

Decommissioning of West Ash Lagoon in Tsang Tsui

Project Profile

July 2024



TABLE OF CONTENTS

| | | |
|----------|--|-----------|
| 1 | BASIC INFORMATION..... | 1 |
| 1.1 | Project Title | 1 |
| 1.2 | Purpose and Nature of the Project..... | 1 |
| 1.3 | Name of Project Proponent..... | 1 |
| 1.4 | Site Location and History | 1 |
| 1.5 | Scope and Scale of Project..... | 1 |
| 1.6 | Number and Type of Designated Project to be Covered by This Project Profile..... | 2 |
| 1.7 | Name and Telephone Number of Contact Person(s) | 2 |
| 2 | OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME..... | 4 |
| 2.1 | Project Planning and Implementation | 4 |
| 2.2 | Project Programme | 4 |
| 2.3 | Interactions with Other Projects | 4 |
| 3 | MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT | 6 |
| 3.1 | General | 6 |
| 3.2 | Existing and Planned Sensitive Receivers and Sensitive Parts of the Natural Environment | 6 |
| 4 | POTENTIAL IMPACTS ON THE ENVIRONMENT | 10 |
| 4.1 | Preliminary Design of the Decommissioning Works of West Ash Lagoon | 10 |
| 4.2 | Potential Environmental Impacts during Decommissioning Phase | 11 |
| 4.3 | Potential Environmental Impacts upon completion of Decommissioning Phase | 19 |
| 5 | ENVIRONMENTAL MITIGATION MEASURES TO BE INCORPORATED IN THE DECOMMISSIONING PHASE AND COMPLETION OF DECOMMISSIONING PHASE AND ANY FURTHER ENVIRONMENTAL IMPLICATION | 20 |
| 5.1 | Decommissioning Phase | 20 |
| 5.2 | Completion of Decommissioning Phase | 26 |
| 5.3 | Environmental Monitoring and Audit (EM&A) | 27 |
| 6 | SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES | 28 |
| 7 | USE OF PREVIOUSLY APPROVED ENVIRONMENTAL IMPACT ASSESSMENT REPORTS..... | 37 |
| 7.1 | Previously Approved EIA Reports..... | 37 |
| 8 | CONCLUSION | 39 |

List of Figures

- Figure 1.1 Project Location Plan
- Figure 3.1 Location of Representative Air Sensitive Receiver
- Figure 3.2 Noise Study Area
- Figure 3.3 Locations of Representative Water Sensitive Receivers
- Figure 3.4 Terrestrial Ecological Impact Study Area and Survey Locations
- Figure 3.5 Habitat Map and Locations of Species of Conservation Importance (Recorded in Verification Survey)
- Figure 3.6 Consultation Zone of WENT Landfill and WENTX

List of Appendices

- Appendix A List of Reviewed Literature for Ecological Baseline Study
- Appendix B Methodology of Verification Survey
- Appendix C Representative Photos of Habitats and Species of Conservation Importance
- Appendix D Flora Species Recorded within Study Area
- Appendix E Fauna Species Recorded within Study Area
- Appendix F Evaluation of Habitats within Study Area
- Appendix G Qualification of Surveying Staff

1 Basic Information

1.1 Project Title

- 1.1.1.1. Decommissioning of West Ash Lagoon in Tsang Tsui (hereinafter referred to as “the Project”).

1.2 Purpose and Nature of the Project

- 1.2.1.1. The purpose of the Project is to decommission the west ash lagoon in Tsang Tsui to provide useful land for future developments.

1.3 Name of Project Proponent

- 1.3.1.1. The Project Proponent is Waste Infrastructure Division of Environmental Protection Department (EPD), the Government of the Hong Kong Special Administration Region.

1.4 Site Location and History

- 1.4.1.1. The Tsang Tsui Ash Lagoons, comprising the west, middle and east ash lagoons, are located at Nim Wan, Tuen Mun. The Project site is located at the west ash lagoon with a site area of approximately 22.1 ha. The west ash lagoon, along with the middle and east ash lagoons, was constructed in the 1980s and leased to the Castle Peak Power Company Limited (CAPCO) for storage and disposal of pulverised fuel ash (PFA), which eventually would be filled and drained according to its design. The west ash lagoon was constructed and operated before the Environmental Impact Assessment Ordinance (EIAO) came into effect on 1 April 1998, so the original operation at the ash lagoon was exempted from the EIAO. The west ash lagoon was surrendered to the Government in 2023. The Government has been taking appropriate environmental precautionary measures since mid-December 2023, including covering the PFA surface with fill materials, to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts. Implementation of environmental precautionary measures for the west ash lagoon is on-going and scheduled for completion in late 2024 / early 2025.
- 1.4.1.2. The western portion of the middle ash lagoon, located to the east of the Project site, has been decommissioned and developed into the Tsang Tsui Columbarium and Garden of Remembrance in 2020 and 2021, respectively. The remaining portion of middle ash lagoon is currently a works area for decommissioning works under the Environmental Permit No.: FEP-01/618/2022. The Project site is bounded by the hillside to the south and coastal water (Deep Bay) to the north and west. The Black Point Power Station (BPPS) is located to the southwest of the Project site. The Project location plan is shown in **Figure 1.1**.

1.5 Scope and Scale of Project

- 1.5.1.1. The proposed decommissioning works of this Project mainly involve covering of at least 1m thick general fill above the PFA at west ash lagoon, as well as installation of temporary surface drainage system. Site clearance such as vegetation clearance might be required prior to the decommissioning works. A temporary construction site office, equipped with air-conditioning & ventilation system and not relying on opened window/door for ventilation, will be provided within the Project site.
- 1.5.1.2. The Project will provide flat buildable land for future development and potential environmental impact associated with future development of the site is not within the scope of this Project.

1.6 Number and Type of Designated Project to be Covered by This Project Profile

- 1.6.1.1. The proposed Project is classified as a Designated Project under Schedule 2, Part II, Item 8 – “*Decommissioning Projects: A waste disposal facility for pulverized fuel ash, furnace bottom ash or gypsum*” under the Environmental Impact Assessment Ordinance (EIAO), Cap 499.
- 1.6.1.2. This Project Profile is prepared to establish and demonstrate the environmental acceptability of the Project, and to seek permission from the Director of Environmental Protection to apply directly for an Environmental Permit for the Project under Section 5(1)(b) and 5(9) of the EIAO.
- 1.6.1.3. The proposed decommissioning works in the Project are considered to be minor in nature and the proposed mitigation measures (**Section 5**) have been proven to be effective in previously approved EIA Reports. As such, adverse environmental impact is not anticipated and requirements of the Technical Memorandum on the Environmental Impact Assessment Ordinance (EIAO-TM) considered to be fulfilled. Further details on the Project are presented in the subsequent sections.

1.7 Name and Telephone Number of Contact Person(s)

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2 Outline of Planning and Implementation Programme

2.1 Project Planning and Implementation

2.1.1.1. The Project involves decommissioning of the west ash lagoon and is classified as a Designated Project under Schedule 2, Part II, Item 8 of the EIAO. The Project will be implemented by Contractor(s) to be appointed at a subsequent stage.

2.2 Project Programme

2.2.1.1. The tentative programme for the decommissioning work would be approximately 6 months, and tentatively scheduled to commence in 2026.

2.3 Interactions with Other Projects

2.3.1.1. The West New Territories Landfill Extension (WENTX) and Development of Integrated Waste Management Facilities Phase 2 (I-PARK2) are identified as potential concurrent projects in the vicinity of the Project during the decommissioning stage in 2026.

West New Territories Landfill Extension (WENTX)

2.3.1.2. The WENTX is located approximately 430m to the southeast of the Project Site. The WENTX contract was awarded in August 2023. It involves the development of a landfill extension with a waste filling area of about 94 ha and a target void space of no less than 76 Mm³ on the western side of the existing West New Territories (WENT) Landfill.

2.3.1.3. The WENTX comprises 4 stages, i.e. construction, operation, restoration and aftercare phases and will start to receive waste upon closure of the existing WENT Landfill. The construction of waste filling cells for WENTX would be divided into phases. The initial works phase was commenced for commencement of waste intake in 2026 tentatively, including the following major construction activities.

- Modification of Tsang Kok Stream (TKS) Outfall.
- Site formation for establishing an Eastern Platform.
- Rock crushing at the Eastern Platform and TKS Outfall area.
- Site formation for establishing the initial phase of landfill cells.
- Building works of waste infrastructure, including site office, leachate treatment facilities, landfill gas (LFG) treatment facilities, LFG power generators, etc.
- Development of new barging points for material transportation.

2.3.1.4. The remaining works phase for the construction of other landfill cells would continue until late 2030s, subject to the project development. It is anticipated that waste filling

at WENTX would commence in 2026. Waste infrastructure, such as leachate treatment facilities, LFG treatment facilities and LFG power generators, would be under operation.

Development of Integrated Waste Management Facilities Phase 2 (I-PARK2)

- 2.3.1.5. The development of I-PARK2 comprises the construction and operation of a waste-to-energy facility at middle ash lagoon to treat municipal solid waste (MSW) using advance incineration technology. The design treatment capacity of I-PARK2 would be 6,000 tonnes per day (tpd) of MSW. The energy from waste incineration will be recovered for electricity generation.
- 2.3.1.6. During construction phase, I-PARK2 will involve the formation of land and the associated roads, drains and other essential utilities, followed by foundation works, construction of buildings and installation of plants and equipment for the various systems. Modification of the existing artificial seawall to the north of the project site of I-PARK2 will be required for the construction of berthing facility for loading and unloading of waste, incineration ashes and recycled products by marine vessels.
- 2.3.1.7. During operation phase, I-PARK2 will receive and handle MSW as its normal feed stock.
- 2.3.1.8. The potential concurrent projects are summarized in **Table 2.1**.

Table 2.1 Summary of Potential Concurrent Project

| Project Title | Concurrent Works | Tentative Construction Period |
|---|---|---|
| West New Territories Landfill Extension | Initial works (including site formation, TKS outfall modification, rock crushing, building works of waste infrastructure and development of new barging points for material transportation) | The WENTX contract was awarded in 2023 for construction of waste filling cells in phases and will commence waste intake in 2026 tentatively |
| Development of Integrated Waste Management Facilities Phase 2 | Construction works of I-PARK2 | 2026 to early 2030s |

3 Major Elements of the Surrounding Environment

3.1 General

- 3.1.1.1. The total area of the Project site is approximately 22.1 ha. It comprises an approximately 16.4 ha ash lagoon area, 2.5 ha plantation, 0.7 ha wasteland and 2.5 ha paved area. The ash lagoon area is located in the middle portion of the Project site. The remaining areas (along the edge and seawall) are paved and plantation / wasteland areas. The decommissioning works would be carried out within the ash lagoon area. There is neither direct impact on landscape with distinctive character / resources, nor pronounced visual change from key public viewing points or on existing visually sensitive areas and major visual resources enjoyed by the public being affected by the decommissioning works.
- 3.1.1.2. The Tsang Tsui Columbarium and Garden of Remembrance are located immediately to the east of the Project site, while the Black Point Power Station is located to the southwest of the Project Site. The coastline is running along the western and northern boundaries of the Project site. There is also a hillside in the adjoining area to the south.

3.2 Existing and Planned Sensitive Receivers and Sensitive Parts of the Natural Environment

Air Quality

- 3.2.1.1. The air quality study area covers an area within 500m from the Project boundary. The representative existing Air Sensitive Receiver (ASR) identified within the study area is listed in **Table 3.1** and location presented in **Figure 3.1**. No planned ASR has been identified within the study area.

Table 3.1 Representative Air Sensitive Receiver

| ASR ID | Description | Existing / Planned | Use | No. of Storey | Approximate Horizontal Distance from Project Boundary (m) |
|--------|----------------------------------|--------------------|--------------------------------------|---------------|---|
| ASR1 | Office of Tsang Tsui Columbarium | Existing | Government, Institution or Community | 1 | 35 |

Note: Central air conditioning is provided for the office of Tsang Tsui Columbarium.

Noise

- 3.2.1.2. The noise study area covers an area within 300m from the Project boundary as shown in **Figure 3.2**. According to the site visit on 7 May 2024, there was a Hung Shing Temple (洪聖宮廟) nearby which was found to be abandoned and therefore not identified as noise sensitive receiver (NSR). There is no existing, committed or planned NSR identified within the 300m study area.

Water Quality

- 3.2.1.3. The water quality study area covers an area within 500m from the Project boundary. It falls within the Deep Bay Water Control Zone (WCZ) defined under the Water Pollution Control Ordinance (WPCO). The representative existing Water Sensitive Receivers (WSRs) have been identified in **Table 3.2** below and their locations presented in **Figure 3.3**. No planned WSR has been identified within the study area.

Table 3.2 Representative Water Sensitive Receivers

| WSR ID | Name | Description |
|---------------|---|--|
| W1 | Water channel to the south of middle ash lagoon | Man-made water channel with concrete bed |
| W2 | Tsang Tsui Stream | Partially disturbed natural stream |
| W3 | Coastal waters of Deep Bay WCZ | - |

Ecology

- 3.2.1.4. The ecological study area covers an area within 500m from the Project boundary. The ecological baseline of the study area has been established from literature review (**see Appendix A**) and terrestrial ecological verification survey. The verification survey covered habitat and vegetation, mammal, bird, herpetofauna, butterfly and odonate, firefly and aquatic fauna surveys. The verification surveys were conducted during both day and night time between March and May 2024, covering dry and wet seasons. The study area, survey transects as well as the sampling points are presented in **Figure 3.4**. The methodology of the verification survey is provided in **Appendix B**.
- 3.2.1.5. No recognized sites of conservation importance are identified within the 500m study area from the Project site.
- 3.2.1.6. Based on a review of the recent aerial photos and several approved EIA studies, habitats within the study area were generally semi-natural or entirely artificial, of which the identified habitats are ash lagoon, wasteland, grassland/shrubland mosaic, woodland and developed areas, plantation and watercourses. During the verification survey, seven habitats, including woodland (15.4ha), plantation (10.9ha), shrubland (24.8ha), developed area (23.3ha), wasteland (20.2ha), ash lagoon (16.4ha), and watercourse (0.6km) were identified within the study area. A total of 131 flora species were recorded within the study area during the verification. A total of 5 mammalian, 65 avifauna, 6 amphibian, 4 reptile, 21 butterfly, 7 odonate, and 1 freshwater fish species were recorded while no firefly species were recorded within the study area. The habitats and the indicative locations of species of conservation importance recorded in the verification surveys are shown in **Figure 3.5**. Representative photographs of each habitat are presented in **Appendix C**. The flora and fauna species recorded within the study area during the verification survey are presented in **Appendix D** and **Appendix E**, respectively.

- 3.2.1.7. According to the verification survey, the Project site was comprised of ash lagoon (16.4ha), wasteland (0.7ha), developed area (2.5ha) and plantation (2.5ha). The ash lagoon (i.e. west ash lagoon) was used by CAPCO for PFA storage since 1980s. PFA filling activity in the ash lagoon had been ceased for a few years and the lagoon was surrendered to the Government in 2023. The Government has been taking appropriate environmental precautionary measures, including covering the PFA surface with fill materials, to prevent the deposited PFA from causing potential environmental impacts, since mid-December 2023. Upon the verification survey, most of the lagoon area is filled with water and the precautionary filling works has been observed. Herb species, such as *Leucaena leucocephala* and *Neyraudia reynaudiana* were recorded surrounding west ash lagoon. *Phragmites australis* was also recorded in the water. The pond-like status of the ash lagoon was only a transient stage of the overall life-cycle of the west ash lagoon which eventually would be filled and drained according to its design.
- 3.2.1.8. Wasteland within the Project site is recorded between west ash lagoon and Tsang Tsui Columbarium. Limited vegetation was recorded, including *Bidens Alba*, *neyraudia reynaudiana*, *Leucaena leucocephala*. Developed Area within the Project Site is mostly paved with concrete. Some area of this habitat has also been taken as temporary works area as the filling works under environmental precautionary measures being carried out. Scarce vegetation is recorded in this habitat. Exotic species such as *Leucaena leucocephala*, *Lantana camara*, *Mikania micrantha*, and *Bidens alba* were recorded in this habitat. Plantation within the Project Site is mostly steep slope. *Celtis sinensis*, *Ficus macrocarpa*, *Acacia auriculiformis* were recorded. Herb species such as *Neyraudia reynaudiana* was also recorded. No floral species of conservation importance were recorded within the Project site.
- 3.2.1.9. A total of 17 avifauna species of conservation importance, and 3 mammalian species of conservation importance were recorded within the Project site during the verification survey. The avifauna species of conservation importance recorded were mostly waterbirds. The recorded species include Northern Shoveler, Eurasian Wigeon, Tufted Duck, Greater Coucal, Eurasian Coot, Little Grebe, Black-winged Stilt, Little Ringed Plover, Black-crowned Night Heron, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret, Black Kite, Pied Kingfisher, Collared Crow, White-shouldered Starling. The mammalian species of conservation importance recorded include Leopard Cat, Japanese Pipistrelle and Least Pipistrelle. Except Eurasian Coot and Least Pipistrelle, most of the species of conservation importance identified within Project site are common in Hong Kong. Breeding activities of Little Grebe, an avifauna species of conservation importance, were recorded previously in literature. Little Grebe is a common resident in Hong Kong and is found in Deep Bay Area. Based on the results of the verification survey between March and May 2024, no active nests, chicks or juveniles of Little Grebe were observed / recorded in the west ash lagoon. Breeding activities of Little Ringed Plover was previously recorded in the literature. Based on the results of the verification surveys, there were no records of breeding activities of Little Ringed Plover or other avifauna.

- 3.2.1.10. The ecological values of ash lagoon, developed area, wasteland and plantation within the Project site considered as very low to “low to moderate”.
- 3.2.1.11. For the study area outside the Project site, six habitats including woodland, plantation, shrubland, developed area, wasteland and watercourse have been identified. Three flora species of conservation importance, including *Cibotium barometz*, *Diospyros vaccinioides* and *Nepenthes mirabilis* were previously recorded in woodland in the literature. No floral species of conservation importance were recorded within woodland as well as other habitats within the study area during the verification survey. A total of 13 species of conservation importance (9 avifauna, 3 mammal and 1 odonate) were recorded within the study area but outside the Project site during the verification survey. The ecological values of the habitats within the study area outside the Project site considered as very low to “low to moderate”. The evaluation of all habitats as discussed in **Sections 3.2.1.10** and **3.2.1.11** is provided in **Appendix F**.

Cultural Heritage

- 3.2.1.12. No Heritage Sites including declared monuments, proposed monuments, graded historic sites and buildings, Government historic sites identified by Antiquities and Monuments Office (AMO), and sites of archaeological interest (SAI) have been identified within 50m from the Project boundary. The closest cultural heritage resource to the Project site is the Tsang Tsui SAI, which is located at more than 50m away to the southeast.

Health Impact

- 3.2.1.13. Under this Project, the proposed decommissioning works involve covering of at least 1 m thick general fill above the PFA at the west ash lagoon. As the Government has already been taking appropriate environmental precautionary measures including covering the PFA surface with fill materials to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts, handling of PFA such as levelling of PFA would be minimized as far as practicable under this Project and neither excavation nor off-site disposal of PFA would be required. The outdoor construction workers and site office workers of this Project may be subject to increased radiation exposure due to radon flux from the PFA stored within the Project site. Office of Tsang Tsui Columbarium is identified as the representative air sensitive receiver as listed in **Table 3.1** above which is about 35m away from the Project boundary.

Landfill Gas Hazards

- 3.2.1.14. As shown in **Figure 3.6**, the Project site is located outside the 250m consultation zone of the existing WENT Landfill and the proposed WENTX. Landfill gas hazard associated with this Project is not anticipated.

4 Potential Impacts on the Environment

4.1 Preliminary Design of the Decommissioning Works of West Ash Lagoon

- 4.1.1.1. The proposed works for decommissioning of the west ash lagoon mainly involve covering of at least one-meter thick general fill above the PFA at west ash lagoon, as well as installation of temporary surface drainage. Site clearance such as vegetation clearance might be required prior to the decommissioning works.
- 4.1.1.2. As discussed in **Section 1.4.1.1**, environmental precautionary measures including covering the PFA with general fill are being implemented at the Project site. Prior to the commencement of this Project, the PFA within the Project site would have already been covered by a layer of general fill. Under this Project, general fill will be further deposited and compacted to at least 1m thick above the PFA surface to form a stable ground for any future development. Handling of PFA such as levelling of PFA would be minimized as far as practicable under this Project and neither excavation nor off-site disposal of PFA would be required. The PFA would be covered and would not be exposed during the decommissioning phase of this Project.
- 4.1.1.3. The composition of general fill material used shall follow *General Specification for Civil Engineering Works, 2020 Edition, Section 6 Earthworks*. The general fill material used for filling activities shall mainly consist of natural soil material and rock. The general fill will be delivered to the Project site via the existing access roads. It is expected that backhoes, vibratory rollers and dozers will be adopted for filling and compaction works. The tentative proposed powered mechanical equipment (PME) for the decommissioning works include 12 backhoes, 12 vibratory rollers and 8 dozers.
- 4.1.1.4. For conservative purposes, it is estimated that approximately 60 trips of trucks per day would be required for importing fill materials. The tentative route for importing fill material would be via Lung Mun Road, Lung Kwu Tan Road, and Nim Wan Road. Given that the hourly traffic (i.e. 6 veh/hr) generated by the Project would be insignificant and outside night time or early morning (i.e. between 11pm and 7am), adverse road traffic noise impact would not be anticipated. Based on broad brush assessment, the number of induced trucks would not cause exceedance of capacity of the nearby roads and cause traffic congestion. Hence, no adverse air quality impact associated with induced truck traffic would be anticipated. Indirect ecological impacts from noise disturbance / air quality impact associated with construction vehicles would not be anticipated. In order to minimize the potential vehicular emission impact, limited marine transport for importing fill materials would be considered if practicable.
- 4.1.1.5. The existing seawall will not be altered during the proposed decommissioning works. Site clearance such as vegetation clearance might be required prior to the decommissioning works. If tree removal is required, the requirements under Development Bureau Technical Circular (Works) No. 4/2020 shall be followed.

- 4.1.1.6. Perimeter cut-off drains directing off-site water around the Project site and site surface water drainage outlet pipe will be constructed for temporary site drainage. Sand/silt traps will also be provided to remove sand/silt particles from surface runoff to meet the effluent discharge standards stipulated in the *Technical Memorandum on Standards for Effluents discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)* for Deep Bay WCZ. The Contractor shall provide the design of the temporary drainage system prior to the commencement of the decommissioning works.

4.2 Potential Environmental Impacts during Decommissioning Phase

4.2.1 Air Quality

- 4.2.1.1. With reference to the proposed decommissioning method presented in **Section 4.1**, the potential source of air quality impact would include the fugitive dust arising from the covering of general fill above the decommissioning works area and installation of temporary surface drainage system. As the Government has already been taking appropriate environmental precautionary measures including covering the PFA surface with fill materials to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts, handling of PFA such as levelling of PFA would be minimized as far as practicable under this Project and neither excavation nor off-site disposal of PFA would be required. There will be no exposed PFA surfaces and no PFA contaminated dust emission arising from this Project.
- 4.2.1.2. Significant dusty activities are not anticipated due to the decommissioning works. No adverse construction dust impact at the nearby ASR is anticipated with the effective implementation of good site practices and dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation.
- 4.2.1.3. It is expected that 12 backhoes, 12 vibratory rollers and 8 dozers would be used for the decommissioning works. Any idling machines / PMEs would be switched off and not all the construction machinery would be operated at the same time. In addition to the statutory requirements of the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, the administrative requirements under Development Bureau Technical Circular (Works) No. 1/2015 regarding the use of approved non-road mobile machinery and Development Bureau Technical Circular (Works) No. 13/2020 regarding timely application of temporary electricity as well as wider use of electric vehicles should be observed, and electric power supply should be provided as far as practicable for on-site construction machinery to minimize gaseous emissions. Adverse air quality impact from the construction machinery would not be expected with implementation of mitigation measures recommended.
- 4.2.1.4. In order to minimize potential impact to the nearby ASR, the Contractor should liaise with Food and Environmental Hygiene Department (FEHD), the operator of the Tsang Tsui Columbarium and Garden of Remembrance and decommissioning works should be scheduled to avoid days with higher volume of visitors (e.g. Ching Ming Festival and Chung Yeung Festival).

4.2.1.5. The potential air quality impact arising from this Project would be minimized with proper implementation of the recommended mitigation measures in **Section 5.1.1**. The initial works phase of the WENTX and I-PARK2 would be conducted concurrently with the decommissioning phase of this Project. Air quality mitigation measures would be separately proposed under WENTX and I-PARK2 projects to minimize the air quality impact. Also, all major works proposed under the initial works of the WENTX would be undertaken over 500m away from the boundary of this Project. No adverse cumulative air quality impact would be expected.

4.2.2 Noise

4.2.2.1. The potential sources of construction noise impact arising from the decommissioning activities presented in **Section 4.1** would be the use of powered mechanical equipment (PME) such as backhoe, vibratory roller and dozer. It is anticipated that the noise nuisance arising from the decommissioning works would be minor in view of the nature of the decommissioning activities, limited number of PME in use at the Project site and that no identified NSRs are located within the 300m study area for noise (refer to **Figure 3.2**). With the implementation of the recommended mitigation measures and good site practices in **Section 5.1.2**, adverse construction noise impact is not anticipated.

4.2.2.2. No construction work during restricted hours is expected. A Construction Noise Permit is required under the Noise Control Ordinance (NCO) in case the decommissioning works are to be carried out during restricted hours, that is between 1900 - 0700 or at any time on a general holiday (including Sunday). Despite any description made in this Project Profile, there is no guarantee that a Construction Noise Permit (CNP) will be issued for the project construction. The Noise Control Authority will consider a well-justified CNP application, once filed, for construction works within restricted hours as guided by the relevant Technical Memoranda issued under the Noise Control Ordinance. The Noise Control Authority will take into account of contemporary conditions / situations of adjoining land uses and any previous complaints against construction activities at the site before making his decision in granting/renewing a CNP. Nothing in this Project Profile shall bind the Noise Control Authority in making his decision. Failure to comply with any such conditions will lead to cancellation of the CNP and prosecution action under the NCO.

4.2.2.3. Referring to **Section 3.2**, there are no NSRs identified within 300m study area for noise. Considering the implementation of the mitigation measures / best practical means to minimize the construction noise from all the concurrent projects, cumulative noise impact during decommissioning phase of the Project is not expected.

4.2.3 Water Quality

4.2.3.1. The potential sources of water quality impact during decommissioning phase of the Project have been identified and include:

- Installation of temporary surface drainage system;

- Construction site and drainage runoff during decommissioning works;
 - Sewage effluent by on-site construction workforce;
 - Accidental spillage; and
 - Release of PFA leachate from the ash lagoon
- 4.2.3.2. Construction site runoff generated at the Project site may increase the sediment loads and concentrations of suspended solids at the WSRs. However, with the proper implementation of the mitigation measures recommended in **Section 5.1.3** to control construction site runoff and drainage from the Project site, adverse water quality impact at the identified WSRs would not be anticipated. Temporary surface drainage system would be provided at the Project site to divert the construction site runoff to silt removal facilities. The construction site runoff would be treated on-site to meet the effluent discharge standards as stipulated in the *Technical Memorandum on Standards for Effluents discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* (TM-DSS) for Deep Bay WCZ prior to discharge. The Contractor is required to apply to EPD for a discharge license for discharge of effluent from construction site under the WPCO.
- 4.2.3.3. For sewage effluent that is generated during decommissioning phase, portable chemical toilets will be provided within the construction site and adverse water quality impact is not anticipated with proper implementation of the mitigation measures proposed in **Section 5.1.3**.
- 4.2.3.4. Site drainage system and facilities will be well maintained and good construction practices will be enforced to ensure that oil, fuels and solvents are managed, stored and handled properly and do not enter the nearby water bodies. With good site practices and proper implementation of mitigation measures, adverse water quality impact is not expected.
- 4.2.3.5. With reference to the proposed decommissioning and associated works presented in **Section 4.1**, the seawall located around the Project site will not be affected by Project works and PFA leachate is not expected to be released from the Project site to the coastal waters of Deep Bay WCZ (WSR W3). Prior to the commencement of this Project, the PFA within the Project site would have already been covered by a layer of general fill after the implementation of environmental precautionary measures. As such, the release of PFA leachate associated with covering general fill on top of PFA would not be anticipated. Furthermore, no underground works is proposed and groundwater contamination due to the Project works during decommissioning phase is not expected.
- 4.2.3.6. The initial works phase of the WENTX and I-PARK2 would be conducted concurrently with the decommissioning phase of this Project. The potential water quality impact associated with this Project is considered limited provided that all the recommended mitigation measures are properly in place. Water quality mitigation measures would also be separately proposed under WENTX and I-PARK2 projects to minimize the water quality impact e.g. due to construction site runoff and wastewater generated. All major works proposed under the initial works phase of the WENTX would be

undertaken over 500m away from the boundary of this Project. No adverse cumulative water quality impact is expected.

4.2.4 Waste Management

- 4.2.4.1. The types of waste arising from the decommissioning phase of the Project would include construction and demolition (C&D) materials, chemical waste and general refuse.
- 4.2.4.2. The Project site comprises ash lagoon area, plantation / wasteland and paved area (see **Figure 1.1**). The decommissioning work would be carried out within the ash lagoon area and site clearance such as vegetation clearance might be required prior to the decommissioning works. As the Government has already been taking appropriate environmental precautionary measures including covering the PFA surface with fill materials to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts, handling of PFA such as levelling of PFA would be minimized as far as practicable under this Project and neither excavation nor off-site disposal of PFA would be required. As this Project only involves covering of general fill above the PFA surface, generation of inert C&D materials would not be anticipated. The non-inert C&D materials generated from site clearance such as vegetation clearance prior to the decommissioning works, if required, will be reused and recycled as far as practicable, e.g. yard waste suitable for recycling are expected to be transported to Y-PARK for recycling. The non-recyclable portion will be disposed of at WENT Landfill.
- 4.2.4.3. Small amount of chemical waste in the order of few cubic meters/month is expected to be generated from the maintenance of construction plants /equipment, and it should be collected by licensed chemical waste collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi. All possible opportunities should be taken to reuse and recycle the materials. Provided the chemical wastes are handled and disposed of in accordance with the mitigation and control requirements in **Section 5.1.4**, adverse environmental impacts would not be anticipated.
- 4.2.4.4. General refuse comprising of food scraps, wastepaper, empty containers, etc. are expected to be generated from construction workers working on-site. The maximum number of construction workers working on-site at any one time is approximately 50. Based on a generation rate of 0.65kg per worker per day, approximately 32.5kg of general refuse would be generated per day during decommissioning phase. With the implementation of the mitigation measures in **Section 5.1.4**, adverse environmental impacts arising from the storage, handling, and transportation of general refuse would not be anticipated.
- 4.2.4.5. The tentative transportation routings for the disposal of non-inert C&D materials, chemical waste and general refuse during decommissioning phase is presented in **Table 4.1**.

Table 4.1 Tentative Transportation Routings for Waste Disposal during Decommissioning Phase

| Type of Waste | Disposal Outlet | Tentative Transportation Routing |
|---|---------------------------------|--|
| Recyclable portion of non-inert C&D Materials (i.e. Yard Waste) | Y-PARK | Within short distance via Nim Wan Road |
| Chemical Waste | Chemical Waste Treatment Centre | Via Lung Mun Road, Tuen Mun Road/ New Territories Circular Road, Ting Kau Bridge, Tsing Sha Highway/ Route 8 |
| Non-recyclable portion of non-inert C&D Materials, General Refuse | WENT Landfill | Within short distance via Nim Wan Road |

4.2.5 Ecology

Loss of Habitat and Associated Vegetation

- 4.2.5.1. Potential direct habitat loss (permanent and temporary) would be expected to occur within the Project Site. As described in **Section 4.1**, the proposed works include covering of at least one-meter thick general fill above the PFA surface and installation of temporary surface drainage system. Considering the decommissioning work would be carried out within the ash lagoon area, permanent loss of the ash lagoon (approx. 16.4 ha) would be anticipated. It should be noted that the Government has been taking appropriate environmental precautionary measures since mid-December 2023, including covering the PFA surface with fill materials, to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts. Implementation of the environmental precautionary measures is on-going and scheduled for completion in late 2024 / early 2025. Therefore, by the time when the Project begins, the west ash lagoon would be covered by some fill materials and no longer be a waterbody. Given the low diversity of plant species, and low to moderate diversity of fauna that the ash lagoon supports, associated ecological impacts are expected to be of low significance. In case of any tree removal required, it shall be mitigated by tree transplanting / compensatory tree planting in accordance with DEVB TCW No. 4/2020.
- 4.2.5.2. Temporary works area might be required for site office and open storage, and they might locate within the existing developed area or wasteland within the Project site. Considered that these works area would occupy mainly developed area, and would not involve major construction activities, associated adverse ecological impacts are not anticipated. While a patch of plantation habitat is located within the Project Site, it is noted that there will not be any works or tree/ vegetation removal at the plantation habitats and hence no permanent or temporary loss of habitat is anticipated.
- 4.2.5.3. **Table 4.2** summarizes the extent of direct habitat loss for each habitat within the Project site.

Table 4.2 Potential Direct Habitat Loss within the Project Site

| Habitat Type | Developed Area | Wasteland | Ash Lagoon | Plantation |
|-------------------------|--|--|---|--|
| Habitat Quality | Very Low | Low | Low to Moderate | Low |
| Species | No flora species of conservation importance No fauna species of conservation importance | No flora species of conservation importance No fauna species of conservation importance | No flora species of conservation importance Three mammalian and 17 avifauna species of conservation importance | No flora species of conservation importance No fauna species of conservation importance |
| Size/Abundance | No permanent loss of habitat Temporary loss of habitat (~2.5ha) due to the establishment of temporary works area Low diversity of flora and low diversity of fauna | No permanent loss of habitat Temporary loss of habitat (~0.7ha) due to the establishment of temporary works area Low diversity of flora and low diversity of fauna | Permanent loss of ~16.4ha Low diversity of flora, and low to moderate diversity of fauna | No permanent or temporary loss of habitat Low diversity of flora and low diversity of fauna |
| Duration | Decommissioning phase | Decommissioning phase | Decommissioning phase | N/A |
| Reversibility | Reversible | Reversible | Irreversible | N/A |
| Magnitude | Low | Low | Low | N/A |
| Regional significance | Very common habitat in the context of Hong Kong | Very common habitat in the context of Hong Kong | Similar man-made habitats are common in the Northwest of the New Territories in Hong Kong. | Very common habitat in the context of Hong Kong |
| Overall Impact Severity | Low | Low | Low | No Impact |

Direct Impact on Fauna Species of Conservation Importance

4.2.5.4. A total of 17 avifauna species of conservation importance, and 3 mammalian species of conservation importance were recorded within the Project site. The avifauna species of conservation importance recorded were mostly waterbirds. For example, Northern Shoveler, Eurasian Wigeon, Tufted Duck, and Eurasian Coot are winter visitor which can be found in Deep Bay Area. Ardeids which are common resident in Hong Kong were also recorded in west ash lagoon, such as Black-crowned Night Heron, Chinese pond Heron, Grey Heron, Great Egret and Little Egret. Waders recorded included Black-winged Stilt and Little Ringed Plover, and they are common

migrant and winter visitor in Hong Kong. These waterbirds are mobile and opportunistic in nature, and alternative habitats are available in the vicinity of the Project Site, and the wider Deep Bay Area (e.g. Fishponds in Ha Pak Nai). Therefore, the impact on the aforementioned species of conservation importance is considered to be negligible.

- 4.2.5.5. Besides, it should be noted that the ash lagoon is considered a man-made transient habitat, and its quality as a habitat for waterbirds and a breeding habitat for Little Grebe had been affected by the changing conditions (e.g. water level and presence of emergent vegetation) of the lagoon. As such, the use of west ash lagoon by waterbirds as roosting ground, or even breeding ground, has always been opportunistic in nature. As mentioned previously, alternative habitats are available for waterbirds within Deep Bay Area. Besides, as discussed in **Section 4.2.5.1**, after the implementation of the environmental precautionary measures, the west ash lagoon would be covered by some fill materials and no longer be a waterbody by the time when the Project begins. Therefore, impacts to waterbirds due to the Project is negligible. Adverse impacts (direct or indirect) on the breeding ground of Little Grebe and their breeding activities due to the Project are not anticipated.
- 4.2.5.6. Mammalian species of conservation importance recorded within the Project site include Leopard Cat, Japanese Pipistrelle and Least Pipistrelle. Leopard Cat is widely distributed in countryside areas throughout Hong Kong. Patches of wooded area to the south of the Project Site, including plantation, woodland, and shrubland, could potentially be alternative habitats for Leopard Cat. Given the highly mobility of Leopard Cat, the impact on this conservation importance is considered to be negligible. For bat species of conservation importance recorded, including Japanese Pipistrelle and Least Pipistrelle, given the highly mobility of these species, the impact on these species of conservation importance is considered to be negligible.

Indirect Impacts from Disturbance to Wildlife

- 4.2.5.7. Indirect impacts from disturbances (including human activities, noise from traffic and construction equipment, and light and glare from construction site) to the habitats adjacent to the Project Site and their associated fauna would be anticipated. Construction activities would mainly occur at ash lagoon, and it is already isolated from the natural habitats nearby. Tsang Tsui Columbarium is located to the east of the ash lagoon, while the natural habitats to the south of ash lagoon, including shrubland and woodland, is separated from a strip of plantation to the immediate south of the ash lagoon. Wildlife which utilizes the natural habitats within the study area is already subject to the prevailing high level of disturbance from anthropogenic activities, including the operation of Tsang Tsui Columbarium, Black Point Power Station, WENT Landfill Extension, and the road traffic along Nim Wan Road. Most of the habitats identified in the study area supported only low abundance and low diversity of fauna. Given the wildlife residing in the existing habitats are already subject to disturbance due to anthropogenic activities, the disturbance impacts due to the Project are considered to be of low significance.

Cumulative Impacts

- 4.2.5.8. Potential ecological cumulative impact would arise if there are concurrent works during decommissioning phase of the Project and the construction phase of WENTX and I-PARK2. The decommissioning works of the Project would cause direct habitat loss of the ash lagoon but the associated direct ecological impact is considered low. No adverse cumulative ecological impact due to direct habitat loss with the concurrent projects would be anticipated. Regarding the indirect disturbances, the decommissioning works of the Project would be confined within the west ash lagoon. With implementation of mitigation measures presented in **Section 5.1.5**, the potential disturbance impact from the Project is expected to be localized and adverse cumulative disturbance impacts with the concurrent projects would not be anticipated.

4.2.6 Land Contamination

- 4.2.6.1. The west ash lagoon is situated on a reclaimed land formed during the 1980s and has been using for water / PFA storage only. No other land use or other anthropogenic activity has been identified at the Project site. Similar to the land contamination assessment findings presented in the *EIA Report for Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui, Tuen Mun* (AEIAR-186/2015) and *Project Profile for Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui* (DIR-294/2022), any potential contamination within the Project site would likely be found within the PFA constituents and subject to the PFA that has been disposed of previously at the Project site. The west ash lagoon was constructed with protective liners to prevent leakage of the stored water and PFA. There are no past records of PFA leakage and / or damage of the protective liners at the Project site. The proposed decommissioning works of this Project would involve surface works only. No disturbances to the protective liners are proposed under this Project. There would be no proposed works involving the building structures at the western boundary of the Project site under this Project. No adverse land contamination issues are expected at the Project site.
- 4.2.6.2. Referring to details of the proposed decommissioning works in **Section 4.1**, the potential sources of land contamination impact during decommissioning phase of the Project has been identified to be due to accidental leakage of chemical fuels and lubricant oils from PME used for the decommissioning works. It is expected that such accidental spills will be minimal and with the proper implementation of the proposed mitigation measures presented in **Sections 5.1.3** and **5.1.4**, no land contamination issue would arise from this Project.

4.2.7 Cultural Heritage

- 4.2.7.1. There are no historic monuments or buildings or structures, declared monuments, proposed monuments, graded historic sites/buildings and Government historic sites identified by the AMO located within or in the vicinity of the Project. The Project site does not encroach on the Tsang Tsui SAI, which is located at more than 50m away to the southeast. No direct impact to the archaeology would be anticipated. Potential

impact on cultural heritage resources is not anticipated during the decommissioning phase of the Project.

4.2.8 Health Impact

- 4.2.8.1. The potential of health impact induced by radon emission from PFA in the Tsang Tsui ash lagoons had been evaluated in detail in the past approved EIA reports for *Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui, Tuen Mun* (AEIAR-186/2015), *Development of Integrated Waste Management Facilities Phase 1* (AEIAR-163/2012) and *Sludge Treatment Facility* (AEIAR-129/2009). All these approved EIA reports indicated that the health risk from radon emissions due to excavation, filling and handling of PFA would be insignificant. According to the *EIA Report for Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui, Tuen Mun* (AEIAR-186/2015), assuming a worker works 12 hours per day with average of 26 days per month for total of 6 working month, the predicted annual effective dose is less than the annual limit of 1 mSv for general public as suggested by the International Commission on Radiological Protection. Under this Project, the proposed decommissioning works involve covering of at least 1 m thick general fill above the PFA at the west ash lagoon. As the Government has already been taking appropriate environmental precautionary measures including covering the PFA surface with fill materials to prevent the PFA deposited in the west ash lagoon from causing potential environmental impacts, handling of PFA such as levelling of PFA would be minimized as far as practicable under this Project and neither excavation nor off-site disposal of PFA would be required. Radiation exposure to the construction site workers and site office workers due to radon flux from the covered PFA is considered insignificant. Nevertheless, for the occupational health protection of workers employed by the contractor, the contractor shall observe relevant requirements promulgated by the Labour Department in respect of occupational safety and health and comply with relevant statutory requirements during the decommissioning works. With the implementation of the recommended mitigation measures listed in **Section 5.1.8**, adverse health impact associated with radon emission from PFA due to handling, transport and disposal of PFA is not anticipated.

4.2.9 Landfill Gas Hazards

- 4.2.9.1. The Project site is located outside the 250m consultation zone of the existing WENT Landfill and the proposed WENTX. Landfill gas hazard associated with this Project is not anticipated.

4.3 Potential Environmental Impacts upon completion of Decommissioning Phase

- 4.3.1.1. Upon completion of decommissioning phase of the Project, it will provide flat buildable land for future development and no adverse environmental impact is anticipated. As stated in **Section 1.5.1.2**, potential environmental impact associated with future development of the site is not within the scope of this Project.

5 Environmental Mitigation Measures to be Incorporated in the Decommissioning Phase and Completion of Decommissioning Phase and any Further Environmental Implication

5.1 Decommissioning Phase

5.1.1 Air Quality

5.1.1.1. Dust control and suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* should be implemented to control dust emissions from the Project Site. Relevant dust control and suppression measures are listed below.

- Use of regular watering to reduce emissions from exposed site surfaces and unpaved areas, particularly during dry season.
- Covering of exposed site surfaces with impervious materials or concrete paving where practicable.
- Provision of pavement to construction access road with concrete paving and provide wheel washing facility at entrance and exit.
- Skip hoist for material transport should be completely enclosed by impervious sheeting.
- Vehicle washing facilities should be provided at every vehicle exit point.
- The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore surfaces.
- Where a site boundary adjoining a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit.
- Every main construction access road should be paved with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.
- The portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials.
- Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides.
- All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction site.
- The load of dusty materials carried by vehicles leaving a construction site should be covered entirely by clean impervious sheets to ensure dusty materials do not

leak from the vehicle.

- Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly during dry periods/seasons.
- Imposition of speed limit for vehicles on unpaved site roads – the recommended limit is 10 km/hr;
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASR.
- Setting up of an environmental auditing program to monitor the construction activities in order to enforce controls and modify the method of works in the event that dusty conditions arise.

5.1.1.2. The Contractor should liaise with Food and Environmental Hygiene Department (FEHD), the operator of the Tsang Tsui Columbarium and Garden of Remembrance and decommissioning works should be scheduled to avoid days with higher volume of visitors (e.g. Ching Ming Festival and Chung Yeung Festival) in order to minimize potential air quality impact.

5.1.1.3. Electric power supply should be provided as far as practicable for on-site PME. In addition to the statutory requirements of the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, the administrative requirements under Development Bureau Technical Circular (Works) No. 1/2015 regarding the use of approved non-road mobile machinery and Development Bureau Technical Circular (Works) No. 13/2020 regarding timely application of temporary electricity as well as wider use of electric vehicles should be observed.

5.1.1.4. Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies, according to the Air Pollution Control (Construction Dust) Regulation for minimization of air quality impact from the exposed earth after completion of decommissioning phase.

5.1.2 Noise

5.1.2.1. Standard noise control measures such as the use of quieter PME, movable / temporary noise barriers, screen hoarding, etc., should be implemented by the Contractor during decommissioning phase in order to minimize the potential impact:

- Only well-maintained plant should be operated on-site and plant should be serviced regularly during decommissioning phase of the Project.
- Silencers or mufflers on construction equipment, if applicable, should be utilized and should be properly maintained.
- Mobile plant should be sited as far away from NSRs (if any) as possible.

- PME that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.
 - Material stockpiles and other structures should be effectively utilized, wherever practicable, for screening noise from on-site construction activities.
- 5.1.2.2. The EPD's "Recommended Pollution Control Clauses for Construction Contracts" and the relevant contract specifications recommended in the EPD's Practice Note for Professional Persons (ProPECC) PN 1/24 "Minimizing Noise from Construction Activities" shall be adopted so as to ensure proper implementation of the necessary mitigation measures and minimization of the potential construction noise impact by the Contractor(s). With reference to ProPECC PN 1/24, the outlined recommendations shall be implemented and the particular specifications shall be imposed in the construction contracts to ensure implementation of the recommended quieter construction equipment and control measures above by the Contractor.

5.1.3 Water Quality

- 5.1.3.1. The site practices outlined in *ProPECC PN 2/23 "Construction Site Drainage"* should be implemented in order to minimize surface runoff and the chance of erosion. The following measures should be implemented to ensure all construction runoff are well controlled, so as to minimize water quality impacts:

Construction Site Runoff and Drainage

- The construction works of temporary drainage outlet pipe shall be scheduled for dry season as far as practicable to minimize the increase of turbidity of nearby waterbodies. Silt fences shall be erected to prevent contaminated surface runoff from entering the nearby waterbodies.
- Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from construction site runoff to meet the requirements of the TM-DSS issued under the WPCO.
- Temporary drainage system should be implemented on-site to divert the site runoff generated in the decommissioning works areas to the sand/ silt removal facilities.
- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- All vehicles and plant should be cleaned before leaving the construction site to ensure no earth, mud, debris and the like is deposited outside the construction works areas.
- For the purpose of preventing soil erosion, all temporarily exposed soil / earth surfaces should be covered (e.g. by tarpaulin) immediately after the works have been completed. Earthwork final surfaces should be well compacted and

subsequent permanent work or surface protection should be immediately performed.

- Precautionary measures in accordance with Appendix A2 of ProPECC PN 2/23 "Construction Site Drainage" will be taken at any time of the year when rainstorms are likely to occur;
- Open stockpiles of construction materials on-site and exposed soil / earth surfaces should be covered with tarpaulin or similar fabric during rainstorms to prevent the washing away of construction materials, soil, silt or debris into any nearby drainage system.
- Good site practices should be implemented to remove rubbish and litter from construction site. It is recommended to clean the construction site on a regular daily basis.

Sewage from Construction Workers

- Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workers. A licensed Contractor should be responsible for the appropriate disposal of sewage and maintenance of these facilities.

Accidental Spillage of Chemical

- The Contractor is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.
- Any maintenance facilities should be located on hard standings within a bunded area and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.
- Disposal of chemical waste should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements for handling chemical waste.

5.1.4 Waste Management

5.1.4.1. The following waste management measures should be taken to control potential environmental impacts or nuisance:

- Proper handling and storage of waste by means of covers and/or water spraying system to minimize the potential environmental impact and to prevent materials from wind-blown or being washed away.
- Covering materials during heavy rainfall.

- Locating stockpiles to minimize potential environmental impacts and away from the waterfront as far as practicable.
 - CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.
- 5.1.4.2. Non-inert C&D materials generated should be reused and recycled wherever possible and disposed of at the designated landfill (i.e. WENT Landfill) only as a last resort.
- 5.1.4.3. All chemical wastes from equipment maintenance will be handled, stored, and disposed of properly in accordance with the *Waste Disposal (Chemical Waste) Regulation*. It will be collected by licensed chemical waste collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi.
- 5.1.4.4. General refuse will be stored in enclosed bins or compaction units, separate from chemical waste. A reputable waste collector should be employed by the Contractor to collect and dispose of general refuse on a daily or every second day basis to minimize odour, pest and litter impacts.

5.1.5 Ecology

- 5.1.5.1. The Project is limited to the extent of west ash lagoon. Natural habitats within the study area have been avoided.
- 5.1.5.2. The following mitigation measures shall be implemented to minimize the predicted indirect disturbance impacts.
- Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be implemented to avoid and minimize impacts to the surrounding habitats and the associated wildlife arising from the construction activities. Other good site practices such as regular water spray at dusty operations as recommended in **Section 5.1.1** shall be implemented.
 - Noise disturbance associated with the decommissioning works shall be minimized by implementation of noise control requirements stated in EPD's "Recommended Pollution Control Clauses for Construction Contracts" as well as other mitigation measures recommended in **Section 5.1.2**.
 - The good site practices outlined in ProPECC PN 2/23 "Construction Site Drainage" shall be implemented in order to properly control surface runoff. Other mitigation measures recommended in **Section 5.1.3** shall be implemented to minimize the potential water quality impacts.
 - For nighttime works, lighting required for safety purpose should keep minimal and pointed inward.
 - Clear signs should be erected on site to alert all site staff and workers about the requirement.
- 5.1.5.3. Good site practice should also be adopted to minimize potential disturbances to the surrounding habitats, including:

- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping to the surrounding habitats, especially watercourses.
 - Excavated materials will be covered and/or properly disposed of as soon as possible to avoid being washed into nearby water bodies.
 - Regularly check the site boundaries to ensure that they are not breached and that no damage occurs to surrounding ecologically sensitive habitats (e.g. mixed woodlands, shrubland/grassland and watercourses).
 - Prohibit and prevent open fires within the site boundary during construction and provide temporary firefighting equipment in the work areas.
- 5.1.5.4. Vegetation removal shall be avoided for the temporary works as far as practicable. If vegetation removal for temporary works is unavoidable, the temporarily affected area shall be reinstated after works completion under this Project.
- 5.1.5.5. As there is no significant loss of important species and habitats, compensation measure is not required.

5.1.6 Land Contamination

- 5.1.6.1. The proposed mitigation measures presented in **Sections 5.1.3** and **5.1.4** shall be implemented to mitigate the potential land contamination impact associated with accidental leakage of chemical fuels and lubricant oils from PME used for the decommissioning works.

5.1.7 Cultural Heritage

- 5.1.7.1. As cultural heritage impact would not be anticipated during the decommissioning phase, mitigation measures are not required.

5.1.8 Health Impact

- 5.1.8.1. In line with the recommendations in the *EIA Report for Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui, Tuen Mun* (AEIAR-186/2015) and *Project Profile for Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui* (DIR-294/2022), under the "As Low as Reasonably Practicable" (ALARP) Principle, and considering the site office to be located at developed area, the following precautionary measures are proposed:
- Prevention of radon influx from the PFA to the site office during decommissioning phase by providing a soil cover beneath the buildings on top of ash lagoon prior to construction works.
 - Provision of sufficient ventilation for the site office – forced and natural ventilation should be introduced properly to enhance air exchange rate in the buildings.
 - Periodic measurement of both indoor and outdoor radon concentrations during the decommissioning phase, methodology for the radon measurement should

adhere to EPD's ProPECC PN 1/99 "*Control of Radon Concentration in New Buildings*".

- 5.1.8.2. In addition, implementation of the proposed dust control and suppression measures as recommended in **Section 5.1.1** shall also minimise the potential inhalation of PFA by on-site workers.

5.1.9 Landfill Gas Hazards

- 5.1.9.1. No landfill gas hazard impact at the Project site is identified. Mitigation measures are not required.

5.2 Completion of Decommissioning Phase

5.2.1 Air Quality

- 5.2.1.1. There are no sources of air quality impact associated with the Project upon completion of decommissioning phase and as such, air quality mitigation measures are not required.

5.2.2 Noise

- 5.2.2.1. There are no noise sources associated with the Project upon completion of decommissioning phase. As such, adverse noise impact is not expected. Noise mitigation measures are not required.

5.2.3 Water Quality

- 5.2.3.1. Upon completion of decommissioning phase of the Project, there will be no water pollution sources associated with the Project. Adverse water quality impact is not expected and therefore water quality mitigation measures are not required.

5.2.4 Waste Management

- 5.2.4.1. No waste will be generated upon completion of decommissioning phase of the Project. Adverse impact associated with waste management is not expected. Waste management measures are not required.

5.2.5 Ecology

- 5.2.5.1. Upon completion of decommissioning phase of the Project, the Project site will be an open area and adverse ecological impact is not expected. Ecological mitigation measures are not required.

5.2.6 Land Contamination

- 5.2.6.1. Upon completion of decommissioning phase of the Project, there will be no sources of land contamination associated with the Project and therefore mitigation measures would not be required.

5.2.7 Cultural Heritage

- 5.2.7.1. No works would be carried out under this Project upon completion of the decommissioning phase nor there is any site of cultural heritage within 50m from the Project boundary. No cultural heritage impact would arise and therefore mitigation measures would not be required.

5.2.8 Health Impact

- 5.2.8.1. Upon completion of decommissioning phase of the Project, the Project site will be an open area with at least one-meter thick general fill above the PFA, and adverse health impact is not expected. No mitigation measure is required.

5.2.9 Landfill Gas Hazards

- 5.2.9.1. The Project site is located outside the 250m consultation zone of the existing WENT Landfill and the proposed WENTX. Landfill gas hazard associated with this Project is not anticipated upon completion of decommissioning phase of the Project. No mitigation measure is required.

5.3 Environmental Monitoring and Audit (EM&A)

- 5.3.1.1. With the implementation of recommended mitigation measures, no adverse environmental impacts during the decommissioning phase would be anticipated. Environmental site audit shall be conducted by an independent and competent professional person during the decommissioning phase to ensure that the recommended mitigation measures are implemented properly.
- 5.3.1.2. As stated in **Section 5.2** above, upon completion of decommissioning phase of the Project, adverse environmental impacts are not anticipated and hence, EM&A after completion of decommissioning works is not required.

6 Summary of Potential Environmental Impacts and Mitigation Measures

6.1.1.1. The potential environmental impacts and proposed mitigation measures to be incorporated during decommissioning phase of the Project are summarized in **Table 6.1**, which would be included in the construction contract document. The Project Proponent would supervise and monitor the implementation of these measures by the Contractor. Upon completion of decommissioning phase, the Project site will be an open area with at least one-meter thick general fill above the PFA, adverse environmental impact is not expected and mitigation measures are not considered to be required.

Table 6.1 Summary of Potential Environmental Impacts and Mitigation Measures

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|-------------------------------------|--|----------------------|-------------------------------------|
| <i>Decommissioning Phase</i> | | | |
| Air Quality | <p>Dust control and suppression measures stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i> should be implemented to control dust emissions from the Project Site. Relevant dust control and suppression measures are listed below:</p> <ul style="list-style-type: none"> • Use of regular watering to reduce emissions from exposed site surfaces and unpaved areas, particularly during dry season. • Covering of exposed site surfaces with impervious materials or concrete paving where practicable. • Provision of pavement to construction access road with concrete paving and provide wheel washing facility at entrance and exit. • Skip hoist for material transport should be completely enclosed by impervious sheeting. • Vehicle washing facilities should be provided at every vehicle exit point. • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore surfaces. • Where a site boundary adjoining a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be | Contractor | 5.1.1 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|--|--|-----------------------------|--|
| | <p>provided along the entire length except for a site entrance or exit.</p> <ul style="list-style-type: none"> • Every main construction access road should be paved with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet. • The portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials. • Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides. • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction site. • The load of dusty materials carried by vehicles leaving a construction site should be covered entirely by clean impervious sheets to ensure dusty materials do not leak from the vehicle. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly during dry periods/seasons. • Imposition of speed limit for vehicles on unpaved site roads – the recommended limit is 10 km/hr; • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASR. • Setting up of an environmental auditing program to monitor the construction activities in order to enforce controls and modify the method of works in the event that dusty conditions arise. <p>The Contractor should liaise with Food and Environmental Hygiene Department (FEHD) (operator of the Tsang Tsui Columbarium and Garden of Remembrance (ASR3)) and decommissioning</p> | | |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|--|----------------------|-------------------------------------|
| | <p>works should be scheduled to avoid days with higher volume of visitors in order to minimize potential air quality impact.</p> <p>Electric power supply should be provided as far as practicable for on-site PME. In addition to the statutory requirements of the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, the administrative requirements under Development Bureau Technical Circular (Works) No. 1/2015 regarding the use of approved non-road mobile machinery and Development Bureau Technical Circular (Works) No. 13/2020 regarding timely application of temporary electricity as well as wider use of electric vehicles should be observed.</p> <p>Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies, according to the Air Pollution Control (Construction Dust) Regulation for minimization of air quality impact from the exposed earth after completion of decommissioning phase</p> | | |
| Noise | <p>Standard noise control measures such as the use of quieter PME, movable / temporary noise barriers, screen hoarding, etc., should be implemented by the Contractor during decommissioning phase.in order to minimize the potential impact:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during decommissioning phase of the Project. • Silencers or mufflers on construction equipment, if applicable, should be utilized and should be properly maintained. • Mobile plant, should be sited as far away from NSRs (if any) as possible. • PME that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. • Material stockpiles and other structures should be effectively utilized, wherever practicable, for | Contractor | 5.1.2 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|---|----------------------|-------------------------------------|
| | <p>screening noise from on-site construction activities.</p> <p>The EPD's "Recommended Pollution Control Clauses for Construction Contracts" and the relevant contract specifications recommended in the EPD's Practice Note for Professional Persons (ProPECC) PN 1/24 "Minimizing Noise from Construction Activities" shall be adopted so as to ensure proper implementation of the necessary mitigation measures and minimization of the potential construction noise impact by the Contractor(s). With reference to ProPECC PN1/24, the outlined recommendations shall be implemented and the particular specifications shall be imposed in the construction contracts to ensure implementation of the recommended quieter construction equipment and control measures above by the Contractor.</p> | | |
| Water Quality | <p>The site practices outlined in <i>ProPECC PN 2/23 "Construction Site Drainage"</i> should be implemented in order to minimize surface runoff and the chance of erosion. The following measures should be implemented to ensure all construction runoff are well controlled, so as to minimize water quality impacts:</p> <p><u>Construction Site Runoff and Drainage</u></p> <ul style="list-style-type: none"> • The construction works of temporary drainage outlet pipe shall be scheduled for dry season as far as practicable to minimize the increase of turbidity of nearby waterbodies. Silt fences shall be erected to prevent contaminated surface runoff from entering nearby waterbodies. • Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from construction site runoff to meet the requirements of the TM-DSS issued under the WPCO. • Temporary drainage system should be implemented on-site to divert the site runoff generated in the decommissioning works areas to the sand/ silt removal facilities. • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient | Contractor | 5.1.3 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|--|----------------------|-------------------------------------|
| | <p>operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.</p> <ul style="list-style-type: none"> • All vehicles and plant should be cleaned before leaving the construction site to ensure no earth, mud, debris and the like is deposited outside the construction works areas. • For the purpose of preventing soil erosion, all temporarily exposed soil / earth surfaces should be covered (e.g. by tarpaulin) immediately after the works have been completed. Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed. • Precautionary measures in accordance with Appendix A2 of ProPECC PN 2/23 "Construction Site Drainage" will be taken at any time of the year when rainstorms are likely to occur; • Open stockpiles of construction materials on-site and exposed soil / earth surfaces should be covered with tarpaulin or similar fabric during rainstorms to prevent the washing away of construction materials, soil, silt or debris into any nearby drainage system. • Good site practices should be implemented to remove rubbish and litter from construction site. It is recommended to clean the construction site on a regular daily basis. <p><u>Sewage from Construction Workers</u></p> <ul style="list-style-type: none"> • Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workers. A licensed Contractor should be responsible for the appropriate disposal of sewage and maintenance of these facilities. <p><u>Accidental Spillage of Chemical</u></p> <ul style="list-style-type: none"> • The Contractor is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste | | |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|--|----------------------|-------------------------------------|
| | <p>Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes;</p> <ul style="list-style-type: none"> • Any maintenance facilities should be located on hard standings within a bunded area and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges; and • Disposal of chemical waste should be carried out in compliance with the Waste Disposal Ordinance. The “Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes” published under the Waste Disposal Ordinance details the requirements for handling chemical waste. | | |
| Waste Management | <p>The following waste management measures should be taken to control potential environmental impacts or nuisance:</p> <ul style="list-style-type: none"> • Proper handling and storage of waste by means of covers and/or water spraying system to minimize the potential environmental impact and to prevent materials from wind-blown or being washed away; • Covering materials during heavy rainfall; • Locating stockpiles to minimize potential environmental impacts; and • CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping. <p>Non-inert C&D materials generated should be reused and recycled wherever possible and disposed of at the designated landfill (i.e. WENT Landfill) only as a last resort.</p> <p>All chemical wastes from equipment maintenance will be handled, stored, and disposed of properly in accordance with the Waste Disposal (Chemical Waste) Regulation. It will be collected by licensed chemical waste collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi.</p> <p>General refuse will be stored in enclosed bins or compaction units, separate from chemical waste. A reputable waste collector should be employed by the</p> | Contractor | 5.1.4 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|--|----------------------|-------------------------------------|
| | Contractor to collect and dispose of general refuse on a daily or every second day basis to minimize odour, pest and litter impacts. | | |
| Ecology | <p>The Project is limited to the extent of west ash lagoon. Natural habitats within the study area have been avoided.</p> <p>The following mitigation measures shall be implemented to minimize the predicted indirect disturbance impacts.</p> <ul style="list-style-type: none"> • Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be implemented to avoid and minimize impacts to the surrounding habitats and the associated wildlife arising from the construction activities. Other good site practices such as regular water spray at dusty operations as recommended in Section 5.1.1 shall be implemented. • Noise disturbance associated with the decommissioning works shall be minimized by implementation of noise control requirements stated in EPD's "Recommended Pollution Control Clauses for Construction Contracts" as well as other mitigation measures recommended in Section 5.1.2. • The good site practices outlined in ProPECC PN 2/23 "Construction Site Drainage" shall be implemented in order to properly control surface runoff. Other mitigation measures recommended in Section 5.1.3 shall be implemented to minimize the potential water quality impacts. • For nighttime works, lighting required for safety purpose should keep minimal and pointed inward. | Contractor | 5.1.5 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|---|----------------------|-------------------------------------|
| | <p>Clear signs should be erected on site to alert all site staff and workers about the requirement.</p> <p>The following mitigation measures shall be implemented to minimize the predicted indirect disturbance impacts.</p> <ul style="list-style-type: none"> • Avoid any damage and disturbance, particularly those caused by filling and illegal dumping to the surrounding habitats, especially watercourses. • Excavated materials will be covered and/or properly disposed of as soon as possible to avoid being washed into nearby water bodies. • Regularly check the site boundaries to ensure that they are not breached and that no damage occurs to surrounding ecologically sensitive habitats (e.g. mixed woodlands, shrubland/grassland and watercourses). • Prohibit and prevent open fires within the site boundary during construction and provide temporary firefighting equipment in the work areas. <p>Vegetation removal shall be avoided for the temporary works as far as practicable. If vegetation removal is unavoidable, the temporarily affected area shall be reinstated after works completion under this Project.</p> <p>As there is no significant loss of important species and habitats, compensation measure is not required.</p> | | |
| Land Contamination | The proposed mitigation measures presented in Sections 5.1.3 and 5.1.4 shall be implemented to mitigate the potential land contamination impact associated with accidental leakage of chemical fuels and lubricant oils from PME used for the decommissioning works. | Contractor | 5.1.6 |
| Health Impact | <p>Under the "As Low as Reasonably Practicable" (ALARP) Principle, and considering the site office to be located at developed area, the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> • Prevention of radon influx from the PFA to the site office during decommissioning phase by | Contractor | 5.1.8 |

| Potential Environmental Impacts | Mitigation Measures | Implementation Agent | Relevant Section in Project Profile |
|---------------------------------|--|----------------------|-------------------------------------|
| | <p>providing a soil cover beneath the buildings on top of ash lagoon prior to construction works.</p> <ul style="list-style-type: none"> • Provision of sufficient ventilation for the site office – forced and natural ventilation should be introduced properly to enhance air exchange rate in the buildings. • Periodic measurement of both indoor and outdoor radon concentrations during the decommissioning phase, methodology for the radon measurement should adhere to EPD's ProPECC PN 1/99 "<i>Control of Radon Concentration in New Buildings</i>". <p>In addition, implementation of the proposed dust control and suppression measures as recommended in Section 5.1.1 shall also minimise the potential inhalation of PFA by on-site workers.</p> | | |

7 Use of Previously Approved Environmental Impact Assessment Reports

7.1 Previously Approved EIA Reports

7.1.1.1. The following approved EIA Reports / Project Profile, involving assessment of decommissioning of ash lagoons and/or works in close vicinity of the Project, have been referred to in this Project Profile:

- EIA Report for Sludge Treatment Facilities (AEIAR-129/2009) (approved on 19 February 2009).
- EIA Report for West New Territories Landfill Extensions (AEIAR-147/2009) (approved on 20 November 2009).
- EIA Report for Development of the Integrated Waste Management Facilities Phase 1 (AEIAR-163/2012) (approved on 17 January 2012).
- EIA Report for Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui, Tuen Mun (AEIAR-186/2015) (approved on 28 January 2015).
- Project Profile for Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui (DIR-294/2022) (application for permission to apply directly for an environmental permit granted on 3 October 2022).

7.1.1.2. The EIA Report for *Sludge Treatment Facilities* addressed the potential environmental impact associated with the construction and operation of the T-PARK on the east ash lagoon in Tsang Tsui. The environmental aspects covered in the EIA include air quality, noise, water quality, ecology, landfill gas hazard, human health risk and landscape and visual. According to the findings of the human health impact assessment, potential health risk impact associated with radon emissions during construction and operation of the T PARK was considered insignificant. The EIA concluded that the Project would be environmentally acceptable with the proper implementation of the recommended mitigation measures during construction and operation phases.

7.1.1.3. The EIA Report for *West New Territories Landfill Extensions* (WENTX) addressed the potential environmental impact associated with the construction, operation and aftercare phases of the WENTX. The WENTX works considered in this approved EIA Report cover the west ash lagoon and the southern portion of the middle ash lagoon in Tsang Tsui. The environmental aspects covered in the EIA include air quality, noise, water quality, waste management, landfill gas hazard, landscape and visual, cultural heritage, ecology and pulverized fuel ash impact. The EIA concluded that the Project would be environmentally acceptable with the implementation of the proposed mitigation measures during construction, operation and aftercare phases.

7.1.1.4. The EIA Report for *Development of the Integrated Waste Management Facilities Phase 1* (I-PARK1) addressed the potential environmental impact associated with the construction and operation of the I-PARK1 on the middle ash lagoon in Tsang Tsui. The environmental aspects covered in the EIA include air quality, noise, water quality, waste management, ecology, fisheries, landfill gas hazard, cultural heritage, human

impact and landscape and visual. According to the findings of the human health impact assessment, potential health risk impact associated with radon emissions during construction and operation of the I-PARK1 was considered insignificant. The EIA concluded that the Project would be environmentally acceptable with the proper implementation of the recommended mitigation measures during construction and operation phases.






- 7.1.1.5. The EIA Report for *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* addressed the potential environmental impact associated with the decommissioning works of the west portion and southern edge of the middle ash lagoon, site formation works and construction of site drainage system and access road at Tsang Tsui, Tuen Mun. The environmental aspects covered in the EIA include air quality, noise, water quality, health impact, waste management implications, land contamination, ecology and landfill gas hazard. According to the findings of the health impact assessment, the potential health risk impact upon the outdoor construction site workers and site office workers during the decommissioning phase was considered insignificant. The EIA concluded that the Project would be environmentally acceptable through the implementation of the proposed mitigation measures.
- 7.1.1.6. The Project Profile for *Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui* addressed the potential environmental impacts associated with the decommissioning works of the remaining portion of the middle ash lagoon at Tsang Tsui, Tuen Mun. The environmental aspects covered in the Project Profile include air quality, noise, water quality, health impact, waste management implications, land contamination, ecology and landfill gas hazard, etc. It was concluded that in view of the nature of the proposed decommissioning works, no adverse environmental impact would be anticipated with the implementation of the recommended mitigation measures.

8 Conclusion

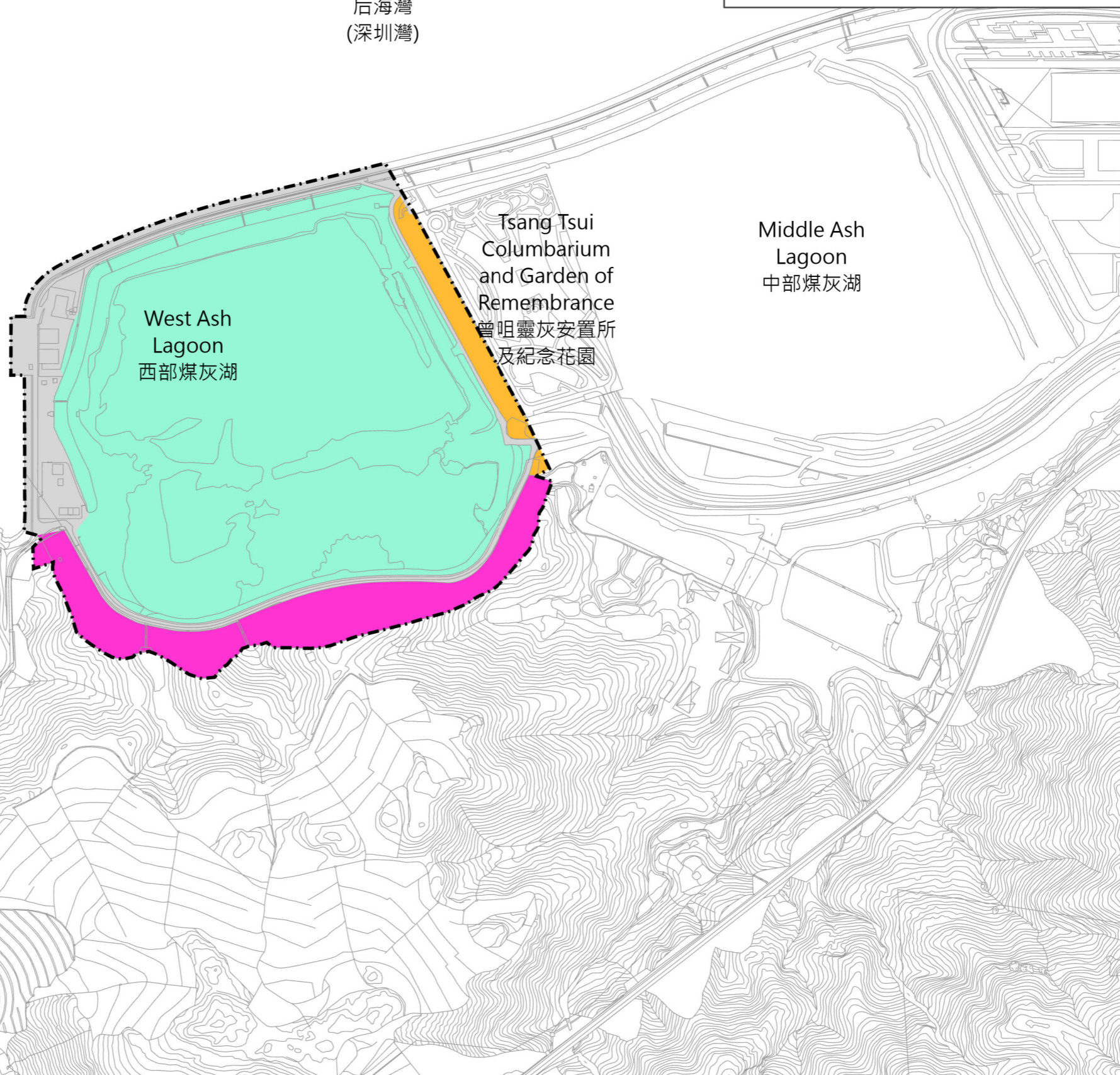
- 8.1.1.1. In view of the nature of the proposed decommissioning works under the Project, with the implementation of the recommended mitigation measures, no adverse environmental impact would be anticipated from this Project.
- 8.1.1.2. The environmental impacts of the Project have been adequately assessed in environmental impact assessment reports in the register; and the information and findings of the environmental impact assessment reports in the register are still relevant.
- 8.1.1.3. This Project Profile is prepared to seek permission from the Director of Environmental Protection under Section 5(9) of the EIAO to apply directly for an Environmental Permit.

FIGURES

LEGEND 圖例

-  PROJECT BOUNDARY 項目範圍
-  ASH LAGOON AREA 煤灰湖區
-  PAVED AREA 已鋪築地區
-  PLANTATION 植林
-  WASTELAND 荒地

Deep Bay
(Shenzhen Bay)
后海灣
(深圳灣)



West Ash Lagoon
西部煤灰湖

Tsang Tsui Columbarium and Garden of Remembrance
曾咀靈灰安置所及紀念花園

Middle Ash Lagoon
中部煤灰湖

Black Point Power Station
龍鼓灘發電廠

| Revision 修訂 | Description 描述 | | | |
|----------------|----------------|----------------|-------------|---------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草稿 | Checked 檢查 |
| Initial 草差 | PSY | Amy | PSY | Amy |
| Date 日期 | 05/24 | 05/24 | 05/24 | 05/24 |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱

Decommissioning of West Ash Lagoon in Tsang Tsui
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱

Project Location Plan
工程項目位置圖

| | |
|----------------------------------|------------------|
| Drawing No. 草圖編號 Figure 圖 1.1 | Revision 修訂 - |
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Scale 比例
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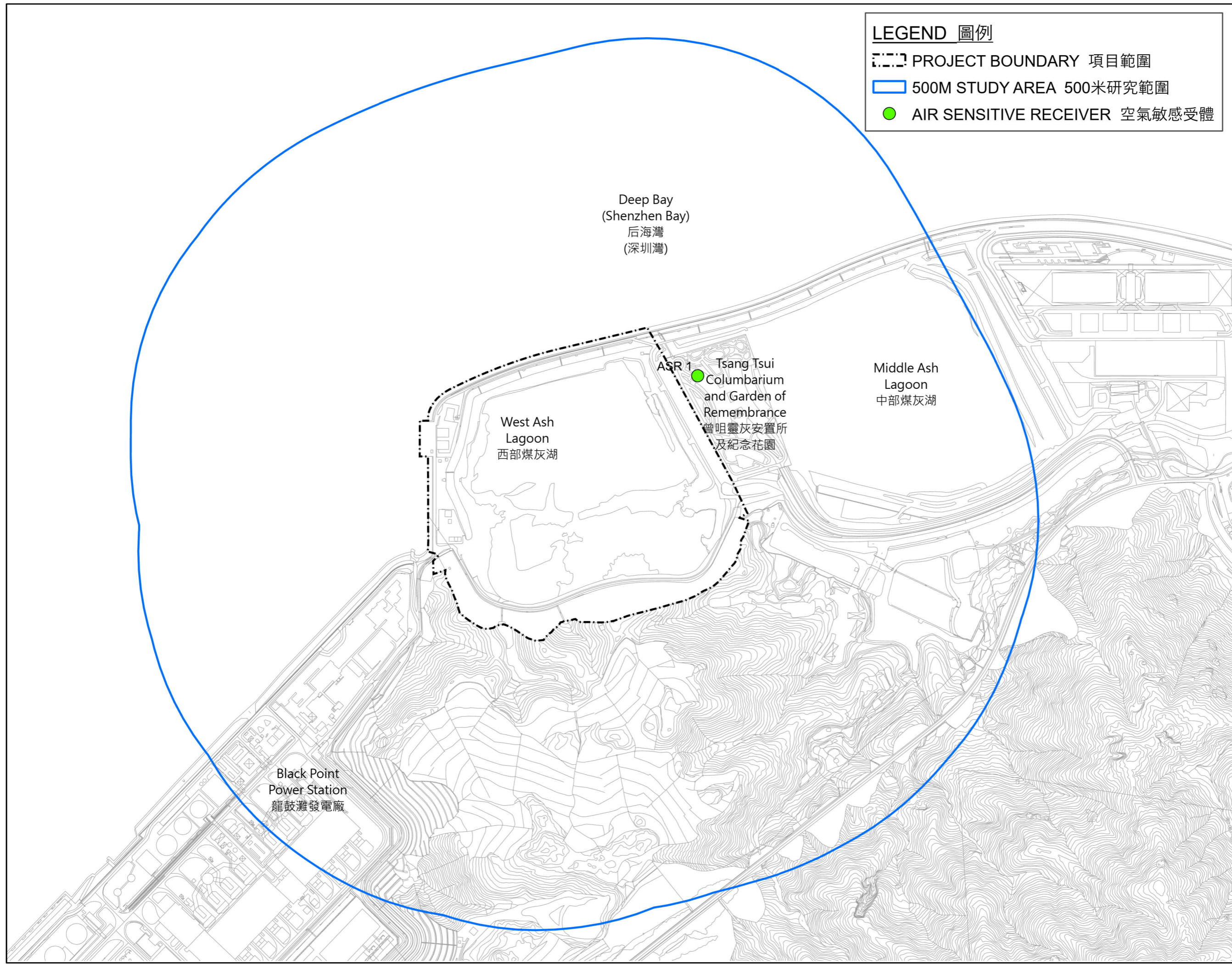
Client 業主
 **Environmental Protection Department**
The Government of the Hong Kong Special Administrative Region

Consultant 顧問

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

LEGEND 圖例

-  PROJECT BOUNDARY 項目範圍
-  500M STUDY AREA 500米研究範圍
-  AIR SENSITIVE RECEIVER 空氣敏感受體



| Revision 修訂 | Description 描述 | | | |
|----------------|----------------|----------------|-------------|---------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草繪 | Checked 檢查 |
| Initial 草繪 | PSY | Amy | PSY | Amy |
| Date 日期 | 05/24 | 05/24 | 05/24 | 05/24 |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱

**Decommissioning of West Ash Lagoon
in Tsang Tsui**
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱

**Locations of Representative
Air Sensitive Receivers**
空氣敏感受體位置圖

| | |
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| Drawing No. 草圖編號 Figure 圖 3.1 | Revision 修訂 - |
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Scale 比例
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Client 業主
 **Environmental Protection Department**
The Government of the Hong Kong
Special Administrative Region

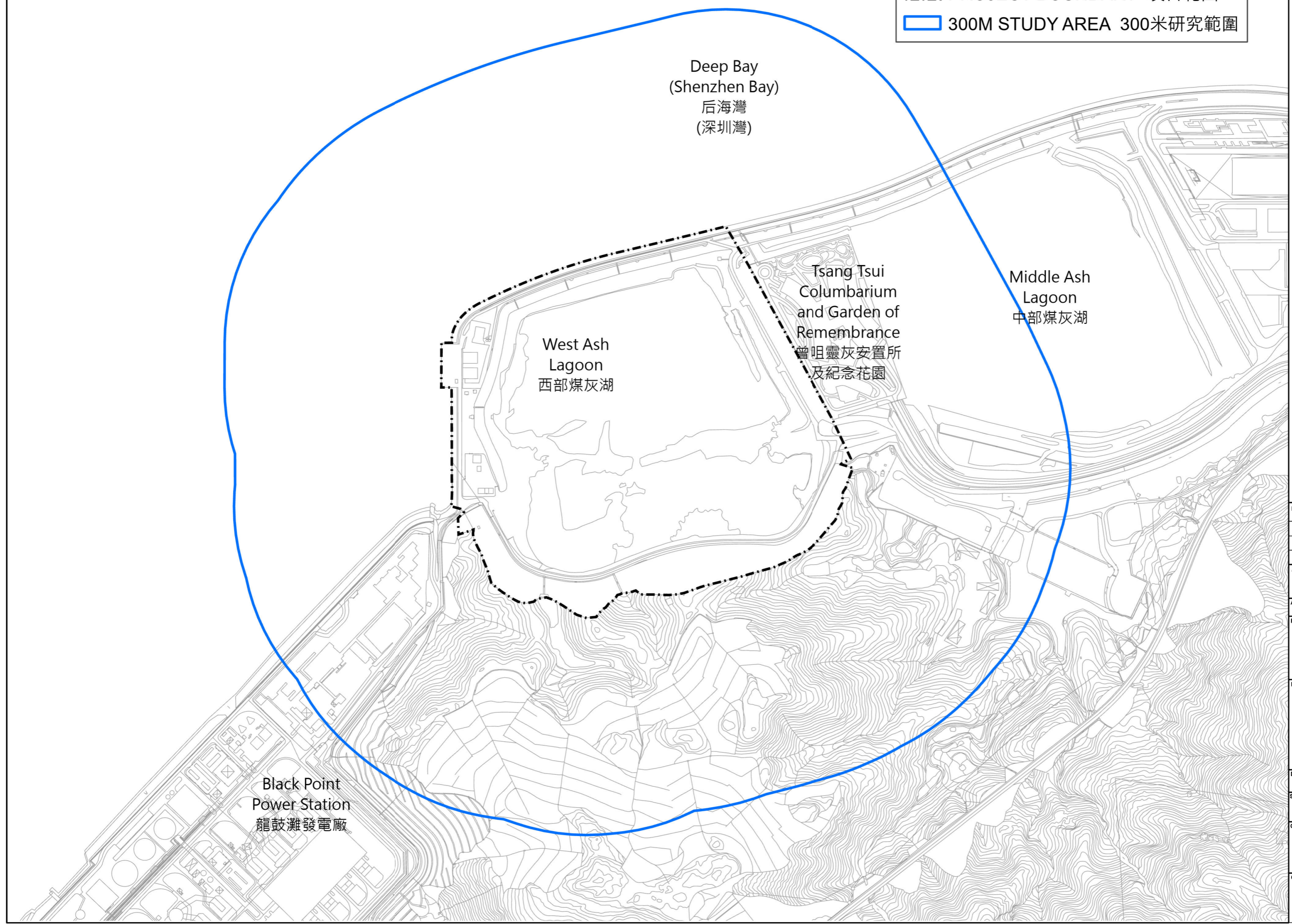
Consultant 顧問

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BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

LEGEND 圖例

 PROJECT BOUNDARY 項目範圍

 300M STUDY AREA 300米研究範圍



| Revision 修訂 | Description 描述 | | | |
|----------------|----------------|----------------|-------------|---------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草稿 | Checked 檢查 |
| Initial 草差 | PSY | Amy | PSY | Amy |
| Date 日期 | 05/24 | 05/24 | 05/24 | 05/24 |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱
Decommissioning of West Ash Lagoon in Tsang Tsui
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱
Noise Study Area
噪音研究範圍

Drawing No. 草圖編號
Figure 圖 3.2

Revision 修訂





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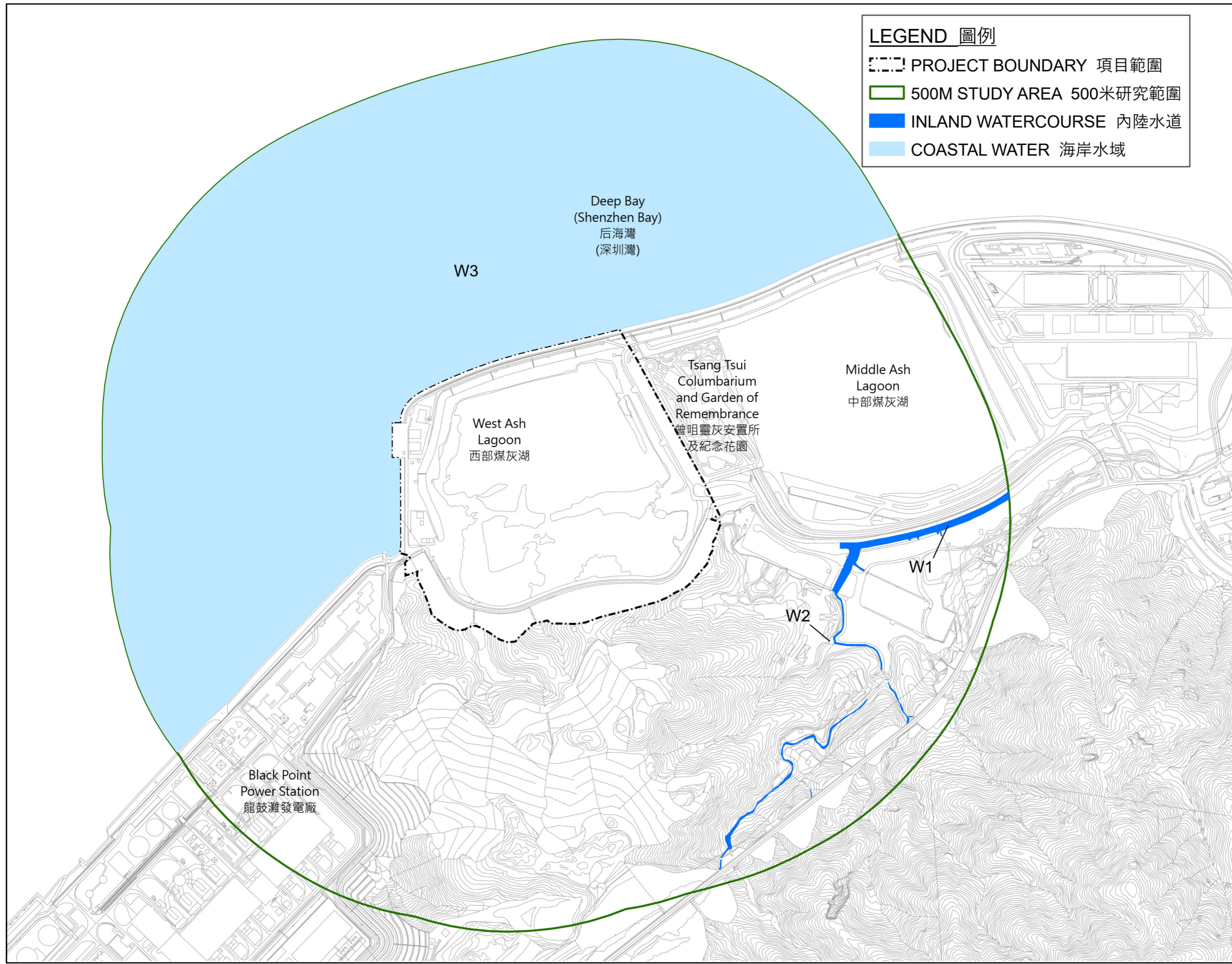
Client 業主
 **Environmental Protection Department**
The Government of the Hong Kong
Special Administrative Region

Consultant 顧問

binnies
BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

LEGEND 圖例

-  PROJECT BOUNDARY 項目範圍
-  500M STUDY AREA 500米研究範圍
-  INLAND WATERCOURSE 內陸水道
-  COASTAL WATER 海岸水域



| Revision 修訂 | Description 描述 | | | |
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| | Designed 設計 | Reviewed 審核 | Drawn 草繪 | Checked 檢查 |
| Initial 草繪 | PSY | Amy | PSY | Amy |
| Date 日期 | 05/24 | 05/24 | 05/24 | 05/24 |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱

**Decommissioning of West Ash Lagoon
in Tsang Tsui**
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱

**Locations of Representative
Water Sensitive Receivers**
水質敏感受體位置圖

| | |
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| Drawing No. 草圖編號 Figure 圖 3.3 | Revision 修訂 - |
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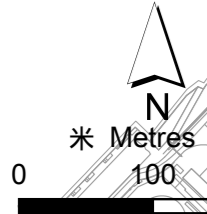
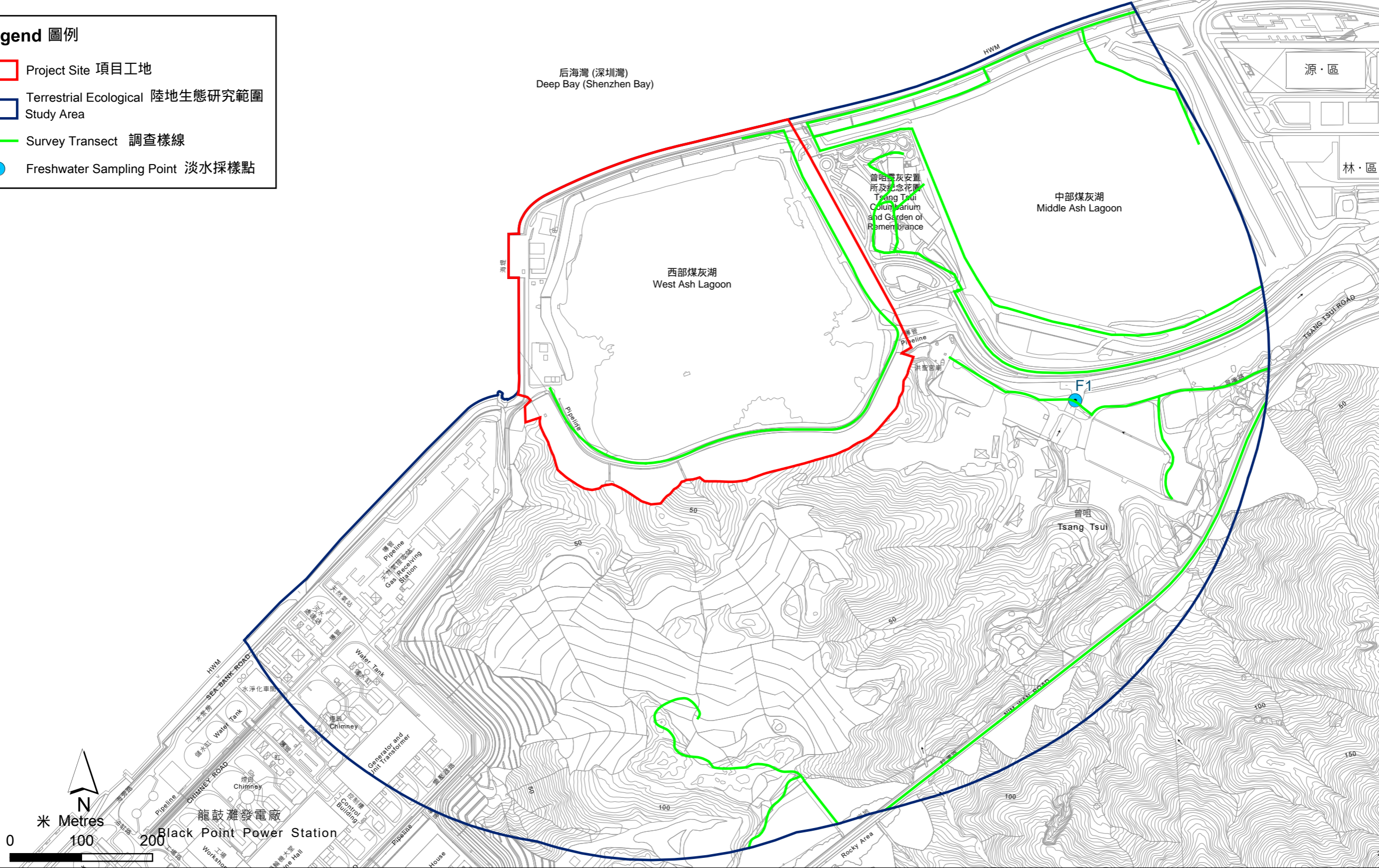
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Client 業主



Legend 圖例

- Project Site 項目工地
- Terrestrial Ecological 陸地生態研究範圍 Study Area
- Survey Transect 調查樣線
- Freshwater Sampling Point 淡水採樣點



| Revision 修訂 | Description 描述 | | | |
|-------------|----------------|-------------|----------|------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草稿 | Checked 檢查 |
| Initial 草圖 | - | - | - | - |
| Date 日期 | - | - | - | - |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱

Decommissioning of West Ash Lagoon in Tsang Tsui
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱

Terrestrial Ecological Impact Assessment Area and Survey Locations
陸地生態評估範圍及調查位置

| | |
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| Drawing No. 草圖編號 | Revision 修訂 |
| Figure 圖 3.4 | - |

Scale 比例

Client 業主

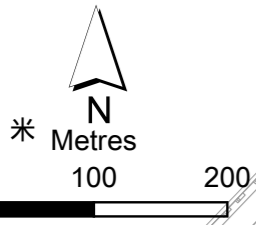
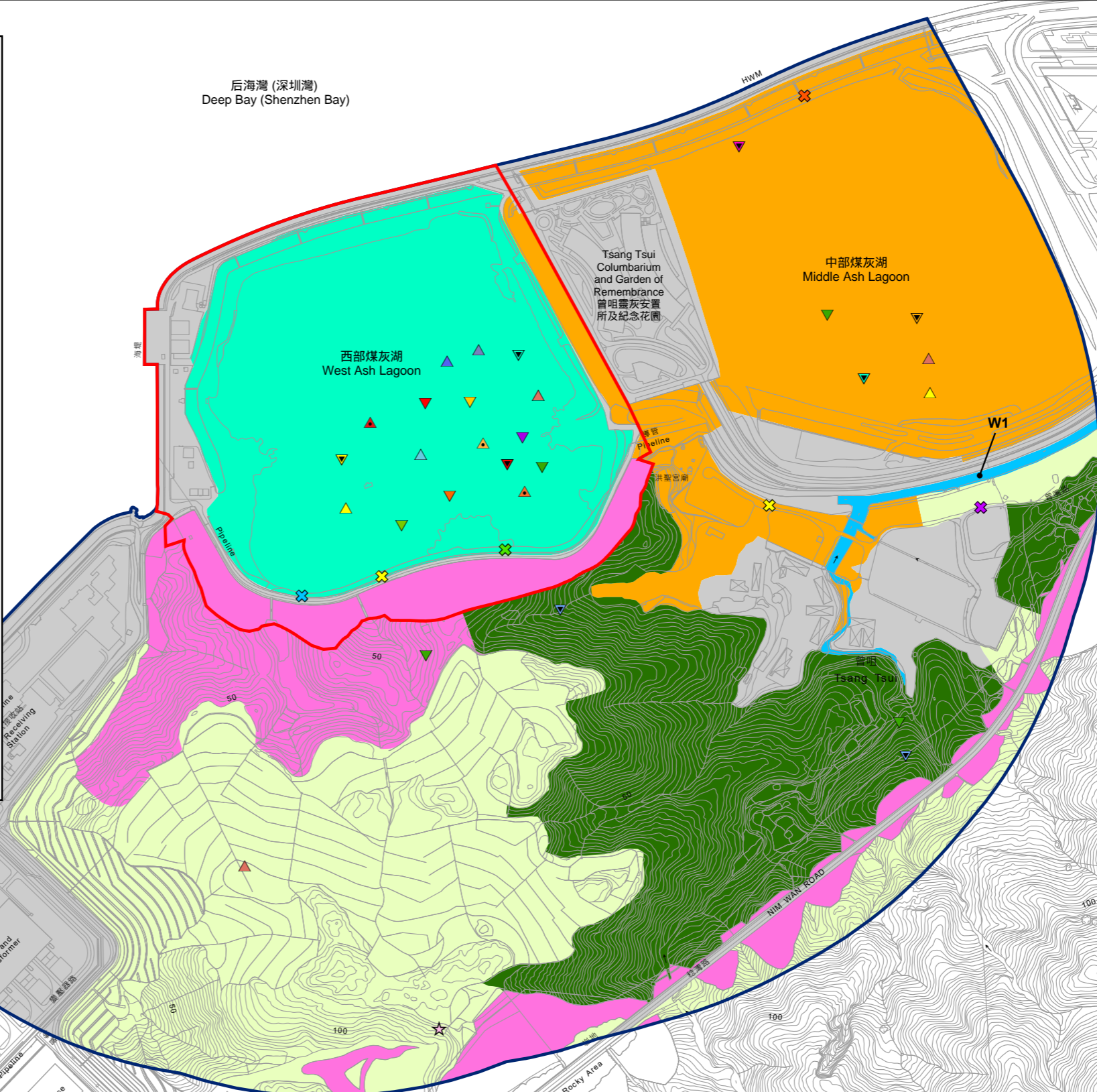


Consultant 顧問



Legend 圖例

- Project Site 項目工地
- Terrestrial Ecological Assessment Area 500米陸地生態研究範圍
- Habitat 生境**
- Woodland 林地
- Plantation 植林
- Shrubland 灌木林
- Developed Area 已發展土地
- Wasteland 荒地
- Ash Lagoon 煤灰湖
- Watercourse 水道
- Species of Conservation Importance 具重要保育價值的物種**
- Mammal 哺乳類動物**
- ✕ Intermediate Horseshoe Bat 中菊頭蝠
- ✕ Japanese Pipistrelle 東亞家蝠
- ✕ Least Pipistrelle 小伏翼
- ✕ Chinese Pipistrelle 灰伏翼
- ✕ Leopard Cat (scats) 豹貓 (糞便)
- Avifauna 鳥類**
- ▲ Black Kite 黑鳶
- ▲ Black-crowned Night Heron 夜鷺
- ▲ Black-winged Stilt 黑翅長腳鷸
- ▲ Chinese Pond Heron 池鷺
- ▲ Collared Crow 白頸鴉
- ▲ Eurasian Coot 骨頂雞
- ▲ Eurasian Wigeon 赤頸鴨
- ▲ Great Egret 大白鷺
- ▼ Greater Coucal 褐翅鴉鵂
- ▼ Grey Heron 蒼鷺
- ▼ Little Egret 小白鷺
- ▼ Little Grebe 小鸕鶿
- ▼ Little Ringed Plover 金眶鸕
- ▼ Northern Shoveler 琵嘴鴨
- ▼ Oriental Pratincole 普通燕鴉
- ▼ Pied Kingfisher 斑魚狗
- ▼ Red-breasted Flycatcher 紅胸姬鶯
- ▼ Tufted Duck 鳳頭潛鴨
- ▼ White-shouldered Starling 灰背棕鳥
- ▼ White-throated Kingfisher 白胸翡翠
- Odonate 蜻蜓**
- ☆ Coastal Glider 高翔澁蜻



* The locations of species of conservation importance recorded in flight, including Besra and Eastern Buzzard, are not shown on the figure.
圖中並沒有顯示記錄了的飛行中的具重要保育價值物種的位置，當中包括松雀鷹和普通鳶。

| Revision 修訂 | Description 描述 | | | |
|-------------|----------------|-------------|----------|------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草繪 | Checked 檢查 |
| Initial 草繪 | - | - | - | - |
| Date 日期 | - | - | - | - |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱
Decommissioning of West Ash Lagoon in Tsang Tsui
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱
Habitat Map and Locations of Species of Conservation Importance (Recorded in Verification Survey)
生境地圖及具重要保育價值的物種 (在核實調查中所記錄)

| | |
|------------------|-------------|
| Drawing No. 草圖編號 | Revision 修訂 |
| Figure 圖 3.5 | - |






Scale 比例

Client 業主

Environmental Protection Department
The Government of the Hong Kong Special Administrative Region

Consultant 顧問
binnies
BINNIES HONG KONG LIMITED
賓尼士工程顧問有限公司

LEGEND 圖例

-  PROJECT BOUNDARY 項目範圍
-  WENT LANDFILL WASTE BOUNDARY 新界西堆填區廢物範圍
-  WENTX WASTE BOUNDARY 新界西堆填區擴建計劃廢物範圍
-  LANDFILL GAS CONSULTATION ZONE OF WENT LANDFILL 新界西堆填區250米諮詢區
-  LANDFILL GAS CONSULTATION ZONE OF WENTX 新界西堆填區擴建計劃250米諮詢區



| Revision 修訂 | Description 描述 | | | |
|----------------|----------------|----------------|-------------|---------------|
| | Designed 設計 | Reviewed 審核 | Drawn 草稿 | Checked 檢查 |
| Initial 草差 | PSY | Amy | PSY | Amy |
| Date 日期 | 05/24 | 05/24 | 05/24 | 05/24 |

Approved 批核

Agreement No. 合約編號

Project Title 工程項目名稱

**Decommissioning of West Ash Lagoon
in Tsang Tsui**
曾咀西部煤灰湖的解除運作工程

Figure Title 附圖名稱

**Consultation Zone of
WENT Landfill and WENTX**
新界西堆填區和新界西堆填區擴建計劃諮詢區

| | |
|----------------------------------|------------------|
| Drawing No. 草圖編號 Figure 圖 3.6 | Revision 修訂 - |
|----------------------------------|------------------|

Scale 比例
A3: 1:8,000

Client 業主
 **Environmental Protection Department**
The Government of the Hong Kong
Special Administrative Region

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賓尼新工程顧問有限公司

APPENDIX A

List of Reviewed Literature for Ecological Baseline Study

List of Reviewed Literature for Ecological Baseline Study

1. Environmental Protection Department (2022) West New Territories (WENT) Landfill Extension – Supporting Document for Variation of Environmental Permit.
2. Environmental Protection Department (2022) Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui – Project Profile.
3. Environmental Protection Department (2017) Landfill Gas Power Generation Project at the West New Territories (WENT) Landfill – Project Profile.
4. CLP Power Hong Kong Limited (2018) Hong Kong Offshore LNG Terminal – EIA Report.
5. Castle Peak Power Company Limited (2016) Additional Gas-fired Generation Units Project – EIA Report.
6. Food and Environmental Hygiene Department (2014) Decommissioning of West Portion of The Middle ASH Lagoon at Tsang Tsui, Tuen Mun – EIA Report.
7. Environmental Protection Department (2011) Development of the Integrated Waste Management Facilities Phase 1 – EIA Report.
8. Environmental Protection Department (2009) West New Territories (WENT) Landfill Extensions – EIA Report.
9. Environmental Protection Department (2008) Sludge Treatment Facilities – EIA Report.
10. Castle Peak Power Company Limited (2006) Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities – EIA Report.

APPENDIX B

Methodology of Verification Survey

Methodology of Verification Surveys

To verify desktop review findings and establish an updated and representative ecological profile of the study area, terrestrial ecological surveys were conducted between March and May 2024, covering dry and wet seasons.

Habitat and Vegetation Survey

Habitat maps of suitable scale showing the type and location of habitats in the study area with the overlay plot of the Site was produced.

Most updated aerial photos were studied to identify the general land use/ habitat type of the study area. A preliminary habitat map was generated through translating the visualized condition in the aerial photos.

Ground truthing study was conducted on-site to verify and delineate the habitat type that was identified or missing during the desktop study. All ecological resources within habitats were recorded and a more focused survey on those identified important habitats was conducted to collect further information.

Vegetation surveys were conducted within the ecological study area by conducting survey walks covering the whole area of each habitat as far as accessible and special attention was paid to species of conservation importance and habitats within the proposed works area of the Project where the vegetation will be directly impacted.

All the flora species with their relative abundance were recorded through visual observation during vegetation surveys. Nomenclature for plant species follows AFCD's Hong Kong Herbarium online Hong Kong Plant Database (2021).

Mammal Survey

Surveys of mammals was conducted along transect routes (**Figure 3.4 of Project Profile**) by direct observation and active searching of traits such as scats, footprints and feeding signs within the study area during daytime and night surveys. All ad hoc records of sightings, tracks and sign of mammals were identified and recorded.

Bat surveys were carried out by direct counting at potential roosting ground such as abandoned village house, and foraging ground such as hillside grassland, woodland fringe and tree lines. Bat surveys were conducted along transect routes (**Figure 3.4 of Project Profile**). Species, abundance and their feeding/foraging behaviours were identified and recorded. Bat detectors were also used to aid identification of insectivore bats, by making reference to the latest local literature, such as Shek & Lau (2006) and Tong (2016).

Nomenclature for mammals follows AFCD's Checklist of Terrestrial Mammals of Hong Kong (2023).

Bird Survey

Bird communities were surveyed using a walk over transect survey method for open area habitats within the study area (see **Figure 3.4 of Project Profile**). Bird surveys were conducted at early morning or late afternoon to collect representative data for most of the bird species, while night-time surveys were conducted for nocturnal birds. All birds seen or heard during the surveys were identified and counted. Species showing notable breeding behaviour, such as breeding, feeding or roosting and the associated habitats were recorded in detail to identify any important breeding/feeding/roosting ground nearby. Ornithological nomenclature follows the List of Hong Kong Birds (2022) published by the Hong Kong Bird Watching Society.

Herpetofauna Survey

Surveys of herpetofauna were conducted along transect routes (see **Figure 3.4 of Project Profile**) through active searching and detection of the mating calls during daytime and night surveys within the study area. Survey area covered both terrestrial and aquatic environment of various habitat types including drainage channels and wooded areas. Daytime surveys for herpetofauna were carried out in line with mammal, and butterfly and odonate surveys. Night surveys were carried out in wet season when this fauna group is more active. Breeding behaviour (if any) and the associated habitats were also recorded. Nomenclature for amphibians and reptiles follows AFCD's Checklist of Amphibians of Hong Kong (2023) and Checklist of Reptiles of Hong Kong (2023).

Butterfly and Odonate Survey

Surveys of butterflies and odonates were carried out using transect count method by direct observation along the transect routes (see **Figure 3.4 of Project Profile**). All butterflies and odonates observed during the transect survey were identified and counted with an aid of a pair of binoculars. Nomenclature for butterflies and dragonflies follows AFCD's Checklist of Butterflies of Hong Kong (2023) and Checklist of Dragonflies of Hong Kong (2023).

Firefly Survey

Firefly surveys were conducted shortly after the dusk using transect count method by direct observation with an aid of binoculars along the transect routes (see **Figure 3.4 of Project Profile**). Active searching for flightless adults and larvae on ground was also conducted. Hand-netting was used for assisting the identification of flying adults, when necessary. Permission from AFCD was sought for the use of hand nets or any applications to capture

animals in the surveys. When site situation permitted, lighting devices (e.g. headlamps, torches, etc.) were switched off most of the time to enhance detection of fireflies. Alternatively, the lighting devices were switched off at sufficient intervals to allow detection of fireflies before the surveys progress along the transects.

Aquatic Fauna Survey

Sizable streams and notable water bodies within the Study area were surveyed for aquatic fauna including freshwater/ brackish fish, invertebrates and macroinvertebrates. Aquatic surveys were performed daytime for diurnal species and night-time for nocturnal species. The aquatic fauna surveys were through direct observation, active searching by hand nets and standard field sampling techniques, such as kick sampling using a D-framed net and trapping using fish traps where necessary at each Freshwater Sampling Point (see **Figure 3.4 of Project Profile**). Potential hiding places such as boulders and logs within the watercourse were turned over to locate any aquatic animals beneath. Permit from AFCD was sought before use of nets and traps to collect freshwater fauna in streams.

APPENDIX C

Representative Photos of Habitats and Species of Conservation Importance



Ash Lagoon (Project Site)



Developed Area (Project Site)



Plantation (Project Site)



Wasteland (Project Site)



Freshwater Sampling Point F1



Watercourse W1

Representative Photos of Habitats and Species of Conservation Importance

DATE: 08/07/2024





Woodland



Plantation



Shrubland



Developed Area



Wasteland



Ash Lagoon

Representative Photos of Habitats and Species of Conservation Importance

DATE: 08/07/2024





Leopard Cat (Scats)



Grey Heron



Little Grebe



Pied Kingfisher



Coastal Glider

Representative Photos of Habitats and Species of Conservation Importance

DATE: 08/07/2024



APPENDIX D

Flora Species Recorded within Study Area

Flora Species Recorded within the 500m Study Area

| Item No. | Common Name | Scientific Name | Chinese Name | Growth Form | Native or Exotic to Hong Kong | Distribution in Hong Kong ¹ | Habitat ² | | | | | | |
|----------|---|-----------------------------------|--------------|---------------|-------------------------------|--|----------------------|-----|-----|----|-----|----|----|
| | | | | | | | 500m Study Area | | | | | | |
| | | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Ear-leaved Acacia, Ear-pod Wattle | <i>Acacia auriculiformis</i> | 耳果相思 | Tree | Exotic | common | | + | ++ | | | | |
| 2 | Taiwan Acacia | <i>Acacia confusa</i> | 台灣相思 | Tree | Exotic | - | | ++ | ++ | | | | |
| 3 | Big-leaved Acacia | <i>Acacia mangium</i> | 大葉相思, 馬占相思 | Tree | Exotic | - | | + | ++ | | | | |
| 4 | Chinese Alangium | <i>Alangium chinense</i> | 八角楓 | Shrub/Tree | Native | - | + | | | | | | |
| 5 | Giant Alocasia, Alocasia | <i>Alocasia macrorrhizos</i> | 海芋 | Herb | Native | very common | + | | | | | | |
| 6 | Aporosa, Common Aporosa | <i>Aporosa dioica</i> | 銀柴 | Tree | Native | very common | ++ | + | + | | | | |
| 7 | Chinese Apea Ear-ring | <i>Archidendron lucidum</i> | 亮葉猴耳環 | Tree | Native | - | + | | | | | | |
| 8 | Hilo Holly | <i>Ardisia crenata</i> | 朱砂根, 大羅傘 | Shrub | Native | - | ++ | | | | | | |
| 9 | Spotted Ardisia | <i>Ardisia lindleyana</i> | 山血丹, 腺點紫金牛 | Shrub | Native | - | | + | | | | | |
| 10 | Carpet Grass | <i>Axonopus compressus</i> | 地毯草, 地氈草 | Herb | Exotic | common | | | | | | + | |
| 11 | Dwarf Mountain Pine, Shrubby Baeckea | <i>Baeckea frutescens</i> | 崗松 | Shrub/Tree | Native | - | | + | +++ | | | | |
| 12 | - | <i>Bambusa sp.</i> | 竹屬 | Bamboo | - | - | ++ | | | | | | |
| 13 | - | <i>Bauhinia sp.</i> | 羊蹄甲屬 | Tree | - | - | + | | | + | | | |
| 14 | White Gourd, Wax Gourd | <i>Benincasa hispida</i> | 冬瓜 | Herb | Exotic | - | | + | | | | | |
| 15 | - | <i>Bidens alba</i> | 白花鬼針草 | Herb | Exotic | very common | + | + | ++ | + | +++ | + | + |
| 16 | Oriental Blechnum | <i>Blechnum orientale</i> | 烏毛蕨 | Herb | Native | very common | | + | | | | | |
| 17 | Brazil Bougainvillea, Beautiful Bougainvillea | <i>Bougainvillea spectabilis</i> | 簕杜鵑 | Climber/Shrub | Exotic | cultivated | ++ | | | + | | | |
| 18 | Blunt Signal-grass | <i>Brachiaria mutica</i> | 巴拉草 | Herb | Exotic | common ⁽²⁾ | | | + | | | | |
| 19 | Waxy Leaf | <i>Bremia fruticosa</i> | 黑面神 | Shrub | Native | very common | + | | | | + | | |
| 20 | Pop-gun Seed, Pikpoktai | <i>Bridelia tomentosa</i> | 土蜜樹, 逼迫仔 | Shrub/Tree | Native | very common | ++ | + | | | ++ | ++ | |
| 21 | False Sumac, Java Brucea | <i>Brucea javanica</i> | 鴉膽子, 苦參子 | Shrub/Tree | Native | common | + | | | | | + | |
| 22 | Gray Nickers | <i>Caesalpinia bonduc</i> | 大托葉雲實 | Climber | Native | restricted | | | + | | | | |
| 23 | Scarab-like Cajanus | <i>Cajanus scarabaeoides</i> | 蔓草蠱豆 | Climber | Native | common | | + | | | | | |
| 24 | India Carallia | <i>Carallia brachiata</i> | 竹節樹 | Tree | Native | common | + | | | | | | |
| 25 | Papaya | <i>Carica papaya</i> | 番木瓜 | Tree | Exotic | common | | + | | | | | |
| 26 | Horse-tail Tree | <i>Casuarina equisetifolia</i> | 木麻黃, 牛尾松 | Tree | Exotic | rare; but commonly cultivated | | | + | | | | |
| 27 | Chinese Bitter-sweet | <i>Celastrus hindsii</i> | 青江藤 | Climber/Shrub | Native | very common | + | | | | | | |
| 28 | Chinese Hackberry | <i>Celtis sinensis</i> | 朴樹 | Tree | Native | common | +++ | + | | | +++ | + | |
| 29 | Cerbera, Sea Mango | <i>Cerbera manghas</i> | 海芒果 | Tree | Native | common; also planted | | + | | | | | |
| 30 | Camphor Tree | <i>Cinnamomum camphora</i> | 樟 | Tree | Native | common | | | | | | + | |
| 31 | Glorybower, Gloryberry | <i>Clerodendrum fortunatum</i> | 鬼燈籠, 白花燈籠 | Shrub | Native | common | + | | | | | | |
| 32 | Snail Seed | <i>Cocculus orbiculatus</i> | 木防己 | Climber | Native | common | + | | | | + | + | |
| 33 | Yellow Cow Wood | <i>Cratogeomys cochinchinense</i> | 黃牛木 | Shrub/Tree | Native | very common | + | | | | | + | |
| 34 | Chinese Dodder | <i>Cuscuta chinensis</i> | 菟絲子 | Herb | Native | common | | + | + | | | | |
| 35 | Wood-fern, Parasitic Tri-vein Fern | <i>Cyclosorus parasiticus</i> | 華南毛蕨 | Herb | Native | very common | ++ | + | | | | + | + |
| 36 | Crow-foot Grass | <i>Dactyloctenium aegyptium</i> | 龍爪茅 | Herb | Native | common | + | + | | + | + | | |
| 37 | Bentham's Rosewood | <i>Dalbergia benthamii</i> | 兩廣黃檀 | Climber | Native | common | + | | | | + | + | |
| 38 | Hong Kong Rosewood | <i>Dalbergia millettii</i> | 香港黃檀 | Climber | Native | common | + | | | | | | |
| 39 | Desmos | <i>Desmos chinensis</i> | 假鷹爪 | Climber/Shrub | Native | common | ++ | + | | | | + | |
| 40 | Dichotomy Forked Fern | <i>Dicranopteris pedata</i> | 芒萁 | Herb | Native | - | + | + | + | | +++ | + | |
| 41 | Longan | <i>Dimocarpus longan</i> | 龍眼, 桂圓 | Tree | Exotic | - | ++ | | | | | | |
| 42 | American Wormseed | <i>Dysphania ambrosioides</i> | 土荊芥, 小荊芥 | herb | Exotic | common | | + | | | | | |
| 43 | Twig-hanging Embelia | <i>Embelia laeta</i> | 酸藤子 | Climber/Shrub | Native | very common | ++ | | | | | | |
| 44 | Tassel Flower | <i>Emilia sonchifolia</i> | 一點紅 | Herb | Native | very common | | + | | | | | |
| 45 | Swamp Mahogany | <i>Eucalyptus robusta</i> | 大葉桉, 大葉有加利 | Tree | Exotic | cultivated | | + | | | | | |
| 46 | - | <i>Eucalyptus sp.</i> | 桉屬 | Tree | Exotic | - | | +++ | ++ | | | | |
| 47 | Shining Eurya | <i>Eurya nitida</i> | 細齒葉柃 | Shrub/Tree | Native | very common | + | | | | | | |
| 48 | Hairy Fig, Hairy Mountain Fig | <i>Ficus hirta</i> | 粗葉榕 | Shrub/Tree | Native | common | + | | | | | | |

| | | | | | | | | | | | | | |
|----|--|---|--------------|---------------|--------|------------------------------------|-----|----|----|-----|-----|-----|----|
| 49 | Opposite-leaved Fig, Rough-leaved Stem-fig | <i>Ficus hispida</i> | 對葉榕 | Shrub/Tree | Native | very common | + | | | | ++ | ++ | |
| 50 | Chinese Banyan, Small-fruited Fig | <i>Ficus microcarpa</i> | 細葉榕 | Tree | Native | common | + | | + | | + | ++ | |
| 51 | Common Red-stem Fig | <i>Ficus variegata</i> | 青果榕 | Tree | Native | common | + | | | | | + | + |
| 52 | Luofushan Joint-fir | <i>Gnetum luofuense</i> | 羅浮買麻藤 | Climber | Native | very common | + | + | | | | | |
| 53 | Rough-leaved Holly, Plum-leaved Holly | <i>Ilex asprella</i> | 梅葉冬青 | Shrub | Native | very common | ++ | | + | | | + | |
| 54 | Downy Holly | <i>Ilex pubescens</i> | 毛冬青 | Shrub | Native | - | ++ | | | | | | |
| 55 | Chinese Ixora, Red Ixora | <i>Ixora chinensis</i> | 龍船花 | Shrub | Native | restricted but widely cultivated | | | + | | | | |
| 56 | - | <i>Kandelia obovata</i> | 水筆仔 | Tree | Native | common | | | | | | | + |
| 57 | Lantana | <i>Lantana camara</i> | 馬纓丹 | Shrub | Exotic | very common | + | | | + | ++ | + | |
| 58 | Chinese Lasianthus | <i>Lasianthus chinensis</i> | 粗葉木 | Shrub | Native | common | ++ | | | | | | |
| 59 | White Popinac | <i>Leucaena leucocephala</i> | 銀合歡 | Shrub/Tree | Exotic | - | + | | ++ | ++ | +++ | +++ | + |
| 60 | Chinese Privet | <i>Ligustrum sinense</i> | 山指甲 | Shrub/Tree | Exotic | common | | | ++ | | | | |
| 61 | Lily Turf | <i>Liriope spicata</i> | 山麥冬, 麥門冬 | Herb | Native | very common | | | + | | | | |
| 62 | Lychee | <i>Litchi chinensis</i> | 荔枝 | Tree | Exotic | restricted but widely planted | ++ | | | | | | |
| 63 | Tanoak | <i>Lithocarpus glaber</i> | 柯, 石櫟 | Tree | Native | common; also planted | ++ | | | | | | |
| 64 | Fragrant Litsea, Mountain-pepper | <i>Litsea cubeba</i> | 木薑子, 山蒼樹 | Shrub/Tree | Native | common | ++ | | | | | | |
| 65 | Pond Spice | <i>Litsea glutinosa</i> | 潺槁樹 | Tree | Native | very common | ++ | | | | | | |
| 66 | Oblong-leaved Litsea, Long-leaved Litsea | <i>Litsea rotundifolia</i> var. <i>oblongifolia</i> | 豺皮樟 | Shrub/Tree | Native | - | +++ | | | | | | |
| 67 | Brisbane Box | <i>Lophostemon confertus</i> | 紅膠木 | Tree | Exotic | - | | | ++ | ++ | | | + |
| 68 | Climbing Fern | <i>Lygodium japonicum</i> | 海金沙 | Climber/Herb | Native | - | | | ++ | +++ | | | + |
| 69 | Elephant's Ear, Common Macaranga | <i>Macaranga tanarius</i> var. <i>tomentosa</i> | 血桐 | Tree | Native | common | ++ | + | + | | ++ | + | |
| 70 | Turn-in-the-wind, Panicked Mallotus | <i>Mallotus paniculatus</i> | 白楸 | Shrub/Tree | Native | very common | + | | | | | | |
| 71 | Mango | <i>Mangifera indica</i> | 芒果 | Tree | Exotic | - | +++ | | | | | | |
| 72 | Common Melastoma | <i>Melastoma malabathricum</i> | 野牡丹 | Shrub | Native | common | + | | + | | | | |
| 73 | Blood-red Melastoma | <i>Melastoma sanguineum</i> | 毛蕊 | Shrub | Native | common | + | | | | | | |
| 74 | China-berry, Persian Lilac | <i>Melia azedarach</i> | 苦楝 | Tree | Exotic | common | + | | | | | | |
| 75 | Redtop, Creeping Rhynchelytrum | <i>Melinis repens</i> | 紅毛草 | Herb | Exotic | very common | | | | | | | + |
| 76 | Microcos | <i>Microcos neroosa</i> | 破布葉, 布渣葉 | Shrub/Tree | Native | - | ++ | + | + | | | | |
| 77 | Mile-a-minute Weed | <i>Mikania micrantha</i> | 薇甘菊 | Climber/Herb | Exotic | very common | + | | + | + | ++ | | ++ |
| 78 | Glittering-leaved Millettia | <i>Millettia nitida</i> | 亮葉雞血藤, 亮葉崖豆藤 | Climber | Native | very common | | | + | | | | |
| 79 | Sensitive Plant | <i>Mimosa pudica</i> | 含羞草 | Herb | Exotic | - | | | | | | | + |
| 80 | - | <i>Mirabilis odorata</i> | 黃花紫茉莉 | herb | Exotic | - | | | + | | | | |
| 81 | Chinese Silvergrass, Eulalia | <i>Miscanthus sinensis</i> | 芒 | Herb | Native | very common | + | | | | ++ | + | |
| 82 | Orange-jessamine | <i>Murraya paniculata</i> | 九里香 | Tree | Exotic | common | + | | | | | | |
| 83 | Splash-of-white, Buddha's Lamp | <i>Mussaenda pubescens</i> | 玉葉金花 | Climber/Shrub | Native | very common | | | + | | | | + |
| 84 | Burma-reed, Reed-like Grass | <i>Neyraudia reynaudiana</i> | 類蘆, 石珍茅 | Herb | Native | - | + | ++ | + | | +++ | +++ | + |
| 85 | Composite Oplismenus | <i>Oplismenus compositus</i> | 竹葉草 | Herb | Native | very common | + | | | | | | |
| 86 | Lavender Sorrel | <i>Oxalis corymbosa</i> | 紅花酢漿草 | Herb | Exotic | common | | | | | | | + |
| 87 | Chinese Feervine | <i>Paederia scandens</i> | 雞矢藤 | Herb | Native | very common | + | | | | ++ | | |
| 88 | - | <i>Pandanus austrosinensis</i> | 露兜草 | Herb | Native | - | | | | | | | |
| 89 | Guinea Grass | <i>Panicum maximum</i> | 大黍 | Herb | Exotic | very common | + | + | | | +++ | | |
| 90 | Diverse-leaved Creeper | <i>Parthenocissus dalzielii</i> | 爬牆虎, 異葉爬山虎 | Climber | Exotic | rare | | | | | | | + |
| 91 | Passion Flower | <i>Passiflora foetida</i> | 龍珠果 | Climber | Exotic | very common | + | | | | | + | + |
| 92 | Napier Grass | <i>Pennisetum purpureum</i> | 象草, 紫狼尾草 | Herb | Exotic | - | | | | | | + | + |
| 93 | Common Reedgrass | <i>Phragmites australis</i> | 蘆葦 | Herb | Native | very common; common ⁽²⁾ | | | | | | | ++ |
| 94 | Reed, Karka Reed | <i>Phragmites vallatorius</i> | 卡開蘆, 水竹 | Herb | Native | - | | | | | | | + |
| 95 | Vietnam Leaf-flower | <i>Phyllanthus cochinchinensis</i> | 越南葉下珠, 鐵包金 | Shrub | Native | - | + | | | | | | |
| 96 | Reticulated Leaf-flower | <i>Phyllanthus reticulatus</i> | 小果葉下珠 | Shrub | Native | common | + | | | | | | |
| 97 | Chinese Red Pine | <i>Pinus massoniana</i> | 馬尾松 | Tree | Native | common | + | | ++ | | | | |
| 98 | Hong Kong Gordonia, Gordonia | <i>Polyspora axillaris</i> | 大頭茶 | Shrub/Tree | Native | very common | | | ++ | | | | |
| 99 | - | <i>Praxelis clematidea</i> | 假臭草 | Herb | Exotic | very common | + | + | | | + | | + |

| | | | | | | | | | | | | | | | | | |
|-----|---|-----------------------------------|-----------|---------------|--------|--------------------------------|----|----|----|-----|----|-----|---|----|----|----|--|
| 100 | Guava | <i>Psidium guajava</i> | 番石榴 | Tree | Exotic | - | + | | | | | | | | | | |
| 101 | Wild Coffee, Red Psychotria | <i>Psychotria asiatica</i> | 山大刀，九節 | Shrub/Tree | Native | - | ++ | + | + | | | | | | | | |
| 102 | Sword Brake | <i>Pteris ensiformis</i> | 劍葉鳳尾蕨，井邊茜 | Herb | Native | - | ++ | | | | | | | | | | |
| 103 | Semi-pinnated Brake | <i>Pteris semipinnata</i> | 半邊旗 | Herb | Native | very common | ++ | | | | | | | | | | |
| 104 | Rose Myrtle, Downy Rosemyrtle | <i>Rhodomyrtus tomentosa</i> | 桃金娘，崗稔 | Shrub | Native | very common | + | | | +++ | | | | | | | |
| 105 | Sumac | <i>Rhus chinensis</i> | 鹽膚木 | Shrub/Tree | Native | common | + | + | | | | +++ | | + | | | |
| 106 | Sumac | <i>Rhus hypoleuca</i> | 白背鹽膚木，白背漆 | Shrub/Tree | Native | common | + | | | | | | | | | | |
| 107 | Wax Tree | <i>Rhus succedanea</i> | 野漆樹 | Shrub/Tree | Native | common | + | + | + | | | | | | | + | |
| 108 | Little-leaved Rourea, Red Leaf of Autumn | <i>Rourea microphylla</i> | 小葉紅葉藤，紅葉藤 | Climber/Shrub | Native | common | + | + | | | | | | | | | |
| 109 | Hedge Sageretia | <i>Sageretia thea</i> | 雀梅藤 | Climber/Shrub | Native | very common | ++ | | | | | +++ | | + | | | |
| 110 | Mountain Tallow Tree | <i>Sapium discolor</i> | 山烏柏 | Tree | Native | very common | + | | | | | | | | | | |
| 111 | Chinese Tallow Tree | <i>Sapium sebiferum</i> | 烏柏 | Tree | Native | common | + | | | | | | | + | | | |
| 112 | Ivy Tree | <i>Schefflera heptaphylla</i> | 鴨腳木 | Shrub/Tree | Native | - | ++ | + | ++ | | | | + | ++ | ++ | ++ | |
| 113 | - | <i>Scleria sp.</i> | 珍珠茅屬 | Herb | - | - | ++ | | | | | | | | | | |
| 114 | Greenbrier | <i>Smilax china</i> | 菝葜，金剛藤 | Climber | Native | very common | | | | + | | | | | | | |
| 115 | Glabrous Greenbrier | <i>Smilax glabra</i> | 土茯苓，光葉菝葜 | Climber | Native | very common | | | + | | | | | | | + | |
| 116 | African Tulip Tree | <i>Spathodea campanulata</i> | 火焰樹，火焰木 | Tree | Exotic | - | | | | | | | | | | + | |
| 117 | - | <i>Stachytarpheta cayennensis</i> | 藍蝶猿尾木 | Tree | Exotic | - | | | + | | | | | | | | |
| 118 | Lance-leaved Sterculia, Scarlet Sterculia | <i>Sterculia lanceolata</i> | 假蘋婆 | Tree | Native | very common | ++ | | | + | | | | | | | |
| 119 | Goat Horns, Divaricate Strophanthus | <i>Strophanthus divaricatus</i> | 羊角拗 | Climber/Shrub | Native | common | + | | | | | | | | | | |
| 120 | - | <i>Tectaria subtriphylla</i> | 叉蕨 | Herb | Native | common | + | | | | | | | | | | |
| 121 | Indian Almond | <i>Terminalia catappa</i> | 欖仁樹 | Tree | Exotic | very rare; widely cultivated | | | | | | | | | | + | |
| 122 | Melia-leaved Evodia | <i>Tetradium glabrifolium</i> | 棟葉吳茱萸 | Tree | Native | common | + | | | | | | | | | | |
| 123 | India-charcoal Trema | <i>Trema tomentosa</i> | 山黃麻 | Shrub/Tree | Native | common | + | + | | | | | | | | | |
| 124 | Tridax | <i>Tridax procumbens</i> | 羽芒菊 | Herb | Exotic | very common | + | | | | | | | | | ++ | |
| 125 | Ovate Tylophora | <i>Tylophora ovata</i> | 娃兒藤 | Climber | Native | - | + | | | | | | | | | | |
| 126 | Iron-weed | <i>Vernonia cinerea</i> | 夜香牛 | Herb | Native | very common | | | + | | | | | | | | |
| 127 | - | <i>Wedelia trilobata</i> | 三裂葉薔琪菊 | Herb | Exotic | common; also widely cultivated | + | | | | | | | | | | |
| 128 | Indian Wikstroemia | <i>Wikstroemia indica</i> | 了哥王 | Shrub | Native | - | | | + | | | | | | | | |
| 129 | Prickly Ash | <i>Zanthoxylum avicennae</i> | 筋櫛花椒 | Tree | Native | common | + | + | | | | | | | | + | |
| 130 | Shiny-leaved Prickly Ash | <i>Zanthoxylum nitidum</i> | 兩面針 | Climber/Shrub | Native | very common | + | | | | | | | | | + | |
| 131 | - | <i>Zanthoxylum piperitum</i> | 胡椒木 | Shrub | Exotic | - | ++ | | | | | | | | | | |
| | | | | | | | 87 | 48 | 30 | 7 | 25 | 42 | 9 | | | | |

Notes:

1. Distribution in Hong Kong follows:

Wu, S.H. & Lee, T.C.W. (2000). Pteridophytes of Hong Kong. *Memoirs of the Hong Kong Natural History Society* 23:5-20.

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.

Siu, L.P.G. (2000). Orchidaceae of Hong Kong. *Memoirs of the Hong Kong Natural History Society* 23:137-148.

Corlett, R.T., Xing, F.W., Ng, S.C., Chau, L.K.C. and Wong, L.M.Y. (2000). Hong Kong Vascular Plants: Distribution and Status. *Memoirs of the Hong Kong Natural History Society* 23:1-157.

2. Yip, Y., Yip, K. L., Liu, K. U., Ngar Y. N., & Lai, C. C. (2010). A Floristic Survey of Marshes in Hong Kong. *Hong Kong Biodiversity*. Issue No. 19.

3. Habitats: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

Code for Abundance: +++=Frequent; ++=Occasional; +=Scarce

APPENDIX E

Fauna Species Recorded within Study Area

Mammal Species Recorded Within the Study Area

| Item No. | Common Name | Scientific Name | Chinese Name | Conservation Status ¹ | Commonness ² | Habitat ³ | | | | | | |
|--------------|----------------------------|---------------------------------|--------------|---------------------------------------|--|----------------------|----------|----------|----------|----------|----------|----------|
| | | | | | | 500m Study Area | | | | | | |
| | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Intermediate Horseshoe Bat | <i>Rhinolophus affinis</i> | 中菊頭蝠 | Cap.170; Fellowes: (LC) | Widely distributed in countryside areas throughout Hong Kong. | | | | | + | | |
| 2 | Japanese Pipistrelle | <i>Pipistrellus abramus</i> | 東亞家蝠 | Cap.170 | Widely distributed throughout Hong Kong. | | | | | + | + | |
| 3 | Least Pipistrelle | <i>Pipistrellus tenuis</i> | 小伏翼 | Cap.170 | Ten-something records found in Nam Chung, Sheung Wo Hang, Lin Ma Hang, Plover Cove Country Park, Yuen Long, Shek Pik, Deep Water Bay, Ho Pui and Ho Chung. | | | | | | + | |
| 4 | Chinese Pipistrelle | <i>Hypsugo pulveratus</i> | 灰伏翼 | Cap.170; Fellowes: (LC) | Only several records in the countryside areas at Ting Kau, Ma On Shan and Lin Ma Hang, and several records of stray individuals inside buildings. | | | + | | | | |
| 5 | Leopard Cat | <i>Prionailurus bengalensis</i> | 豹貓 | Cap.170; Cap.586; RLCV(VU); CITES(II) | Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island. | | | | | | + | |
| TOTAL | | | | | | 0 | 0 | 1 | 0 | 2 | 3 | 0 |

Notes:

Species of conservation importance is in **bold** type face

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Conservation and Protection Status:

- a. Cap. 170 - Protected under Wild Animals Protection Ordinance
- b. Fellowes - Fellowes *et al.* (2002): 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.
- c. RLCV - Red List of China's Vertebrates (2020): VU = Vulnerable
- d. CITES - Under Appendix (I), Appendix (II) or Appendix (III) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

2. Commonness as per AFCD database: Available at <https://bih.gov.hk/en/home/index.html>

3. Habitats: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

4. References:

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

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.

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 500m Study Area | | | | | | | |
|----------|---------------------------|-----------------------------------|--------------|----------------------------------|--|---|----|------|----|----|------|----|----|
| | | | | | | WL | PL | SL | DA | WA | AL | WC | IF |
| 1 | Northern Shoveler | <i>Spatula clypeata</i> | 琵嘴鴨 | Fellowes: RC | Abundant winter visitor. Found in Deep Bay area. | | | | | | + | | |
| 2 | Eurasian Wigeon | <i>Mareca penelope</i> | 赤頸鴨 | Fellowes: RC | Winter visitor. Found in Deep Bay area, Tai Lam Chung. | | | | | | + | | |
| 3 | Tufted Duck | <i>Aythya fuligula</i> | 鳳頭潛鴨 | Fellowes: LC | Abundant winter visitor. Found in Deep Bay area, Nam Chung, Starling Inlet. | | | | | | ++++ | | |
| 4 | Savanna Nightjar | <i>Caprimulgus affinis</i> | 林夜鷹 | - | Uncommon resident. Widely distributed in Hong Kong. | | | + | | + | | | |
| 5 | House Swift | <i>Apus nipalensis</i> | 小白腰雨燕 | - | Abundant spring migrant and common resident. Widely distributed in Hong Kong. | | | ++++ | | | + | | |
| 6 | Greater Coucal | <i>Centropus sinensis</i> | 褐翅鴉鵂 | CSMPS(II) | Common resident. Widely distributed in Hong Kong. | + | + | | | + | + | | |
| 7 | Asian Koel | <i>Eudynamis scolopaceus</i> | 噪鵲 | - | Common resident. Widely distributed in Hong Kong. | | | | | | + | | |
| 8 | Oriental Cuckoo | <i>Cuculus optatus</i> | 東方中杜鵑 | - | Scarce passage migrant. Distributed in agricultural fields and fish ponds in Hong Kong. | | | | | | + | | |
| 9 | Red Turtle Dove | <i>Streptopelia tranquebarica</i> | 火斑鳩 | - | Common passage migrant and winter visitor. Found in Deep Bay area, Cheung Chau, Po Toi, Lantau Island, Hong Kong Island. | | | | | + | | | |
| 10 | Spotted Dove | <i>Spilopelia chinensis</i> | 珠頸斑鳩 | - | Abundant resident. Widely distributed in Hong Kong. | | + | | + | ++ | + | | |
| 11 | Common Emerald Dove | <i>Chalcophaps indica</i> | 綠翅金鳩 | - | Uncommon but widespread resident. Widely distributed in woodland throughout Hong Kong. | | | | | | + | | |
| 12 | Common Moorhen | <i>Gallinula chloropus</i> | 黑水雞 | - | Common winter visitor, resident and migrant. Found in Deep Bay area, Shuen Wan, Starling Inlet. | | | | | | + | | |
| 13 | Eurasian Coot | <i>Fulica atra</i> | 骨頂雞 | Fellowes: RC | Uncommon winter visitor. Found in Deep Bay area, Plover Cove Reservoir, Shuen Wan. | | | | | | + | | |
| 14 | Little Grebe | <i>Tachybaptus ruficollis</i> | 小鸕鶿 | Fellowes: LC | Common resident. Found in Deep Bay area. | | | | | | +++ | | |
| 15 | Black-winged Stilt | <i>Himantopus himantopus</i> | 黑翅長腳鸕 | Fellowes: RC | Common migrant and winter visitor. Found in Deep Bay area, Long Valley, Kam Tin. | | | | | | + | | |
| 16 | Little Ringed Plover | <i>Charadrius dubius</i> | 金眶鸕 | Fellowes: (LC) | Resident, common winter visitor and passage migrant. Widely distributed in freshwater areas throughout Hong Kong. | | | | | | + | | |
| 17 | Common Sandpiper | <i>Actitis hypoleucos</i> | 磯鸕 | - | Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong. | | | | | | + | + | |
| 18 | Green Sandpiper | <i>Tringa ochropus</i> | 白腰草鸕 | - | Common migrant and winter visitor. Found in Deep Bay area, Shuen Wan, Long Valley, Kam Tin, Shek Kong, Ho Chung. | | | | | | + | | |
| 19 | Oriental Pratincole | <i>Glareola maldivarum</i> | 普通燕鸕 | Fellowes: LC | Passage migrant. Found in Mai Po, Tsim Bei Tsui. | | | | | | + | | |
| 20 | Black-crowned Night Heron | <i>Nycticorax nycticorax</i> | 夜鸕 | Fellowes: (LC) | Common resident and migrant. Widely distributed in Hong Kong. | | | | | | + | | |
| 21 | Chinese Pond Heron | <i>Ardeola bacchus</i> | 池鸕 | Fellowes: PRC (RC) | Common resident. Widely distributed in Hong Kong. | | | | | | + | | |
| 22 | Grey Heron | <i>Ardea cinerea</i> | 蒼鸕 | Fellowes: PRC | Common winter visitor. Found in Deep Bay area, Starling Inlet, Kowloon Park, Cape D'Aguilar. | | | | | | ++ | | |

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 500m Study Area | | | | | | | |
|----------|---------------------------|-------------------------------|--------------|---|---|---|----|----|----|----|----|----|----|
| | | | | | | WL | PL | SL | DA | WA | AL | WC | IF |
| 23 | Great Egret | <i>Ardea alba</i> | 大白鷺 | Fellowes: PRC (RC) | Common resident, migrant and winter visitor. Widely distributed in Hong Kong | | | | | | + | | |
| 24 | Little Egret | <i>Egretta garzetta</i> | 小白鷺 | Fellowes: PRC (RC) | Common resident, migrant and winter visitor. Widely distributed in coastal area throughout Hong Kong. | | | | | | + | | |
| 25 | Besra | <i>Accipiter virgatus</i> | 松雀鷹 | Cap.586; CSMPS(II); CITES(II) | Common resident and migrant. Found in Tai Po Kau, Deep Bay area, Chek Lap Kok, Cheung Chau, Soko Islands. | | | | | | | | + |
| 26 | Black Kite | <i>Milvus migrans</i> | 黑鳶 | Cap.586; Fellowes: (RC); CSMPS(II); CITES(II) | Common resident and winter visitor. Widely distributed in Hong Kong. | | | + | | + | + | | + |
| 27 | Eastern Buzzard | <i>Buteo japonicus</i> | 普通鵟 | Cap.586; CSMPS(II); CITES(II) | Common winter visitor. Widely distributed in Hong Kong. | | | | | | | | + |
| 28 | White-throated Kingfisher | <i>Halcyon smyrnensis</i> | 白胸翡翠 | Fellowes: (LC) | Common resident. Widely distributed in coastal areas throughout Hong Kong. | | | | | + | | | |
| 29 | Common Kingfisher | <i>Alcedo atthis</i> | 普通翠鳥 | - | Common passage migrant and winter visitor. Widely distributed in wetland habitat throughout Hong Kong. | | | | | | + | | |
| 30 | Pied Kingfisher | <i>Ceryle rudis</i> | 斑魚狗 | Fellowes: (LC) | Common resident. Widely distributed in lakes and ponds throughout Hong Kong. | | | | | | + | | |
| 31 | Long-tailed Shrike | <i>Lanius schach</i> | 棕背伯勞 | - | Common resident. Widely distributed in open areas throughout Hong Kong. | | | | | | + | | |
| 32 | Red-billed Blue Magpie | <i>Urocissa erythroryncha</i> | 紅嘴藍鵲 | - | Common resident. Widely distributed in woodland edges throughout Hong Kong. | | + | | | + | + | | |
| 33 | Oriental Magpie | <i>Pica serica</i> | 喜鵲 | - | Common resident. Widely distributed in Hong Kong. | | | | | | + | | |
| 34 | Collared Crow | <i>Corvus torquatus</i> | 白頸鴉 | Fellowes: LC; IUCN(VU) | 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. | | | | | + | + | | |
| 35 | Japanese Tit | <i>Parus minor</i> | 遠東山雀 | - | Common resident. Widely distributed in Hong Kong. | | | + | | | + | | |
| 36 | Chinese Bulbul | <i>Pycnonotus sinensis</i> | 白頭鶇 | - | Abundant resident. Widely distributed in Hong Kong | | | + | | ++ | + | | |
| 37 | Red-whiskered Bulbul | <i>Pycnonotus jocosus</i> | 紅耳鶇 | - | Abundant resident. Widely distributed in Hong Kong | + | + | | | ++ | + | | |
| 38 | Sooty-headed Bulbul | <i>Pycnonotus aurigaster</i> | 白喉紅臀鶇 | - | Common resident. Widely distributed in open areas throughout Hong Kong | | | + | | | + | | |
| 39 | Barn Swallow | <i>Hirundo rustica</i> | 家燕 | - | Abundant passage migrant and uncommon winter visitor. Widely distributed in Hong Kong. | | | ++ | | + | + | | |
| 40 | Yellow-browed Warbler | <i>Phylloscopus inornatus</i> | 黃眉柳鶯 | - | Abundant winter visitor and migrant. Widely distributed in woodland throughout Hong Kong | + | | + | | | | | |
| 41 | Dusky Warbler | <i>Phylloscopus fuscatus</i> | 褐柳鶯 | - | Abundant winter visitor and migrant. Widely distributed in shrubland and waterside vegetation throughout Hong Kong | | | + | | | | | |

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 500m Study Area | | | | | | | |
|----------|----------------------------------|-----------------------------------|--------------|----------------------------------|---|---|----|----|----|----|----|----|----|
| | | | | | | WL | PL | SL | DA | WA | AL | WC | IF |
| 42 | Yellow-bellied Prinia | <i>Prinia flaviventris</i> | 黃腹鷦鶯 | - | Common resident. Widely distributed in Hong Kong | | | + | | + | + | | |
| 43 | Plain Prinia | <i>Prinia inornata</i> | 純色鷦鶯 | - | Locally common resident. Widely distributed in grassland throughout Hong Kong | | | | | | + | | |
| 44 | Common Tailorbird | <i>Orthotomus sutorius</i> | 長尾縫葉鶯 | - | Common resident. Widely distributed in Hong Kong | | | + | | + | | | |
| 45 | Swinhoe's White-eye | <i>Zosterops simplex</i> | 暗綠繡眼鳥 | - | Abundant resident. Widely distributed in Hong Kong | ++ | | | | | + | | |
| 46 | Black-throated Laughingthrush | <i>Pterorhinus chinensis</i> | 黑喉噪鶇 | - | Common resident. Widely distributed in woodland and shrubland throughout Hong Kong | + | | | | | | | |
| 47 | Masked Laughingthrush | <i>Pterorhinus perspicillatus</i> | 黑臉噪鶇 | - | Abundant resident. Widely distributed in shrubland throughout Hong Kong | + | | + | | | + | | |
| 48 | Crested Myna | <i>Acridotheres cristatellus</i> | 八哥 | - | Abundant resident. Widely distributed in Hong Kong | | | | ++ | + | + | | |
| 49 | Common Myna | <i>Acridotheres tristis</i> | 家八哥 | - | Locally common resident. Found in Mai Po, Sheung Uk Tsuen, Sheung Shui, Kam Tin, Shek Kong, Ping Shan, Mong Tseng | | | | | | + | | |
| 50 | Black-collared Starling | <i>Gracupica nigricollis</i> | 黑領椋鳥 | - | Common resident. Widely distributed in Hong Kong | | + | | + | + | + | | |
| 51 | White-shouldered Starling | <i>Sturnia sinensis</i> | 灰背椋鳥 | Fellowes: (LC) | Locally common passage migrant and uncommon winter visitor. Found in Kam Tin, Deep Bay area, Po Toi Island, Long Valley, Victoria Park, Ho Chung, Ma Tso Lung, Mui Wo, Lam Tsuen Valley | | | | | + | + | | |
| 52 | Chinese Blackbird | <i>Turdus mandarinus</i> | 烏鶇 | - | Common winter visitor and migrant. Widely distributed in Hong Kong | | + | | + | | | | |
| 53 | Grey-backed Thrush | <i>Turdus hortulorum</i> | 灰背鶇 | - | Common winter visitor and migrant. Widely distributed in woodland throughout Hong Kong | | | + | | | | | |
| 54 | Oriental Magpie Robin | <i>Copsychus saularis</i> | 鶇鶇 | - | Abundant resident. Widely distributed in Hong Kong | | + | + | + | | | | |
| 55 | Blue Whistling Thrush | <i>Myophonus caeruleus</i> | 紫嘯鶇 | - | Common resident. Widely distributed in shrubland and woodland throughout Hong Kong | + | | | | | | | |
| 56 | Red-breasted Flycatcher | <i>Ficedula parva</i> | 紅胸姬鶇 | CITES (III) | Scarce passage migrant and winter visitor. Found in Po Toi, Shek Kong | + | | | | | | | |
| 57 | Stejneger's stonechat | <i>Saxicola stejnegeri</i> | 黑喉石(即鳥) | - | Common passage migrant and winter visitor. Widely distributed in open fields throughout Hong Kong | | | | | + | | | |
| 58 | Scarlet-backed Flowerpecker | <i>Dicaeum cruentatum</i> | 朱背啄花鳥 | - | Common resident. Widely distributed in wooded area throughout Hong Kong | | | | + | | | | |
| 59 | Fork-tailed Sunbird | <i>Aethopyga christinae</i> | 叉尾太陽鳥 | - | Common resident and winter visitor. Widely distributed in Hong Kong | | | + | | | | | |
| 60 | Eurasian Tree Sparrow | <i>Passer montanus</i> | 樹麻雀 | - | Abundant resident. Widely distributed in Hong Kong | | | | + | | | | |
| 61 | Scaly-breasted Munia | <i>Lonchura punctulata</i> | 斑文鳥 | - | Abundant resident. Widely distributed in Hong Kong | | | | | | + | | |

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 500m Study Area | | | | | | | |
|--------------|---------------------|------------------------------|--------------|----------------------------------|--|---|----------|-----------|----------|-----------|-----------|----------|----------|
| | | | | | | WL | PL | SL | DA | WA | AL | WC | IF |
| 62 | Grey Wagtail | <i>Motacilla cinerea</i> | 灰鶺鴒 | - | Common passage migrant and winter visitor. Widely distributed in hill streams throughout Hong Kong | | | + | | | | | |
| 63 | White Wagtail | <i>Motacilla alba</i> | 白鶺鴒 | - | Resident, common passage migrant and winter visitor. Widely distributed in Hong Kong | | | | | + | + | | |
| 64 | Olive-backed Pipit | <i>Anthus hodgsoni</i> | 樹鶺鴒 | - | Common passage migrant and winter visitor. Widely distributed in Hong Kong | + | | | | | | | |
| 65 | Black-faced Bunting | <i>Emberiza spodocephala</i> | 灰頭鷓鴣 | - | Common winter visitor and passage migrant. Widely distributed in Hong Kong | | | | + | | + | | |
| TOTAL | | | | | | 9 | 7 | 16 | 8 | 20 | 44 | 0 | 3 |

Notes:

Species of conservation importance is in **bold** type face

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Conservation and Protection Status:

- a. All birds in Hong Kong are protected under Cap. 170 – Protected under Wild Animals Protection Ordinance
- b. Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- c. Fellowes – 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.
- d. CSMPS – China State Major Protection Status: Appendix I/II
- e. IUCN – International Union for Conservation of Nature Red List of Threatened Species (2023). VU = Vulnerable
- f. 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: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse, IF = In-flight

4. References:

- AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.
- 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*.
- Zheng, G. M. and Wang, Q. S. (1998). *China Red Data Book of Endangered Animals: Aves*. Science Press, Beijing, pp 1-346.
- IUCN. (2023). *The IUCN Red List of Threatened Species (Version 2023-1)*. Accessed from <<http://www.iucnredlist.org>> in Mar 2024.

Amphibian Species Recorded within the 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 500m Study Area | | | | | | |
|--------------|-----------------------------|-----------------------------------|--------------|---|---|---|---|----------|----------|----------|----------|----------|----------|
| | | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Asian Common Toad | <i>Duttaphrynus melanostictus</i> | 黑眶蟾蜍 | - | Very common and widespread throughout Hong Kong | Widely distributed in HK | + | | | | | | |
| 2 | Spotted Narrow-mouthed Frog | <i>Kalophrynus interlineatus</i> | 花細狹口蛙 | - | Common and widespread in the New Territories | Widely distributed from low to moderate altitudes in northern and central New Territories | | | | | + | + | |
| 3 | Asiatic Painted Frog | <i>Kaloula pulchra</i> | 花狹口蛙 | - | Common and widespread in Hong Kong | Widely distributed in HK | + | + | | | | + | |
| 4 | Paddy Frog | <i>Fejervarya limnocharis</i> | 澤蛙 | - | Very common and widespread throughout Hong Kong | Widely distributed throughout HK | + | + | | | + | | |
| 5 | Günther's Frog | <i>Sylvirana guentheri</i> | 沼蛙 | - | Very common and widespread throughout Hong Kong | Widely distributed throughout HK | + | | | | + | | |
| 6 | Brown Tree Frog | <i>Polypedates megacephalus</i> | 斑腿泛樹蛙 | - | Very common and widespread throughout Hong Kong | Widely distributed throughout Hong Kong | + | | | | + | | |
| TOTAL | | | | | | | 5 | 2 | 0 | 0 | 4 | 2 | 0 |

Notes:

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Conservation and Protection Status follow:

- a. Cap. 170: Protected under Wild Animals Protection Ordinance
- b. Fellowes – Fellowes et al. (2002): PRC = Potential 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.
- c. CSMPs- China State Major Protection Status: Appendix (I) or Appendix (II)
- d. RLCV – Red List of China's Vertebrate (2020): VU = Vulnerable, EN: Endangered
- e. IUCN – International Union for Conservation of Nature Red List of Threatened Species (2022). VU = Vulnerable, EN: Endangered

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: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

5. References:

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

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

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.

IUCN. (2023). The IUCN Red List of Threatened Species (Version 2023-1). Accessed from <<http://www.iucnredlist.org>> in Mar 2024.

Reptile Species Recorded Within the Study Area

| Item No. | Common Name | Scientific Name | Chinese Name | Conservation and Protection Status ¹ | Distribution in Hong Kong ² | Habitat ³ 500m Study Area | | | | | | |
|--------------|-------------------|---------------------------------|--------------|---|---|---|----------|----------|----------|----------|----------|----------|
| | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Long-tailed Skink | <i>Eutropis longicaudata</i> | 長尾南蜥 | - | Widely distributed throughout Hong Kong | | + | | | | | |
| 2 | Chinese Gecko | <i>Gekko chinensis</i> | 壁虎 | - | Widely distributed throughout Hong Kong | | | | | | + | |
| 3 | Bowring's Gecko | <i>Hemidactylus bowringii</i> | 原尾蜥虎 | - | Distributed throughout Hong Kong | | | + | | + | + | |
| 4 | Bamboo Snake | <i>Cryptelytrops albolabris</i> | 白唇竹葉青 | - | Very common and widespread in Hong Kong | + | | | | | | |
| TOTAL | | | | | | 1 | 1 | 1 | 0 | 1 | 2 | 0 |

Notes:

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Conservation and Protection Status:

a. Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance

b. Fellowes - 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.

c. RLCV - Red List of China's Vertebrate (2020): NT = Near Threatened, EN: Endangered

d. CRDB - China Red Data Book (1998): VU = Vulnerable, EN: Endangered

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: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

4. References:

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

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*.

IUCN. (2023). *The IUCN Red List of Threatened Species (Version 2023-1)*. Accessed from <<http://www.iucnredlist.org>> in Mar 2024.

Zhao, E. 1998. *China Red Data Book of Endangered Animals: Amphibia and Reptilia*. Science Press. Beijing, China. 330pp.

Butterfly Species Recorded within the Study Area

| Item No. | Common Name | Scientific Name | Chinese Name | Rarity in Hong Kong ¹ | Distribution in Hong Kong ² | Habitat ³ 500m Study Area | | | | | | |
|--------------|----------------------|---------------------------|--------------|----------------------------------|--|---|----------|----------|----------|----------|----------|----------|
| | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Plum Judy | <i>Abisara echerius</i> | 蛇目褐蛭蝶 | Very Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 2 | Blue-spotted Crow | <i>Euploea midamus</i> | 藍點紫斑蝶 | Very Common | Widely distributed throughout Hong Kong. | | | | + | | | |
| 3 | Red Lacewing | <i>Cethosia biblis</i> | 紅錦蛭蝶 | Uncommon | Widely distributed throughout Hong Kong. | + | | | | | | |
| 4 | Rustic | <i>Cupha erymanthis</i> | 黃襟蛭蝶 | Very Common | Widely distributed throughout Hong Kong. | + | | + | | | | |
| 5 | Great Eggfly | <i>Hypolimnas bolina</i> | 幻紫斑蛭蝶 | Common | Widely distributed throughout Hong Kong. | | | | + | + | | |
| 6 | Blue Admiral | <i>Kaniska canace</i> | 琉璃蛭蝶 | Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 7 | Common Sailer | <i>Neptis hylas</i> | 中環蛭蝶 | Very Common | Widely distributed throughout Hong Kong. | + | | | | + | + | |
| 8 | Straight Five-ring | <i>Ypthima lisandra</i> | 黎黎雙眼蝶 | Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 9 | Tailed Jay | <i>Graphium agamemnon</i> | 統帥青鳳蝶 | Common | Widely distributed throughout Hong Kong. | + | | | | | | |
| 10 | Common Jay | <i>Graphium doson</i> | 木蘭青鳳蝶 | Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 11 | Common Bluebottle | <i>Graphium sarpedon</i> | 青鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 12 | Chinese Peacock | <i>Papilio bianor</i> | 碧鳳蝶 | Common | Widely distributed throughout Hong Kong. | | + | + | | | | |
| 13 | Red Helen | <i>Papilio helenus</i> | 玉斑鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | | + | | | | |
| 14 | Great Mormon | <i>Papilio memnon</i> | 美鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 15 | Paris Peacock | <i>Papilio paris</i> | 巴黎翠鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | + | | | + | | |
| 16 | Common Mormon | <i>Papilio polytes</i> | 玉帶鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | + | | | | | |
| 17 | Spangle | <i>Papilio protenor</i> | 藍鳳蝶 | Very Common | Widely distributed throughout Hong Kong. | | | | | + | | |
| 18 | Common Grass Yellow | <i>Eurema hecabe</i> | 寬邊黃粉蝶 | Very Common | Widely distributed throughout Hong Kong. | + | | | | + | | |
| 19 | Red-base Jezebel | <i>Delias pasithoe</i> | 報喜斑粉蝶 | Very Common | Widely distributed throughout Hong Kong. | | | + | + | | | |
| 20 | Indian Cabbage White | <i>Pieris canidia</i> | 東方菜粉蝶 | Very Common | Widely distributed throughout Hong Kong. | | | | | + | | |
| 21 | Eurema sp. | #N/A | 黃粉蝶屬 | - | - | | | + | | | + | |
| TOTAL | | | | | | 5 | 9 | 5 | 3 | 6 | 2 | 0 |

Notes:

Species of conservation importance is in **bold** type face

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Rarity follows: 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. Habitats: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

4. References:

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

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

Odonate 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 | | | | | | |
|--------------|-----------------------|---|--------------|--|-------------------------------------|---|----------------------|----------|----------|----------|----------|----------|----------|
| | | | | | | | 500m Study Area | | | | | | |
| | | | | | | | WL | PL | SL | DA | WA | AL | WC |
| 1 | Orange-tailed Sprite | <i>Ceriagrion auranticum ryukyusnum</i> | 琉球橘黃蟴 | - | Abundant | Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters | | | + | | | | |
| 2 | Common Bluetail | <i>Ischnura senegalensis</i> | 褐斑異痣蟴 | - | Abundant | Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong | | | | | | ++ | |
| 3 | Common Flangetail | <i>Ictinogomphus pertinax</i> | 霸王葉春蜓 | - | Common | Widely distributed in ponds and still water throughout Hong Kong | | | | | | + | |
| 4 | Coastal Glider | <i>Macrodiplax cora</i> | 高翔濼蜻 | Fellowes: LC | Common | Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas | | | + | | | | |
| 5 | Red-faced Skimmer | <i>Orthetrum chrysis</i> | 華麗灰蜻 | - | Abundant | Widely distributed in pools and marshy areas adjacent to flowing streams throughout Hong Kong | | | | | | + | |
| 6 | Green Skimmer | <i>Orthetrum sabina sabina</i> | 狹腹灰蜻 | - | Abundant | Widely distributed in all wetland habitats throughout Hong Kong. | | + | | | | + | |
| 7 | Wandering Glider | <i>Pantala flavescens</i> | 黃蜻 | - | Abundant | Widely distributed all over Hong Kong | | + | + | | | | |
| TOTAL | | | | | | | 0 | 2 | 3 | 0 | 0 | 4 | 0 |

Notes:

Species of conservation importance is in **bold** type face

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

1. Fellowes - Fellowes et al. (2002); 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.

2. Rarity as per AFCD. 2014.: Available at <http://www.afcd.gov.hk/english/conservation/hkbiodiversity/database/search.asp?lang=en>.

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

4. Habitats: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

5. References:

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

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.

Freshwater Fauna Recorded within the Study Area

| Item No. | Common Name | Scientific Name | Chinese Name | Conservation Status ¹ | Habitat ³ 500m Study Area | | | | | | |
|------------------------|-------------|--------------------|--------------|----------------------------------|---|----------|----------|----------|----------|----------|----------|
| | | | | | WL | PL | SL | DA | WA | AL | WC |
| Freshwater Fish | | | | | | | | | | | |
| 1 | - | <i>Channa spp.</i> | - | - | | | | | | | + |
| TOTAL | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Notes:

Relative abundance: +: Scarce (1-10), ++: Uncommon (11-20), +++: Common (21-30), ++++: Abundant (>30)

Indicative symbol “*” was used to indicate that a species is not considered as a species of conservation importance based on the new EIAO-TM guidelines

1. Conservation and Protection Status:

a. Fellowes - Fellowes *et al.* (2002): PGC = Potential Global 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.

b. CRDB - China Red Data Book (1998): VU = Vulnerable

c. IUCN - IUCN (2022): VU = Vulnerable

2. Habitats: WL = Woodland, PL = Plantation, SL = Shrubland, DA = Developed Area, WA = Wasteland, AL = Ash Lagoon, WC = Watercourse

3. References:

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

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.

IUCN. (2023). The IUCN Red List of Threatened Species (Version 2023-1). Accessed from <<http://www.iucnredlist.org>> in Mar 2024.

APPENDIX F

Evaluation of Habitats within Study Area

Evaluation of Habitats within Study Area

Table 1 Evaluation of Woodland within the Study Area

| Criteria | Woodland |
|---------------------------------|--|
| Naturalness | Habitat is dominated by native species but is secondary in nature. |
| Size | Approx. 15.4 ha within the Study Area |
| Diversity | Low to moderate diversity of plant species and structural complexity Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. Fauna species of conservation importance recorded during the surveys include: Avifauna – Greater Coucal, Red-breasted Flycatcher |
| Re-creatability | Recreatability is moderate but the habitat requires several decades to re-create. |
| Fragmentation | Fragmented by several access roads and developed areas |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Moderate |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Young in view of the structural complexity and community composition |
| Abundance/ Richness of Wildlife | Low to moderate |
| Overall Ecological Value | Low to moderate |

Table 2 Evaluation of Plantation within the Study Area

| Criteria | Plantation |
|---------------------------------|---|
| Naturalness | Planted man-made habitat dominated by exotic species |
| Size | Approx. 10.9 ha within the Study Area |
| Diversity | Low diversity of plant species and structural complexity Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. Fauna species of conservation importance recorded during the surveys include: Avifauna – Greater Coucal |
| Re-creatability | High |
| Fragmentation | Fragmented by several access roads |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Relatively young in terms of succession pathway |
| Abundance/ Richness of Wildlife | Low |
| Overall Ecological Value | Low |

Table 3 Evaluation of Shrubland within the Study Area

| Criteria | Shrubland |
|---------------------------------|---|
| Naturalness | Habitat is largely natural but likely to be frequently disturbed by human-induced activities such as fires. |
| Size | Approx. 24.8 ha within the Study Area |
| Diversity | Low diversity of plant species and structural complexity Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. Fauna species of conservation importance recorded during the surveys include: Mammal – Chinese Pipistrelle Avifauna – Black Kite Odonate – Coastal Glider |
| Re-creatability | High |
| Fragmentation | Fragmented by access roads and engineered slopes |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Relatively young in terms of succession pathway |
| Abundance/ Richness of Wildlife | Low |
| Overall Ecological Value | Low |

Table 4 Evaluation of Developed Area within the Study Area

| Criteria | Developed Area |
|---------------------------------------|---|
| Naturalness | Man-made habitat |
| Size | Approx. 23.3 ha within the Study Area |
| Diversity | Low diversity of plant species Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. No fauna species of conservation importance were recorded. |
| Re-creatability | High |
| Fragmentation | Not applicable |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Not applicable |
| Abundance/ Richness of Wildlife | Low |
| Overall Ecological Value | Very Low |

Table 5 Evaluation of Wasteland within the Study Area

| Criteria | Wasteland |
|---------------------------------|--|
| Naturalness | Man-made habitat |
| Size | Approx. 20.2 ha within the Study Area |
| Diversity | Low diversity of plant species Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. Fauna species of conservation importance recorded during the surveys include: Mammal – Japanese Pipistrelle, Intermediate Horseshoe Bat Avifauna – Greater Coucal, Oriental Pratincole, Black Kite, White-throated Kingfisher, Collared Crow, White-shouldered Starling |
| Re-creatability | High |
| Fragmentation | Not applicable |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Not applicable |
| Abundance/ Richness of Wildlife | Low |
| Overall Ecological Value | Low |

Table 6 Evaluation of Ash Lagoon within the Study Area

| Criteria | Ash Lagoon |
|---------------------------------|---|
| Naturalness | Man-made habitat |
| Size | Approx. 16.4 ha within the Study Area |
| Diversity | Low diversity of plant species Low to moderate diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. Fauna species of conservation importance recorded during the surveys include: Mammal – Leopard Cat, Japanese Pipistrelle, Chinese Pipistrelle Avifauna – Northern Shoveler, Eurasian Wigeon, Tufted Duck, Greater Coucal, Eurasian Coot, Little Grebe, Black-winged Stilt, Little Ringed Plover, Black-crowned Night Heron, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret, Black Kite, Pied Kingfisher, Collared Crow, White-shouldered Starling |
| Re-creatability | High |
| Fragmentation | Not applicable |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | Potential breeding ground for Little Grebe, an avifauna species of conservation importance, given adequate water level and presence of emergent vegetation during the breeding season. It should be noted that the operation of ash lagoon has been ceased and there are ongoing filling works under environmental precautionary measures. Upon recent terrestrial ecological surveys conducted between March 2024 and May 2024, no breeding activities of Little Grebe were recorded, and no chicks or juveniles were recorded. |
| Age | Not applicable |
| Abundance/ Richness of Wildlife | Low to moderate |
| Overall Ecological Value | Low to moderate |

Table 7 Evaluation of Watercourse within the Study Area

| Criteria | Watercourse |
|---------------------------------|---|
| Naturalness | The watercourse is a man-made channel with concrete bed. |
| Size | Approx. 0.6km within the Study Area |
| Diversity | Low diversity of plant species Low diversity of fauna species |
| Rarity | No floral species of conservation importance were recorded. No fauna species of conservation importance were recorded. |
| Re-creatability | Re-creatable as it is a modified watercourse |
| Fragmentation | Not fragmented from the water course in the hilly areas nearby |
| Ecological Linkage | Not functionally or structurally linked to any nearby highly valuable habitat |
| Potential Value | Low |
| Nursery/ Breeding Ground | No significant nursery or breeding ground recorded |
| Age | Not applicable |
| Abundance/ Richness of Wildlife | Low |
| Overall Ecological Value | Low |

APPENDIX G



Qualification of Surveying Staff

Appendix G

Qualification of Surveying Staff

| Faunal/Floral Group under Study | Key Surveyor | | |
|---|---|--|--------------------|
| | Full Name and Academic Qualification | Relevant Experience | Year of Experience |
| <i>Terrestrial Ecological Surveys</i> | | | |
| Habitat and Vegetation, Terrestrial Mammal, Avifauna, Herpetofauna, Butterfly and Odonate, Firefly, Aquatic Fauna | Mr. Raymond Chow BSc (Hons), MPhil | Ecological Team Leader Over 11 years' post-qualification experience in biodiversity, ecology and fisheries studies | 11 |
| | Mr. Mike Pang BSc (Hons), MSc | Over 8 years of experience in conducting a wide range of ecological surveys and impact assessment for main fauna groups and habitats | 8 |
| | Ms. Novia Yip BSc (Hons), MPhil, MSc | Over 7 years of experience in conducting a wide range of ecological surveys and impact assessment for main fauna groups and habitats | 7 |
| | Mr. Yuihong Chiu BSc (Hons) | Over 4 years of experience in conducting ecological surveys for flora and fauna in different natural habitats for impact assessments | 4 |

Survey data presented in Appendices A to F are:

| | Name | Signature | Date |
|--------------------------|--------------|--|--------------|
| Prepared and Checked by: | Novia Yip |  | 22 July 2024 |
| Reviewed by: | Raymond Chow |  | 22 July 2024 |