians in Hong Kong (NCSC 4/09). Annex 1.
3. Distribution as per AFCD database. Available at https://bih.gov.hk/en/home/index.html
4. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse
5. Relative abundance: +: Scarce (1-5), ++: Uncommon (6-20), +++: Common (20 - 50), ++++: Abundant (>50)
6. References:

AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.

AFCD. 2009. The Proposed Action Plan for the Conservation of Amphibians in Hong Kong (NCSC 4/09). Annex 1. Accessed from <http://www.epd.gov.hk/epd/textonly/english/boards/advisory_council/files/ncsc_paper04_2009.pdf> in Sep 2014

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IUCN. (2024). The IUCN Red List of Threatened Species. Accessed from <http://www.iucnredlist.org> in August 2024.

Appendix 7 Maximum Count of Reptile Species Recorded Within Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation and Protection Status	Distribution in Hong Kong[1]	Habitat[2] 300m Study Area					
						S	VA	AGL	WAL	P	WC
8	Chinese Gecko	*Gekko chinensis*	壁虎	-	Widely distributed throughout Hong Kong		2				
					TOTAL	**0**	**1**	**0**	**0**	**0**	**0**

Notes:

1. Distribution as per AFCD database. Available at https://bih.gov.hk/en/home/index.html

2. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Feb 2022.

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Annex 7 Maximum Count of Butterfly Species Recorded within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Consevation/ Protection Status [1]	Rarity in Hong Kong [2]	Distribution in Hong Kong [3]	Habitat[4] 300m Study Area					
							S	VA	AGL	WAL	P	WC
1	Pale Grass Blue	*Zizeeria maha*	酢漿灰碟	-	Very Common	Widely distributed throughout Hong Kong.		3				
2	Plum Judy	*Abisara echerius*	蛇目褐蜆蝶	-	Very Common	Widely distributed throughout Hong Kong.	1					
3	Blue Tiger	*Tirumala limniace*	青斑蝶	-	Common	Widely distributed throughout Hong Kong.	2					
4	Dark-brand Bush Brown	*Mycalesis mineus*	小眉眼蝶	-	Very Common	Widely distributed throughout Hong Kong.		1				
5	Red Helen	*Papilio helenus*	玉斑鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.		1				
6	Paris Peacock	*Papilio paris*	巴黎翠鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.	1					
7	Common Mormon	*Papilio polytes*	玉帶鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.		1				
8	Indian Cabbage White	*Pieris canidia*	東方菜粉蝶	-	Very Common	Widely distributed throughout Hong Kong.			3	5		
						TOTAL	**3**	**4**	**1**	**1**	**0**	**0**

Notes:

1. Conservation and Protection Status:
2. Rarity in Hong Kong refers to:
Chan, A., Cheung, J., Sze, P., Wong, A., Wong, E. and Yau, E. 2011. A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity 21: 1-12
3. Distribution in Hong Kong refers to AFCD database: AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.
4. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse
5. References:

AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.
Chan, A., Cheung, J., Sze, P., Wong, A., Wong, E. and Yau, E. 2011. A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity 21: 1-12

Annex 8 Maximum Count of Odonate Species Recorded within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Consevation/ Protection Status	Rarity in Hong Kong [1]	Distribution in Hong Kong [2]	Habitat[3] 300m Study Area					
							S	VA	AGL	WAL	P	WC
1	Red-faced Skimmer	*Orthetrum chrysis*	華麗灰蜻	-	Abundant	Widely distributed in pools and marshy areas adjacent to flowing streams throughout Hong			1			
2	Wandering Glider	*Pantala flavescens*	黃蜻	-	Abundant	Widely distributed all over Hong Kong	1	20	8			8
3	Variegated Flutterer	*Rhyothemis variegata arria*	斑麗翅蜻	-	Common	Widely distributed in marshes, ponds and tanks throughout Hong Kong		1	2			2
					TOTAL		**1**	**2**	**3**	**0**	**0**	**2**

Notes:

1. Rarity as per AFCD. 2014.: Available at http://www.afcd.gov.hk/english/conservation/hkbiodiversity/database/search.asp?lang=en.
2. Distribution as per AFCD database. Available at https://bih.gov.hk/en/home/index.html
3. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse
4. References: AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.

Annex 9 Presence of Freshwater Fauna Recorded within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status	Habitat[1/2] 300m Study Area					
					S	VA	AGL	WAL	P	WC
Freshwater Fish										
1	Wild Carp	*Hemiculter leucisculus*	藍刀	-						++
2	Nile Tilapia	*Oreochromis niloticus*	尼羅口孵非鯽	-						+++
				TOTAL	**0**	**0**	**0**	**0**	**0**	**2**

Notes:

1. Habitats: S = Shrubland, VA=Village Area, AGL = Abandoned Agricultural Land, WAL = Wet Agricultural Land, P = Pond, WC = Watercourse

2. Relative abundance: +: Scarce (1-5), ++: Uncommon (6-20), +++: Common (20 - 50), ++++: Abundant (>50)

3. References:

AFCD. 2024. Hong Kong Biodiversity Information Hub. Accessed from <https://bih.gov.hk/en/home/index.html> in Aug 2024.

Fellowes *et al* . 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. Memoirs of the Hong Kong Natural History Society 25:123-159.

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