



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

## **Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui**

### **Project Profile**

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**AECOM Asia Co. Ltd.**



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## **1 BASIC INFORMATION**

### **1.1 Project Title**

- 1.1.1.1. Decommissioning of Remaining Portion of Middle 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 remaining portion of the Middle Ash Lagoon in Tsang Tsui (Middle TTAL) to provide useful land for future development.

### **1.3 Name of Project Proponent**

- 1.3.1.1. The Project Proponent is the Waste Infrastructure Planning Division of the Environmental Protection Department.

### **1.4 Location and Scale of Project and History of Site**

- 1.4.1.1. The Project Site is located to the west of the T-PARK (formerly known as “Sludge Treatment Facilities”) and to the east of Tsang Tsui Columbarium and Garden of Remembrance, with the coastline running along the north. The total area of the Project Site is approximately 208,000m<sup>2</sup> (20.8 ha) which comprises a 159,000m<sup>2</sup> (15.9 ha) pulverized fuel ash (PFA) platform and 49,000m<sup>2</sup> (4.9 ha) paved area along the northern and southern boundary. The location of the Project Site is shown in **Figure 1.1**.
- 1.4.1.2. The Middle TTAL was once leased to the Castle Peak Power Company Limited (CAPCO) for storing PFA and is now returned to the Government. The western portion of the Middle TTAL has been decommissioned for construction of the Tsang Tsui Columbarium and Garden of Remembrance and this Project involves the decommissioning of the remaining portion of the Middle TTAL.
- 1.4.1.3. The purpose of the Project is to decommission the remaining portion of the Middle Ash Lagoon in Tsang Tsui, Tuen Mun. The decommissioning will provide buildable land for future development. The proposed decommissioning works of the remaining portion of the Middle TTAL includes site clearance, levelling of PFA surface, covering of at least 1m thick general fill above the levelled PFA surface, and installation of temporary surface drainage system.
- 1.4.1.4. Upon completion of decommissioning phase of the Project, part of the site will be considered for the temporary relocation of the Y-PARK. Y-PARK is a yard waste recycling facility, which is equipped with plants and equipment such as wood shredders, hammer mill, wood cutting machines, and drying units, and thereby be capable of converting sorted and suitable yard waste into recyclable products with various applications. The remaining part is considered for temporary stockpiling of construction materials and other beneficial uses, so as to best utilise the landuse potential of the Middle TTAL.

## **1.5 Number and Type of Designated Project to be Covered by This Project Profile**

- 1.5.1.1. 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.
- 1.5.1.2. 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.
- 1.5.1.3. 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.

## **1.6 Name and Telephone Number of Contact Person(s)**

Dr. KWAN Cheuk Yan, Joanna

Senior Environmental Protection Officer, Strategic Facilities Development and Planning Group, Environmental Protection Department

Rm. 1601-03, 16/F., Chinachem Exchange Square, 1 Hoi Wan Street, Quarry Bay, Hong Kong

Tel: 3529 2907

Fax: 3529 2991

Mr. CHEUNG Chi-shing

Environmental Protection Officer, Strategic Facilities Development and Planning Group, Environmental Protection Department

Rm. 1601-03, 16/F., Chinachem Exchange Square, 1 Hoi Wan Street, Quarry Bay, Hong Kong

Tel: 3529 2793

Fax: 3529 2991

## 2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

### 2.1 Project Planning and Implementation

- 2.1.1.1. The Project involves decommissioning of an area within the Middle TTAL 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 Time-table

- 2.2.1.1. The tentative programme for the whole decommissioning work is approximately 10 months, and is tentatively scheduled to start in 2023. However, there is possibility that the decommissioning work will be conducted phase by phase and if so, each phase of decommissioning work would be proportionally shorter. Key implementation milestones of the Project are summarised in **Table 2.1** below.

**Table 2.1 Key Implementation Milestones of the Project**

Key Milestone	Tentative Programme
Site Clearance	1 <sup>st</sup> to 3 <sup>rd</sup> month
Levelling of PFA platform and covering of at least 1m thick general fill	2 <sup>nd</sup> to 9 <sup>th</sup> month
Installation of temporary surface drainage system	8 <sup>th</sup> to 10 <sup>th</sup> month

- 2.2.1.2. The Project will provide flat buildable land for future development by the government and potential environmental impact associated with future development of the site is not within the scope of this Project.

### 2.3 Interactions with Other Projects

- 2.3.1.1. The Project Site is located within the Middle TTAL and the proposed West New Territories (WENT) Landfill Extension has been identified to be a potential concurrent project with the Project.
- 2.3.1.2. The proposed WENT Landfill Extension is located to the south of the Project Site, with T-PARK located to the east. The WENT Landfill Extension project comprises all works necessary for the extension of the existing WENT Landfill (including site formation, installation of landfill liner system, and provision of leachate treatment and landfill gas management systems). According to the latest programme, the WENT Landfill Extension contract, in design-build-operate (DBO) form, will be awarded in mid to late 2023, with a view to commencing waste intake in 2026.
- 2.3.1.3. In view of DBO nature of the WENT Landfill Extension contract, it is anticipated that only preliminary activities of minor nature, such as site clearance, background environmental monitoring, etc. would take place in the initial few months of the detailed design stage upon contract award. According to the time-table in **Section 2.2**, the decommissioning work for the Middle TTAL should have been substantially, if not entirely, completed by the time when the major construction activities for WENT Landfill Extension would commence. The cumulative impact due to the WENT Landfill Extension project is therefore considered insignificant.
- 2.3.1.4. A summary of potential concurrent project is given in **Table 2.2**.

**Table 2.2 Summary of Potential Concurrent Project**

<b>Project Title</b>	<b>Works</b>	<b>Tentative Construction Period</b>
WENT Landfill Extension	Construction (including site formation, installation of landfill liner system, provision of leachate treatment and landfill gas management systems) and Operation of WENT Landfill Extension	Mid to late 2023: commence works,  2026: commence waste intake

### 3 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

#### 3.1 General

- 3.1.1.1. The total area of the Project Site is approximately 208,000m<sup>2</sup> (20.8 ha) which comprises a 159,000m<sup>2</sup> (15.9 ha) PFA platform and a 49,000m<sup>2</sup> (4.9 ha) paved area along the northern and southern boundary.
- 3.1.1.2. The elevation of the PFA platform is generally ranging from +6.0 mPD to +7.5 mPD with a strip of upheaved zone (refer to **Figure 2.1**) located near the eastern boundary of the Middle TTAL with the elevation from +9.0mPD to +10.0mPD. The paved area mainly comprises of a track which connects Nim Wan Road and Tsang Tsui Columbarium and a flat area at +5.5mPD. The elevation of the track ranges from +8.4mPD to +11.3mPD, which served as the construction access road during the decommissioning work of the west portion of Middle TTAL. Since it is concrete paved and no exposed PFA is found, no decommissioning is required for this area.
- 3.1.1.3. The T-PARK is located immediately to the east of the Project Site, while the Tsang Tsui Columbarium and Garden of Remembrance and the proposed WENT Landfill Extension are located to the west and south of the Project Site respectively.

#### 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 of 500m from the Project Site Boundary. During decommissioning phase of the Project, five existing representative Air Sensitive Receivers (ASRs) have been identified within the Study Area and these include the EPD WENT Landfill Site Office, T-PARK Site Office, existing Y-PARK Site Office, Tsang Tsui Garden of Remembrance and office of the Tsang Tsui Columbarium. The identified existing ASRs are listed in **Table 3.1** and locations presented in **Figure 3.1**. No planned ASRs are identified within the 500m Air Quality Study Area.

**Table 3.1 Representative Air Sensitive Receivers**

Sensitive Receiver ID	Description	Land Use	Number of Floors	Approximate Horizontal Distance from the Nearest Site Boundary (m)
ASR1	WENT Landfill Site Office	Industrial	2	294
ASR2	T-PARK Site Office	Industrial	2	235
ASR3	Tsang Tsui Garden of Remembrance	Garden of Remembrance	-	7
ASR4	Existing Y-PARK Site Office	Industrial	2	100
ASR5	Office of the Tsang Tsui Columbarium	Government, Institution or Community	1	98

Note: Office areas of WENT Landfill, T-PARK, existing Y-PARK and Tsang Tsui Columbarium are equipped with air-conditioning and the dust filter associated with the air-conditioning system.

Noise

- 3.2.1.2. The Noise Study Area covers an area of 300m from the Project Site Boundary (refer to **Figure 3.2**). There are no existing or planned Noise Sensitive Receivers (NSR) identified within the 300m Noise Study Area.

Water Quality

- 3.2.1.3. The Water Quality Study Area covers an area of 500m from the Project Site Boundary. The vicinity of the Project Site falls within the Deep Bay Water Control Zone (WCZ). Five existing Water Sensitive Receivers (WSRs) have been identified in **Table 3.2** below and their locations presented in **Figure 3.3**.

**Table 3.2 Representative Water Sensitive Receivers**

Sensitive Receiver ID	Description
W1	Channel located to the south of the Project Site
W2	Channel located to the south of the Project Site
W3	Natural watercourse located to the south of the Project Site
W4	Coastal waters of Deep Bay Water Control Zone
W5	Seawater Intake of T-PARK

Ecology

- 3.2.1.4. The ecological baseline of the Project Site was established from literature review and the recent ecological site check. The purpose of the recent site check was to collect latest ecological baseline information as to verify the validity of ecological baseline and impact assessment from previous studies. The site checks covered habitat and vegetation, avifauna, herpetofauna, butterfly, odonate, mammal, aquatic fauna and intertidal surveys, and conducted in areas within 500m from the boundary of the Project Site (hereafter referred as 'the Area'). The site checks were conducted during both day and night time from November 2020 to January 2021 (dry season), and May 2021 to July 2021 (wet season) (refer to **Figure 3.4** for the walk transects for habitat and vegetation, avifauna, herpetofauna, butterfly, odonate and mammal surveys; and sampling points for intertidal and aquatic fauna surveys).
- 3.2.1.5. A total of ten habitat types were identified within the Area in previous studies<sup>1,2,3,4</sup> and the recent site checks which included woodland, shrubland, grassland, plantation, developed area, wasteland, ash lagoon (i.e. West Ash Lagoon in Tsang Tsui), watercourse, seawall and enhancement pond. The habitats and the indicative locations of species of conservation importance recorded in recent site check are shown in **Figure 3.4**. Representative photos of habitats and species of conservation importance recorded in recent site check are presented in **Appendix A**. The flora and fauna list of the Area recorded in recent site check are presented in **Appendix B** and **C**, respectively.

<sup>1</sup> Environmental Protection Department (EPD). (2009a). Approved EIA Report for Sludge Treatment Facilities (AEIAR-129/2009).

<sup>2</sup> EPD. (2009b). Approved EIA Report for West New Territories (WENT) Landfill Extensions (AEIAR-147/2009).

<sup>3</sup> EPD. (2012). Approved EIA Report for Development of the Integrated Waste Management Facilities Phase 1 (AEIAR-163/2012).

<sup>4</sup> Food and Environmental Hygiene Department (FEHD). (2015). Approved Environmental Impact Assessment Report for decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun (AEIAR-186/2015).

- 3.2.1.6. According to previous studies, the Project Site was functioned as the ash lagoon (i.e. Middle TTAL) with water coverage before 2014<sup>1,2,3,4</sup>. About two-thirds of the Middle TTAL was filled up with PFA in 2013 and form a +10.5mPD platform in the western part of the Middle TTAL. The remaining portion only occasionally covered by shallow water and observed to be dry in June 2014 in previous study<sup>4</sup>. The Middle TTAL was returned to the Government in 2015, no active management (e.g. routine vegetation clearance) within the Middle TTAL is expected. The results of Environmental Monitoring and Audit (EM&A) reports of Sludge Treatment Facilities and Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun <sup>5,6,7</sup> suggested that the Middle TTAL was no longer a perennial water body from 2014 onwards. It was observed that the unfilled part of Middle TTAL was covered with 2% to 70 % (mostly below 40%) of water mainly during wet season from June 2014 - May 2017, while it was completely dry during dry season <sup>5,6,7</sup>. Other natural habitats recorded outside the Project Site, including woodland, grassland/shrubland and natural watercourse, were mainly situated on hillside to the south of the Project Site. These habitats mainly supported common and widespread flora species. Artificial habitats such as plantation, orchard/village, urbanised/disturbed area and seawall were also recorded, these habitats only supported low floral diversity.
- 3.2.1.7. Given that the Middle TTAL was not a perennial water body from 2014 onwards, it no longer supported these wetland-dependent species <sup>5,6,7</sup>. Moreover, the fluctuating water level in unfilled part of the Middle TTAL rendered it unfit for the breeding population of Little Grebe. No breeding behavior of Little Grebe was observed in Middle TTAL since 2015 <sup>4,5,6,7</sup>.
- 3.2.1.8. According to the recent surveys in 2021, the Project Site was comprised of wasteland, developed area, grassland and seawall. The wasteland was the dominant habitat within the Project Site and it was overgrown with ruderal exotic tree species such as *Leucaena leucocephala* and *Tamarix chinensis*. Other flora species such as *Bidens alba*, *Dicranopteris pedata* and *Celtis sinensis* were also recorded. Grassland habitat was located along the northeast corner and extending southwards, herb species including *Grangea maderaspatana*, *Persicaria lapathifolia* and *Rumex trisetifer* were commonly recorded. The wasteland and grassland habitats were observed to be dry during both dry and wet season surveys (refer **Appendix A**). The southwest corner of the Project Site was a construction site (i.e. developed area) which covered by limited vegetation including *Bauhinia spp.*, *Ruellia coerulea* and *Leucaena leucocephala*. The seawall was situated along the northern edge of the Project Site and formed by boulders. Flora species including *Celtis sinensis* and *Ficus macrocarpa* were sparsely recorded. The flora diversity was low within the Project Site and no flora species of conservation importance was recorded.
- 3.2.1.9. Habitats within the Project Site only supported low diversity and abundance of wildlife and majority of the recorded species are common in Hong Kong, including birds Scaly-breasted Munia (*Lonchura punctulata*), Crested Myna (*Acridotheres cristatellus*) and butterfly Red Ring Skirt (*Hestina assimilis*). Some common intertidal species were recorded along the seawall, such as bivalves, barnacles. Five avifauna species of conservation importance were recorded in the seawall and wasteland within the Project Site. Among which the recorded ardeids were observed foraging along the seawall. Calls of Lesser Coucal (*Centropus bengalensis*) were heard within the Project Site. Two mammal species of conservation importance, Chinese Horseshoe Bat (*Rhinolophus sinicus*) and Japanese Pipistrelle (*Pipistrellus abramus*)

<sup>5</sup> AEC (2016). Contract No. EP/SP/58/08 - Sludge Treatment Facilities Environmental Monitoring Results in Operation Phase - Post-Construction Phase Ecological Bi-monthly Monitoring Reports (April 2015 – June 2016).

<sup>6</sup> Fugro Technical Services Limited. (2015). Sludge Treatment Facilities EM&A Reports.

<sup>7</sup> Leighton Contractors (Asia) Limited. (2017). Final Review EM&A Report for Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun.

were recorded foraging in wasteland habitat within the Project Site. Individuals of dragonfly of conservation importance Coastal Glider (*Macrodiplax cora*), were recorded perching on trees along the seawall within Project Site.

- 3.2.1.10. Man-made habitats including plantation, developed area, wasteland, ash lagoon, seawall, modified watercourses and enhancement pond were also recorded in the surrounding of the Project Site. The plantation habitat mainly comprised of roadside and slope plantation. Developed area within the Area included Tsang Tsui Columbarium, T-PARK, WENT landfill and other land use such as traffic roads, brownfield workshops and construction sites. Plantation and landscaping flora species were commonly recorded. The wasteland habitat was similar to the wasteland recorded within the Project Site stated in **Section 3.2.1.6** above. Seawall was located on the northern edge of the Area and formed by boulders. The West Ash Lagoon was filled with water during the surveys. Grass and reed species including *Neyraudia reynaudiana* and *Phragmites australis* were commonly recorded along the edge of the lagoon. Watercourse W1 and W2 were modified watercourses with concreted bank. Both watercourses were approximately 10m in width with 5-20cm water depth. Some vegetation was recorded at the bankside of W1 but not in W2. Water quality was observed to be fine. The enhancement pond habitat, which functioned as alternative habitat for the Little Grebe in addition to the former Middle TTAL, was situated in the north-eastern part of T-PARK. No flora species of conservation importance was recorded.
- 3.2.1.11. Majority of these man-made habitats near the Project Site only supported low fauna diversity and abundance, except for the West Ash Lagoon which utilized by various waterbirds and wetland-dependent birds. A total of 40 avifauna species were recorded in the ash lagoon, of which 13 of them are species of conservation importance, including Grey Heron (*Ardea cinerea*) and Eurasian Coot (*Fulica atra*). Nests and juveniles of Little Grebe (*Tachybaptus ruficollis*) were also recorded. Beside avifauna, several individuals of dragonfly Coastal Glider (*Macrodiplax cora*), were recorded perching on trees along the seawall and within the ash lagoon.
- 3.2.1.12. Natural habitats including woodland, shrubland and watercourse W3 were recorded on hillslope at the southern half of the Area outside the Project Site. The woodland habitat supported low to moderate flora diversity. Dominant flora species in the canopy included *Celtis sinensis*, *Lithocarpus glaber*, etc. Three floral species of conservation importance were recorded in this habitat, including *Cibotium barometz*, *Diospyros vaccinioides*, and *Gnetum luofuense*. The shrubland supported low flora diversity, typical shrub species including *Melastoma malabathricum*, *Microcos nervosa* and *Psychotria asiatica* were commonly recorded. Watercourse W3 was observed to be natural and flows towards W1. It was approximately 1m in width with around 10cm water depth and cobbles bottom. Riparian vegetation included exotic herb species such as *Mikania micrantha*, and native herb species *Commelina diffusa* were recorded. Water quality was observed to be fine.
- 3.2.1.13. These natural habitats only supported low fauna abundance and diversity, some common and widespread species including bird Red-whiskered Bulbul (*Pycnonotus jocosus*) and butterfly Red-base Jezebel (*Delias pasithoe pasithoe*) were recorded. The woodland habitat supported higher diversity of butterfly species among the Area, probably due to the higher diversity of flora species it supported. Freshwater invertebrates including caddisfly, stonefly and crustaceans were recorded in W3. No fauna species of conservation importance was recorded in these natural habitats.



- 3.2.1.14. Majority of the habitats recorded within the Area are considered as having low or very low ecological value, except for woodland and ash lagoon which considered as having low to moderate value.

#### Cultural Heritage

- 3.2.1.15. There are no declared monuments, proposed monuments, graded historic sites/buildings and Government historic sites identified by the Antiquities and Monuments Office (AMO) within 500 m from the Project site. The Project Site does not encroach on the Tsang Tsui Site of Archaeological Interest (SoAI), which is located at more than 50m away to the south.

#### Landfill Gas

- 3.2.1.16. According to the latest programme, the proposed WENT Landfill Extension contract will be awarded in mid to late 2023, with a view to commencing waste intake in 2026. As detailed in the PWSC(2020-21)36 Paper (March 2021), the proposed Landfill Extension will have a reduced extension area (refer to **Appendix D**) as compared with the original design boundary adopted in the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA Report. The southern portion of the Project Site is located within the 250m Consultation Zone of the updated boundary of the WENT Landfill Extension (refer to **Figure 3.5**).
- 3.2.1.17. The location of the existing WENT Landfill and its 250m Consultation Zone, and the planned WENT Landfill Extension and its 250m Consultation Zone are presented in **Figure 3.5**. The potential sensitive receivers associated with landfill gas hazard has been identified to be the outdoor construction workers and site office workers at the Project Site during decommissioning phase.

#### Health Impact

- 3.2.1.18. The potential health impact induced by PFA contaminated dust emission has been evaluated in detail in previously approved EIA studies, including *Decommissioning of West Portion of The Middle Ash Lagoon at Tsang Tsui* EIA, *Sludge Treatment Facilities* EIA, *West New Territories (WENT) Landfill Extensions* EIA and *Development of the Integrated Waste Management Facilities Phase 1* EIA. The potential sensitive receivers associated with health impact is identified to be workers at the Project Site and off-site receivers (e.g. workers at T-PARK Site Office, existing Y-PARK Site Office, Office of the Tsang Tsui Columbarium and WENT Landfill Site Office) during decommissioning phase.

## 4 POTENTIAL IMPACTS ON THE ENVIRONMENT

### 4.1 Preliminary design of the decommissioning works of remaining portion of the Middle TTAL

4.1.1.1. The proposed works for decommissioning of the remaining portion of the Middle TTAL include:

- Decommissioning works on PFA Platform (Levelling of PFA surface and covering of at least one-meter thick general fill above the levelled PFA surface).

4.1.1.2. In addition, the associated works for the decommissioning of the remaining portion of the Middle TTAL under the Project include the following:

- Site clearance works (mainly tree removal works) at the Project Site; and
- Installation of temporary surface drainage system.

#### Decommissioning works on PFA Platform

4.1.1.3. The proposed method of decommissioning of the remaining portion of the Middle TTAL is the same as that proposed in the *Decommissioning of West Portion of the Middle Ash Lagoon, Tsang Tsui EIA*, which involves levelling of PFA surface followed by the covering of at least 1m thick general fill above the levelled final PFA surface.

4.1.1.4. The Project Site is expected to have a formation level of no less than +7.6mPD after the decommissioning works. The PFA within the PFA platform of the Project Site will be evened into a generally flat surface through levelling works. After levelling of the existing PFA surface, general fill will be deposited and compacted to at least 1m thick above the existing PFA platform to prevent it from being significantly disturbed due to any future development. The composition of general fill material used shall follow *General Specification for Civil Engineering Works, 2020 Edition, Section 6 Earthworks*. The general fill will be delivered to the Project Site via the construction access roads located to the south of the Project Site. It is expected that backhoes will be adopted for performing the filling works. The general fill shall be deposited in layers by backhoe and compacted by vibratory rollers as per statutory requirements. The general fill material used for filling activities shall mainly consist of natural soil material and rock.

4.1.1.5. The proposed powered mechanical equipment (PME) for the filling and compaction works include 12 backhoes, 12 vibratory rollers and 8 dozers. In order to minimize the duration of the decommissioning works and duration of associated dust impact, more numbers of PME have been proposed than in the *Decommissioning of West Portion of the Middle Ash Lagoon, Tsang Tsui EIA*.

4.1.1.6. According to the Annual Traffic Census 2020 published by the Transport Department (TD), the annual average daily traffic of Lung Kwu Tan Road which connects to Nim Wan Road is approximately 6,700. The estimated number of trips of trucks required per day is approximately 1% of this traffic flow. As such, the induced vehicular emission impact is expected to be minimal with consideration of the baseline conditions.

4.1.1.7. The Project will not involve any exportation of PFA or soil out of the Project Site. The existing seawall will not be alternated during proposed decommissioning works.

#### Site clearance

- 4.1.1.8. Site clearance works, which mainly involve removal of existing trees and vegetation, will be carried out before levelling of PFA surface.
- 4.1.1.9. The existing construction access road at the southern end of the Project Site (shown in **Figure 2.1**) would be used to direct inbound and outbound construction vehicles away from the Project Site to cater for the decommissioning works.

#### Installation of temporary surface drainage system

- 4.1.1.10. Perimeter cut-off drains to direct off-site water around the Project Site will be constructed for site drainage. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of decommissioning works.
- 4.1.1.11. Site surface water drainage outlet pipe will be constructed at the northern end of the Project Site for temporary site stormwater drainage purposes, which form part of the temporary surface drainage system.
- 4.1.1.12. Sand/silt traps will also be provided to remove sand/silt particles from runoff to meet the requirements of the *Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)*. The detailed design of the sand/silt traps shall be undertaken by the Contractor prior to the commencement of decommissioning works.

#### No decommissioning area

- 4.1.1.13. For the paved area along the northern and southern boundary, since it is concrete paved and no exposed PFA is found, only site clearance and levelling works but not any decommissioning works are required.

## **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**, and the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA, the potential sources of air quality impact during decommissioning phase would be fugitive dust arising from the following works:
  - Levelling of PFA surface;
  - Covering of at least one-meter thick general fill above the levelled PFA surface;
  - Installation of temporary surface drainage system.
- 4.2.1.2. The site area for the Decommissioning of West Portion of Middle TTAL Project was approximately 38,000m<sup>2</sup> (3.8 ha) and volume of PFA to be handled was 15,000m<sup>3</sup> (approximately 4,000m<sup>3</sup> PFA per ha). With reference to the air quality impact assessment conducted for the EIA, with the implementation of practicable dust suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, adverse air quality impact was not anticipated at the identified ASRs during decommissioning phase.
- 4.2.1.3. The Project site area is approximately 159,000m<sup>2</sup> (15.9 ha) and volume of PFA to be handled is 34,000m<sup>3</sup> (approx. 2,100 m<sup>3</sup> PFA per ha). With consideration of the nature of the Project decommissioning works (similar to that for West Portion of Middle TTAL), that the Project Site is located immediately to the East of West Portion of Middle TTAL with similar historical use (storage of PFA), that the volume of PFA to

be handled per ha and proposed PME per ha will be less than that for Decommissioning of West Portion of Middle TTAL Project, the large separation distance of the Project site to nearby ASR1, ASR2, ASR4 and ASR5 (refer to **Table 3.1**) and that they have been equipped with air-conditioning with dust filter, with the implementation of the dust suppression measures stipulated in *Air Pollution Control (Construction Dust) Regulation* and detailed in **Section 5.1.1**, adverse air quality impact during decommissioning phase is not anticipated at these ASRs. Since ASR3 (Tsang Tsui Garden of Remembrance) is an open area and the separation distance from the Project site is short, dust monitoring and regular site environmental audit is proposed at this location during decommissioning phase of the Project so as to ensure the implementation of the proposed dust mitigation measures and dust suppression measures stipulated in *Air Pollution Control (Construction Dust) Regulation* and as presented in **Section 5.1.1** and that the dust criteria stipulated in the EIAO-TM could be complied with at the nearest ASR3.

- 4.2.1.4. In order to minimize potential impact to the nearby ASRs, 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. Electric power supply should be provided as far as practicable for on-site PME in order to minimize gaseous emissions.
- 4.2.1.6. There is potential cumulative impact for the operation of the neighbouring T-PARK and the decommissioning phase of the Project. According to the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui EIA*, the main source of air quality impact during operation phase of the T-PARK is from chimney emissions and air pollution control and stack monitoring system installed for the T-PARK to ensure that the emissions from T-PARK stacks will comply with the emission limits stipulated in *Guidance Note on the Best Practicable Means for Incinerators (Municipal Waste Incineration) BPM 12/1*, the European Commission's Waste Incineration Directive and US's Emission Limits in *Title 40 Part 503 of CFR on Sewage Sludge Incineration*. Adverse cumulative air quality impact associated with decommissioning phase of the Project and operation phase of the T-PARK is not expected and the potential cumulative impact is considered to be adequately assessed in *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui EIA* and findings of the EIA still relevant.
- 4.2.1.7. There is also potential cumulative impact for the operation of the neighbouring existing Y-PARK and the decommissioning phase of the Project. The existing Y-PARK is a yard waste recycling centre commissioned in June 2021 and its scope of services include screening, sorting and processing of yard waste collected to produce different useful materials, such as compost and mulch for gardening and planting, bulking agent for composting and substrate for mushroom cultivation. The main source of air quality impact from operation of existing Y-PARK has been identified to be chimney emissions from operation of diesel generators (3 sets) and also minor activities from operation of a few diesel-driven plant including wood shredder/wood cutting machine, excavator and grab-lorry. With consideration of the nature of the Project decommissioning works and the recycling activities at existing Y-PARK which do not include major dust generating activities, cumulative impact due to operation of existing Y-PARK is considered to be insignificant.

- 4.2.1.8. Potential cumulative impact may arise if there are concurrent works during decommissioning phase of the Project and that of the WENT Landfill Extension. As stated in **Section 2.2** and **2.3**, the Project decommissioning works is tentatively scheduled to start in 2023 and according to the latest programme, the WENT Landfill Extension (DBO) contract will be awarded in mid to late 2023, with a view to commencing waste intake in 2026. It is anticipated that only preliminary activities of minor nature, such as site clearance, background environmental monitoring, etc. would take place in the initial few months of the detailed design stage upon contract award. The decommissioning work for the Middle TTAL is expected to have been substantially, if not entirely, completed by the time when the major construction activities for WENT Landfill Extension would commence. The cumulative impact due to the WENT Landfill Extension project is therefore considered insignificant.
- 4.2.1.9. For the existing WENT Landfill, there are mitigation measures in place such as active extraction system (for controlling potential risk of landfill gas migration) and covering with plastic sheet at inactive tipping phases of the landfill, adverse cumulative air quality impact associated with decommissioning phase of the Project and operation of the WENT Landfill is not 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 Noise Study Area (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 night-time (1900 – 0700), Sundays and public holidays.
- 4.2.2.3. Referring to **Section 3.2**, there are no NSRs identified within 300m Noise Study Area and cumulative noise impact during decommissioning phase of the Project is not expected. The potential noise impact during decommissioning phase is considered to be adequately assessed in the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA and its information and findings still relevant.

#### **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:
- Drainage and construction site runoff during decommissioning works;
  - Installation of temporary surface drainage system;
  - Sewage effluent by on-site construction workforce;
  - Accidental Spillage; and
  - Release of PFA Leachate from the Ash Lagoon.

- 4.2.3.2. The proposed drainage works involve construction of site surface water drainage outlet pipe at the northern end of the Project Site for temporary site stormwater drainage purposes. Perimeter cut-off drains to direct off-site water around the Project Site will be constructed. Runoff from the Project works areas may increase sediment loads and contaminants to the nearby identified WSRs.
- 4.2.3.3. 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. The construction site drainage will be collected by the temporary surface drainage system and treated on-site to meet the effluent discharge standards as stipulated in the *Technical Memorandum 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 obtain a discharge license from EPD for discharge to the Deep Bay WCZ.
- 4.2.3.4. 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 the proper implementation of the mitigation measures proposed in **Section 5.1.3**.
- 4.2.3.5. Site drainage system and facilities will be well maintained and good construction practices enforced to ensure that oil, fuels and solvents are managed, stored and handled properly and do not enter the nearby streams. With good site practices and proper implementation of mitigation measures, adverse water quality impact is not expected.
- 4.2.3.6. With reference to the proposed decommissioning and associated works presented in **Section 4.1**, the seawall located to the north of the Project Site will not be affected by Project works and PFA leachate is not expected to be released from the Project Site to WSR W4. Furthermore, no excavation or underground works is proposed and groundwater contamination due to the Project works during decommissioning phase is not expected.
- 4.2.3.7. There is potential cumulative impact for the operation of the neighbouring T-PARK and the decommissioning phase of the Project. According to the Sludge Treatment Facilities EIA, wastewater generated will be discharged to the on-site wastewater treatment plant and treated effluent reused within the T-PARK. Wastewater effluent discharge into the Deep Bay is not expected and cumulative water quality impact with the decommissioning phase of the Project is not expected.
- 4.2.3.8. Potential cumulative impact may arise if there are concurrent works during decommissioning phase of the Project and that of the WENT Landfill Extension. According to the approved EIA Report for the WENT Landfill Extension, it is expected that there will be proper implementation of the recommended construction site runoff control measures during decommissioning phase and as such, adverse cumulative water quality impact is not expected.
- 4.2.3.9. For the existing WENT Landfill which is located at over 260m to the east of the Project Site, according to the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA, the leachate generated is treated by treatment plant prior to discharge to the Lung Kwu Sheung Tan Outfall Chamber and then the Urmston Road Submarine Outfall. Cumulative impact with the Project is not anticipated. The potential water quality impact during decommissioning phase is considered to be adequately assessed in the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA and its information and findings still relevant.

#### 4.2.4 Waste Management

- 4.2.4.1. The types of waste generated during decommissioning phase of the Project are expected to include Construction and Demolition (C&D) materials, chemical waste and general refuse. No inert C&D materials are expected to be generated, as they are all involved in the levelling works. The amount of non-inert C&D materials generated is expected to be around 145m<sup>3</sup>. These materials 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. The tentative transportation routings for the disposal during decommissioning phase is presented in **Table 4.1**.
- 4.2.4.2. 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 collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi. The tentative transportation routings for the disposal of chemical waste during decommissioning phase is presented in **Table 4.1**.
- 4.2.4.3. 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 150. Based on a generation rate of 0.65kg per worker per day, approximately 97.5kg 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. The potential waste management implications during decommissioning phase are considered to be adequately assessed in the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA and its information and findings still relevant.

**Table 4.1 Tentative Transportation Routings for Waste Disposal during Decommissioning Phase**

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

#### **4.2.5 Ecology**

- 4.2.5.1. The proposed site clearance and decommissioning works would also result in the removal of existing vegetation in wasteland (18.41 ha), developed area (1.49 ha), grassland (0.82 ha) and seawall (0.09 ha) at the Project Site. As discussed in **Section 3.2.1.8**, the wasteland, developed area and seawall were dominated by ruderal and exotic species and only limited herb species were recorded in grassland. No flora species of conservation importance would be directly impacted. Hence, the ecological impact on vegetation is anticipated to be minor.
- 4.2.5.2. The habitats within the Project Site were found to support only low faunal diversity and abundance, and majority of the recorded species are common and widespread in Hong Kong. While five avifauna and two mammal species of conservation importance were recorded within Project Site, it is considered that these habitats are unlikely to be significant for these species of conservation due to its man-made nature and similar alternative habitats are available in the surrounding. No notable breeding and roosting behaviour were observed within the Project Site. Hence, ecological impact from the loss of habitats is anticipated to be minor.
- 4.2.5.3. The decommissioning activities could result in direct injury or mortality on wildlife. However, given that the Project Site only supported low fauna diversity and abundance, and the recorded fauna within the Project Site are highly mobile. Therefore, direct impact from potential injury or mortality on wildlife is considered minor.
- 4.2.5.4. The proposed works stated in **Section 4.1** would cause indirect disturbance impacts (e.g. noise-generating construction plant, increased human activities, light and glare from construction site) to surrounding habitats, resulting in decreased habitat quality and fauna utilisation at nearby habitats, including the West Ash Lagoon which utilized by various wetland-dependent birds and functioned as the breeding ground for Little Grebe. However, the West Ash Lagoon is largely screened by the Tsang Tsui Columbarium, it is expected that the disturbance impact to the relatively sensitive area arising from noise and glare is limited.
- 4.2.5.5. Other disturbance impact such as dust generated during decommissioning may hinder photosynthesis and survival of vegetation, site runoff and potential spillage of oil/chemical may potentially contaminate adjacent habitats (e.g. watercourse) and affect associated wildlife. Nonetheless, as stated in **Section 4.2.1** and **4.2.3**, with the proper implementation of good site practices (e.g. dust emission control measures, proper handling and disposal of construction discharges), unacceptable indirect impacts arising from dust and site runoff are not anticipated.
- 4.2.5.6. Potential cumulative impact may arise if there are concurrent works during decommissioning phase of the Project and that of the WENT Landfill Extension. Cumulative loss of habitats of low ecological value and disturbance impact (e.g. dust, noise, human activities, glare) to wildlife at West Ash Lagoon and natural habitats at the southern part of the Area would be expected. With implementation of mitigation measures, such as good site practices to minimise the disturbance impact arising from decommissioning activities, no unacceptable cumulative indirect impacts are anticipated.



#### **4.2.6 Land Contamination**

- 4.2.6.1. Based on review of historical aerial photographs presented in **Appendix E**, the Project Site has been filled with water since 1980s and with PFA since the 1990s. Site visit was conducted on 9<sup>th</sup> February 2022 (refer to **Appendix F**) and no anthropogenic activities nor source of contamination was observed. Site walkover checklist (from Annex C1 of EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*) was prepared based on observations made during the site visit and is presented in **Appendix G**. From review of the available information, there are no previous records of leakage and/or damage throughout operation period of the ash lagoon.
- 4.2.6.2. Similar to the findings of the land contamination assessment conducted for the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui EIA*, 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. With consideration of the historical and existing land use of the Project Site, and that protective liners for prevention of leakage of the stored water and PFA had previously been constructed (with no previous records of leakage and/or damage), adverse land contamination issues are not expected.
- 4.2.6.3. 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 **Section 5.1.6**, land contamination issues at the Project Site are not expected.

#### **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 Site of Archaeological Interest (SoAI), which is located at more than 50m away to the south. 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 Landfill Gas Hazard**

- 4.2.8.1. The southern portion of the Project Site is located within the 250m Consultation Zone of the latest boundary of the WENT Landfill Extension according to PWSC(2020-21)36 (refer to **Figure 3.5**) and the Landfill Gas Hazard review conducted is applicable for this portion of the Project Site.
- 4.2.8.2. Reference is made to the Landfill Gas Hazard Assessment (LFGHA) conducted in accordance with EPD's LFGHA Guidance Note for the approved *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui EIA* which evaluated the potential landfill gas hazard during decommissioning phase to workers at the West Portion of the Middle TTAL (i.e. location of existing Tsang Tsui Columbarium and Garden of Remembrance) related to the WENT Landfill Extension.

Source

4.2.8.3. According to the assessment conducted, the “Source” (i.e. WENT Landfill Extension) was determined to be “**MEDIUM**”, as landfill gas control measures will be adopted including the following:

- Multi-layer composite liner systems covering the entire surface area of the landfill site with LFG collection and management systems to eliminate any off-site migration of LFG;
- Active gas extraction systems; and
- Gas control systems installed and comprehensive monitoring conducted to ensure no migration of gas beyond landfill boundary.

Pathway

4.2.8.4. Based on the updated boundary of waste filling area of the WENT Landfill Extension from PWSC(2020-21)36 (**Appendix D**), the distance from Project Site to the WENT Landfill Extension is 94m and the “Pathway” is evaluated to be “**MODERATELY SHORT/DIRECT**” (refer to **Figure 3.5** which presents updated boundary of waste filling area of the WENT Landfill Extension and the 250m Consultation Zone).

Target

4.2.8.5. During decommissioning and associated works, construction workers which have had adequate training on the potential hazards relating to landfill gas will be working at the Project Site in an outdoor environment. In accordance with the LFGHA Guidance Note, target sensitivity is evaluated to be “**MEDIUM**”. For potential site office to be located on-site, it will be accessed by construction workers and project related personnel only. These staff will have been briefed on the potential hazards relating to landfill gas and knowledgeable on all relevant safety precautions and procedures. As such, for site office, the target sensitivity is evaluated to be “**MEDIUM**”.

Qualitative Review

4.2.8.6. **Table 4.2** presents the summary of the qualitative LFGHA for WENT Landfill Extension. The LFG risks arising from decommissioning and associated works of the Project is determined to be “**MEDIUM**” for outdoor construction workers and the site office workers if located at Project Site area that is within the 250m Consultation Zone of the WENT Landfill Extension (refer to **Figure 3.5**).

**Table 4.2 Qualitative LFG Risk Assessment Matrix**

Source	Pathway	Target	Risk
WENT Landfill Extension: <b>MEDIUM</b>	<b>MODERATELY SHORT/DIRECT</b>	Outdoor construction workers: <b>MEDIUM</b>	<b>MEDIUM</b>
		Site office workers: <b>MEDIUM</b>	<b>MEDIUM</b>

#### **4.2.9 Health Impact**

- 4.2.9.1. During decommissioning phase, there will be no excavation works conducted within the Project Site and no transportation of PFA for disposal off-site. According to the Health Impact Assessment conducted for the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA, it concluded that the health impact associated with PFA due to emissions in the decommissioning phase expected to be negligible. For site office workers which may have potential for increased radiation exposure from radon flux, with the implementation of the recommended mitigation measures listed in **Section 5.1.9**, health impact is also concluded to be not anticipated.
- 4.2.9.2. With consideration that the Project Site is located immediately to the east of west portion of Middle TTAL, that the historical use and condition of the Project Site is the same as that of west portion of Middle TTAL (for storage of PFA), and that the proposed method for decommissioning works is also similar (refer to **Section 4.1**), it is considered that the findings of the Health Impact Assessment for the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA is also relevant for the Project Site. As such, during decommissioning phase of the Project, adverse health impact for outdoor construction workers and site office workers is not anticipated with the implementation of the recommended measures in **Section 5.1.9**.

#### **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 by the government. No equipment operation or human activities are expected and no adverse environmental impact is anticipated.

## **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, referencing those proposed under *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA, due to the similar nature of the Project works.

- Dust Suppression by watering of construction area at least 10 times per day;
- Provide covering of 50% of open area with impervious materials or concrete paving;
- 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 2.4m high from ground level should be provided along the entire length except for a site entrance or exit;
- For site boundary near ASR3, hoarding of higher than 2.4m high from ground level should be provided;
- 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 sites;
- 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 ASRs; and
  - 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 (ASR3) 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 order to minimize gaseous emissions.

### **5.1.2 Noise**

- 5.1.2.1. Standard noise control measures such as the use of quiet 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, if any, should be sited as far away from NSRs as possible;
  - PME that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
  - Plant known to emit noise strongly in one direction should, wherever possible, be directed away from the nearby NSRs; and
  - Material stockpiles and other structures should be effectively utilized, wherever practicable, for screening noise from on-site construction activities.

### **5.1.3 Water Quality**

- 5.1.3.1. The site practices outlined in *ProPECC PN 1/94 "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

- In order to minimize adverse water quality impact for construction of temporary drainage outlet pipe at the northern end of the Project Site for temporary site stormwater drainage purposes, works shall, as far as possible, be scheduled to commence during dry season in order to prevent potential disturbance to breeding activities and adversely increase turbidity of nearby waterbodies. Silt fences shall be erected to prevent contaminated surface runoff from entering the water channel;

- Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the Technical Memorandum standard under the *Water Pollution Control Ordinance*;
- 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;
- All exposed PFA/earth areas should be covered immediately after the works have been completed. If excavation of PFA/soil cannot be avoided in these months or at any time of the year when rainstorms are likely to happen. For the purpose of preventing soil erosion, temporarily exposed slope/soil surfaces should be covered by tarpaulin. 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 1/94 "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 PFA 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; and
- 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.

- The construction runoff discharged from the Project Site shall fully comply with the standards stipulated in the Water Pollution Control Ordinance (including the Water Quality Objectives for Deep Bay Water Control Zone), otherwise directed to the on-site leachate treatment facilities prior to discharge.

#### **5.1.4 Waste Management**

5.1.4.1. As stated in **Section 4.2.4.1**, no inert C&D materials are expected to be generated, as they are all involved in the levelling works. Nevertheless, within the stockpiling areas associated with the levelling works, the following 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 visual impacts; and
- Warning signs should be put up to remind the designated disposal sites. 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 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. Habitat loss arising from the Project includes the loss of wasteland, developed area, grassland and seawall. Given that only minor ecological impact is expected from the habitat and vegetation loss, and the affected habitats were not considered as important habitats under EIAO-TM, hence mitigation measure related to habitat and vegetation loss would not be required.

5.1.5.2. The decommissioning activities would be confined within Project Site and avoid direct impact on adjacent natural habitats (e.g. woodland, shrubland). No sites or ecological resources of conservation importance would be lost under the Project.

5.1.5.3. Disturbance from decommissioning activities may arise, the impact to nearby habitats caused by disturbance is considered limited and minor given the Project Site was already surrounded by developed area, where facilities such as Tsang Tsui Columbarium and T·PARK are already in operation.

5.1.5.4. Nevertheless, the indirect impact arising from the decommissioning activities would be minimized to the lowest level through the implementation of good site practices.

Construction activities should be restricted within clearly demarcated works areas and provision of screening (e.g. site hoardings, noise barriers) should be implemented during decommissioning phase.

- 5.1.5.5. To alleviate dust emission, dust suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* should be implemented to avoid and minimize impacts to the surrounding habitats and the associated wildlife arising from the construction activities. Other good site practices are also recommended such as intermittent use of equipment and regular water spray at dusty operations as stated in **Section 5.1.1**.
- 5.1.5.6. Noise impact during decommissioning phase should be minimized to reduce the disturbance to the natural habitats and ash lagoon near the Project Site. The implementation of noise control requirements stated in EPD's "*Recommended Pollution Control Clauses for Construction Contracts*" is recommended. Implementation of other mitigation measures stated in **Section 5.1.2** are also recommended in order to reduce the disturbance to the ecologically sensitive habitats near the Project Site.
- 5.1.5.7. Good site practices as described in *ProPECC PN 1/94 "Construction Site Drainage"* should be adopted to avoid any pollution or improper discharge entering the watercourses nearby where applicable, such as site runoff should be directed towards regularly cleaned and maintained sand traps and silt traps, catchpits and perimeter channels should be constructed in advance of site formation works and earthworks, etc. Implementation of other mitigation measures stated in **Section 5.1.3** are also recommended.
- 5.1.5.8. The intensity of artificial light from construction activities should also be controlled to the lowest possible level. Unnecessary lighting should be turned off outside the working hours of the construction sites. A balance between lighting for safety and avoiding excessive lighting can be achieved by using directional lighting.

#### **5.1.6 Land Contamination**

- 5.1.6.1. Adverse environmental impact associated with land contamination is not expected during the proposed decommissioning works. The following good site practices should be implemented by the Contractor to prevent leakage of stored PFA and water and to minimize health impact on construction workers:
- With reference to the Land Contamination Assessment conducted for *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui EIA*, a protective liner was previously installed and maintained by CLP. Responsible personnel should be requested to maintain the protective liner during the decommissioning works so as to prevent leakage of the stored PFA and water;
  - Use of proper personal protective equipment (PPE) for construction workers with direct contact with stored PFA/water; and
  - Prevention of workers from ingesting the stored PFA/water.

#### **5.1.7 Cultural Heritage**

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



### 5.1.8 Landfill Gas Hazard

5.1.8.1. According to the review conducted in **Section 4.2.8**, “**MEDIUM**” risk was evaluated for both outdoor construction workers and workers at site office and in accordance with EPD’s LFGHA Guidance Note, engineering and precautionary measures are considered necessary to protect the safety of the workers. The following mitigation measures have been proposed and it should be noted that they are only applicable when the WENT Landfill Extension is in operation.

- Landfill gas monitoring should be conducted during ground works (e.g. construction of drainage system at Project Site) and manual monitoring to be conducted using portable calibrated instruments. Actions should be taken in accordance with **Table 5.1** when detected levels of stipulated parameters reach the limit.
- Site office should be provided with proper ventilation system to keep it well ventilated and be designed to be raised clear off the ground with a minimum clearance of 500mm. Safety notices should be posted at the site office with warnings of potential landfill gas hazards. Appropriate breathing apparatus should be made available and gas detection equipment used to conduct on-going gas monitoring to ensure that the office areas remain gas free. In the event that the detected levels reach the limit levels stipulated in **Table 5.1**, the relevant action as stated will need to be taken.

**Table 5.1 Actions in the Event of Gas Being Detected in Excavations**

Parameter	Measurement	Action
O <sub>2</sub>	<19%	Ventilate trench/void to restore O <sub>2</sub> to >19%
	<18%	Stop works, evacuate personnel/prohibit entry, increase ventilation to restore O <sub>2</sub> to >19%
CH <sub>4</sub>	>10% LEL	Post "No Smoking" signs, prohibit hot works, ventilate to restore CH <sub>4</sub> to <10% LEL
	>20% LEL	Stop works, evacuate personnel/prohibit entry, increase ventilation to restore CH <sub>4</sub> to <10% LEL
CO <sub>2</sub>	>0.5%	ventilate to restore CO <sub>2</sub> to <0.5%
	>1.5%	Stop works, evacuate personnel/prohibit entry, increase ventilation to restore CO <sub>2</sub> to <0.5%

5.1.8.2. The precautionary measures to be adopted during decommissioning phase of the Project is detailed in the LFGHA Guidance Note. The proposed measures will form part of the specifications of the construction contract to ensure that the Contractor is fully aware of the decommissioning phase landfill gas hazards during tender stage.

### 5.1.9 Health Impact

5.1.9.1. In line with the proposed mitigation measures related to Health Impact in the *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA Report, under the “As Low as Reasonably Practicable” (ALARP) Principle, the following mitigation 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; and
- 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*".

## **5.2 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, mitigation measures are not considered to be 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 and mitigation measures not considered to be required.

### **5.2.3 Water Quality**

- 5.2.3.1. Upon completion of decommissioning phase of the Project, there will be no human activity or equipment operation associated with the Project and adverse water quality impact is not expected. Mitigation measures not considered to be 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. Mitigation measures are not considered to be 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 environmental impact is not expected. Mitigation measures are not considered to be required.

### **5.2.6 Land Contamination**

- 5.2.6.1. Upon completion of decommissioning phase of the Project, there will be no equipment operation or human activities associated with the Project. No sources of land contamination impact are identified and mitigation measures are not considered to be required.

### **5.2.7 Cultural Heritage**

- 5.2.7.1. 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 Site of Archaeological Interest (SoAI), which is located at more than 50m away to the south. No direct impact to the archaeology would be anticipated. Mitigation measures are not considered to be required.

### **5.2.8 Landfill Gas Hazard**

- 5.2.8.1. Upon completion of decommissioning phase of the Project, the Project Site will be an open area with no human activity or equipment operation. Adverse environmental impact associated with landfill gas hazard is not expected. Mitigation measures are not considered to be required.

### **5.2.9 Health Impact**

- 5.2.9.1. Upon completion of decommissioning phase of the Project, the Project Site will be an open area and adverse impact associated with health risk is not expected. No mitigation measure is considered to be 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. Due to the relatively close distance of ASR3 (Tsang Tsui Garden of Remembrance) to the Project site, dust monitoring during the decommissioning phase of the Project is proposed and details to be included in the Dust Monitoring Plan to be submitted before commencement of the decommissioning work. Environmental Site Audit is to be conducted during the decommissioning phase to ensure 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, there will be no human activity or equipment operation at the Project Site and adverse environmental impacts not anticipated and hence, EM&A not considered to be necessary.

## 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 no human activity or equipment in operation, adverse environmental impact is not expected and mitigation measures 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
<b>Decommissioning Phase</b>			
Air Quality (Construction Dust)	<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"> <li>Dust Suppression by watering of construction area at least 10 times per day;</li> <li>Provide covering of 50% of open area with impervious materials or concrete paving;</li> <li>Provision of pavement to construction access road with concrete paving and provide wheel washing facility at entrance and exit;</li> <li>Skip hoist for material transport should be completely enclosed by impervious sheeting;</li> <li>Vehicle washing facilities should be provided at every vehicle exit point;</li> <li>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;</li> <li>Where a site boundary adjoining a road, streets or other areas accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit;</li> <li>For site boundary near ASR3, hoarding of higher than 2.4m high from ground level should be provided;</li> <li>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;</li> </ul>	Contractor	5.1.1

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
	<ul style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet;</li> <li>Open stockpiles should be avoided or covered. Where possible prevent placing dusty material storage piles near ASRs;</li> <li>Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites;</li> <li>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;</li> <li>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;</li> <li>Imposition of speed limit for vehicles on unpaved site roads – the recommended limit is 10 km/hr;</li> <li>Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs; and</li> <li>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.</li> </ul> <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 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 order to minimize gaseous emissions.</p>		

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Noise	<p>Standard noise control measures such as the use of quiet 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"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during decommissioning phase of the Project;</li> <li>• Silencers or mufflers on construction equipment, if applicable, should be utilized and should be properly maintained;</li> <li>• Mobile plant, if any, should be sited as far away from NSRs as possible;</li> <li>• PME that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• Plant known to emit noise strongly in one direction should, wherever possible, be directed away from the nearby NSRs; and</li> <li>• Material stockpiles and other structures should be effectively utilized, wherever practicable, for screening noise from on-site construction activities.</li> </ul>	Contractor	5.1.2
Water Quality	<p>The site practices outlined in <i>ProPECC PN 1/94 "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"> <li>• In order to minimize adverse water quality impact for construction of temporary drainage outlet pipe at the northern end of the Project Site for temporary site stormwater drainage purposes, works shall, as far as possible, be scheduled to commence during dry season in order to prevent potential disturbance to breeding activities and adversely increase turbidity of nearby waterbodies. Silt fences shall be erected to prevent contaminated surface runoff from entering the water channel;</li> <li>• Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the Technical Memorandum standard under the <i>Water Pollution Control Ordinance</i>;</li> <li>• 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.</li> </ul>	Contractor	5.1.3

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
	<p>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"> <li>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;</li> <li>All exposed PFA/earth areas should be covered immediately after the works have been completed. If excavation of PFA/soil cannot be avoided in these months or at any time of the year when rainstorms are likely to happen. For the purpose of preventing soil erosion, temporarily exposed slope/soil surfaces should be covered by tarpaulin. Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed;</li> <li>Precautionary measures in accordance with Appendix A2 of ProPECC PN 1/94 "Construction Site Drainage" will be taken at any time of the year when rainstorms are likely to occur;</li> <li>Open stockpiles of construction materials on-site and exposed PFA 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; and</li> <li>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.</li> </ul> <p><u>Sewage from Construction Workers</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Accidental Spillage of Chemical</u></p> <ul style="list-style-type: none"> <li>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;</li> <li>Any maintenance facilities should be located on hard standings within a bunded area and sumps and oil interceptors should be provided.</li> </ul>		

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
	<p>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;</p> <ul style="list-style-type: none"> <li>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; and</li> <li>The construction runoff discharged from the Project Site shall fully comply with the standards stipulated in the Water Pollution Control Ordinance (including the Water Quality Objectives for Deep Bay Water Control Zone), otherwise directed to the on-site leachate treatment facilities prior to discharge.</li> </ul>		
Waste Management	<ul style="list-style-type: none"> <li>Within the stockpiling areas associated with the levelling works, the following measures should be taken to control potential environmental impacts or nuisance: <ul style="list-style-type: none"> <li>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;</li> <li>Covering materials during heavy rainfall;</li> <li>Locating stockpiles to minimize potential visual impacts; and</li> <li>Warning signs should be put up to remind the designated disposal sites. CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.</li> </ul> </li> <li>Non-inert C&amp;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.</li> <li>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 collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi; and</li> </ul> <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 Contractor to collect and dispose of general refuse on a daily or every second day basis to minimize odour, pest and litter impacts.</p>	Contractor	5.1.4



Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Ecology	<p>The potential indirect impact arising from the Project construction activities would be minimized through implementation of good site practices including the following:</p> <ul style="list-style-type: none"> <li>• Construction activities to be restricted within clearly demarcated works areas and provision of screening (e.g. site hoardings, noise barriers);</li> <li>• Dust suppression measures stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i>;</li> <li>• Implementation of noise control requirements under EPD's <i>Recommended Pollution Control Clauses for Construction Contracts</i> and noise mitigation measures recommended under <b>Section 5.1.2</b>;</li> <li>• ProPECC PN 1/94 "<i>Construction Site Drainage</i>" should be adopted to avoid pollution and improper discharge entering watercourses nearby. Site runoff should be directed towards regularly cleaned and maintained sand traps and silt traps, catchpits and perimeter channels should be constructed in advance of site formation works and earthworks. Implementation of mitigation measures under <b>Section 5.1.3</b> is also recommended; and</li> <li>• The intensity of artificial light from construction activities should be controlled to the lowest possible level. Unnecessary lighting should be turned off outside the working hours of the construction sites. A balance between lighting for safety and avoiding excessive lighting can be achieved by using directional lighting.</li> </ul>	Contractor	5.1.5
Land Contamination – no impact	<p>The following good site practices should be implemented by the Contractor to prevent leakage of stored PFA and water and to minimize health impact on construction workers:</p> <ul style="list-style-type: none"> <li>• With reference to the Land Contamination Assessment conducted for <i>Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui</i> EIA, a protective liner was previously installed and maintained by CLP. Responsible personnel should be requested to maintain the protective liner during the decommissioning works so as to prevent leakage of the stored PFA and water;</li> <li>• Use of proper personal protective equipment (PPE) for construction workers with direct contact with stored PFA/water; and</li> <li>• Prevention of workers from ingesting the stored PFA/water.</li> </ul>	Contractor	5.1.6

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Landfill Gas Hazard – no impact	<ul style="list-style-type: none"> <li>Landfill gas monitoring should be conducted during ground works (e.g. construction of drainage system at Project Site) and manual monitoring to be conducted using portable calibrated instruments. Actions should be taken in accordance with <b>Table 5.1</b> when detected levels of stipulated parameters reach the limit; and</li> <li>Site office should be provided with proper ventilation system to keep it well ventilated and be designed to be raised clear off the ground with a minimum clearance of 500mm. Safety notices should be posted at the site office with warnings of potential landfill gas hazards. Appropriate breathing apparatus should be made available and gas detection equipment used to conduct on-going gas monitoring to ensure that the office areas remain gas free. In the event that the detected levels reach the limit levels stipulated in <b>Table 5.1</b>, the relevant action as stated will need to be taken.</li> </ul>	Contractor	5.1.8
Health Risk – no impact	<p>Under the “As Low as Reasonably Practicable” (ALARP) Principle, the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> <li>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;</li> <li>Provision of sufficient ventilation for the site office – forced and natural ventilation should be introduced properly to enhance air exchange rate in the buildings; and</li> <li>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>”.</li> </ul>	Contractor	5.1.9

## **7 USE OF PREVIOUSLY APPROVED ENVIRONMENTAL IMPACT ASSESSMENT REPORTS**

### **7.1 Previously Approved EIA Reports**

7.1.1.1. The following approved EIA Reports have been referred to in this Project Profile:

- Schedule 2 EIA Report for Sludge Treatment Facilities (AEIAR-129/2009) (approved on 19 February 2009);
- Schedule 2 EIA Report for Agreement No. CE43/2006(EP) West New Territories (WENT) Landfill Extensions – Feasibility Study (AEIAR-147/2009) (approved on 20 November 2009); and
- Schedule 2 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).

7.1.1.2. The *Sludge Treatment Facilities* EIA has addressed the potential environmental impact associated with the construction and operation of the T-PARK. 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 *WENT Landfill Extension* EIA has addressed the potential environmental impact associated with the construction, operation and aftercare phases of the WENT Landfill Extension. 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 *Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui* EIA has addressed the potential environmental impact associated with the decommissioning works of the west portion and southern edge of the Middle TTAL, 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, during decommissioning phase, with the implementation of dust control measures, radon emission is considered as insignificant to on-site workers. It also concluded that the provision of at least 1m of soil is adequate to prevent PFA from emitting into the air, and to minimize radon flux to the surface and health impact upon completion of decommissioning phase of the Project. No cultural heritage impact assessment was conducted as part of the EIA as no cultural heritage impacts were anticipated from the Project as reviewed in the Project Profile submitted for application for EIA Study Brief (PP-460/2012). The EIA concluded that the Project would be environmentally acceptable through the implementation of the proposed mitigation measures.

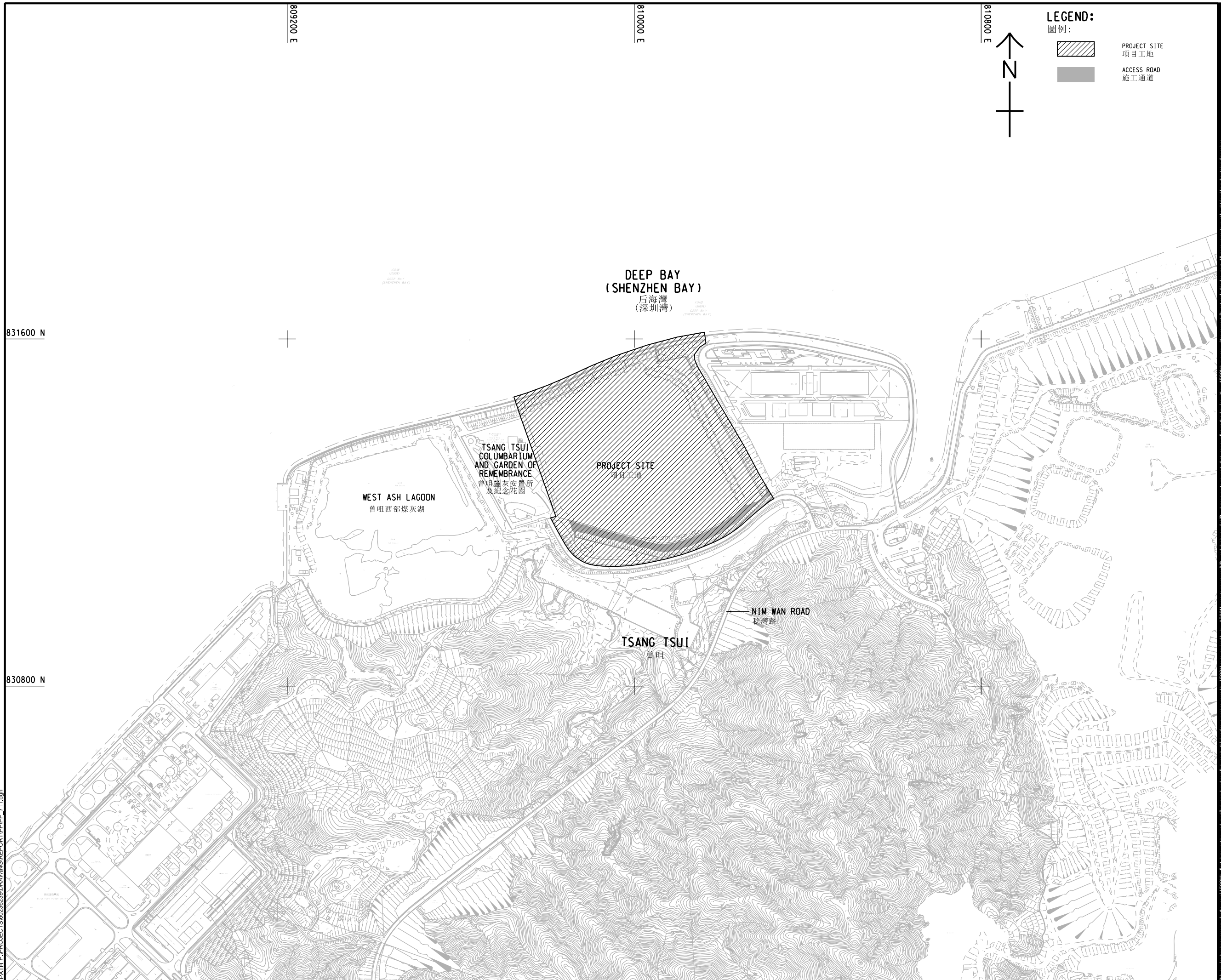
## **8 CONCLUSION**

- 8.1.1.1. In view of the nature of the proposed Project decommissioning works, with the implementation of the recommended mitigation measures, no adverse residual impact would be anticipated from this Project.
- 8.1.1.2. The environmental impact of the Project is 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

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## PROJECT

DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
曾咀中部煤灰湖其餘部分  
的解除運作工程

**CLIENT**  
業主



THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ENVIRONMENTAL PROTECTION  
DEPARTMENT

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**ISSUE/REVISION**

<b>I/R</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>CHK</b>
修订	日期	内容摘要	校核

## STATUS

**SCALE**  
比例

A1 1 : 4000

**DIMENSION UNIT**  
尺寸單位

METRES

## KEY PLAN

PROJECT NO.  
項目編號

60236239

**SHEET TITLE**  
圖紙名稱

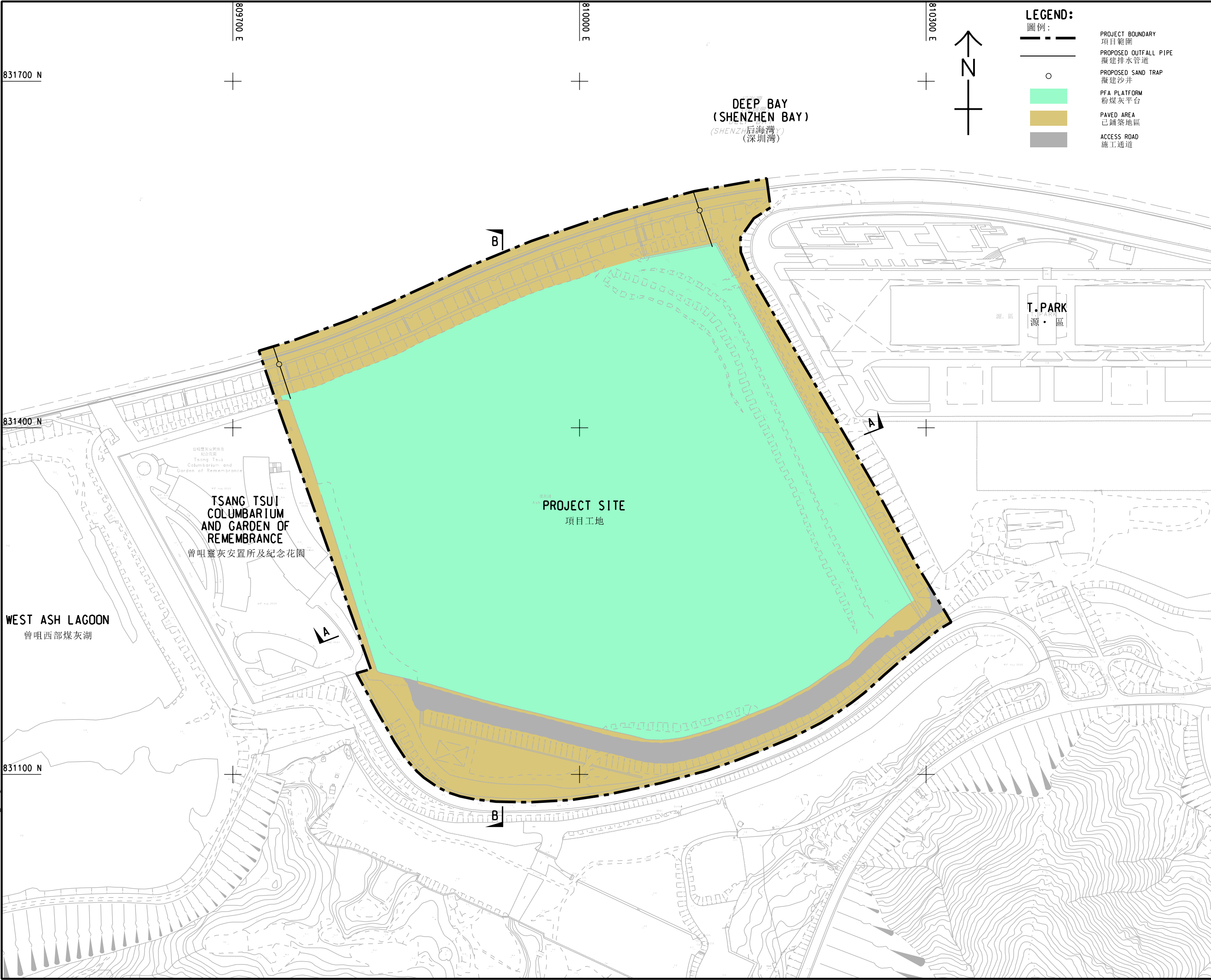
**SITE LOCATION PLAN**  
工地位置圖

**SHEET NUMBER**  
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60236239/PP/FIGURE 1.1  
60236239/PP/圖 1.1



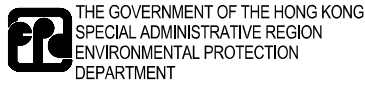
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Checked:  
Designer:  
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**PROJECT**  
項目  
**DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI**  
曾咀中部煤灰湖其餘部分  
的解除運作工程  
**CLIENT**  
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修訂

I/R	DATE	DESCRIPTION	CHK.

**STATUS**  
階段

**SCALE**  
比例  
A1 1 : 1500

**DIMENSION UNIT**  
尺寸單位  
METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號  
60236239

**AGREEMENT NO.**  
協議編號

**SHEET TITLE**  
圖紙名稱

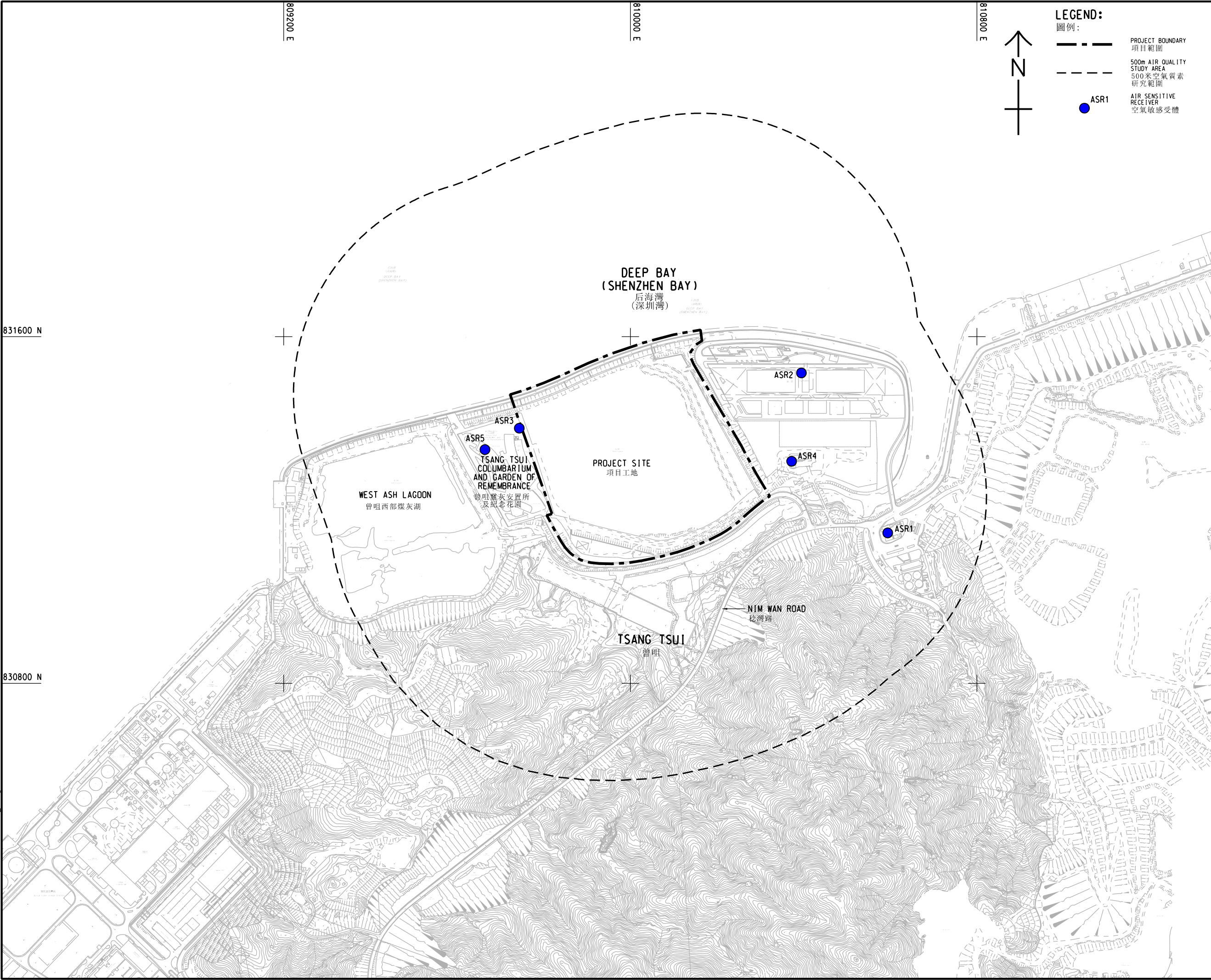
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工地平面圖

**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE 2.1  
60236239/PP/圖2.1



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PATH P:\PROJECTS\60236239\DRAWING\REPORT\PP\PP-731.dgn



**LEGEND:**  
圖例:

PROJECT BOUNDARY  
項目範圍

500m AIR QUALITY  
STUDY AREA  
500米空氣質素  
研究範圍

AIR SENSITIVE  
RECEIVER  
空氣敏感受體

ASR1



**PROJECT**  
項目

**DECOMMISSIONING OF  
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修訂

I/R	DATE	DESCRIPTION	CHK.
01	2022/7/6	Issue for approval	ZHILZ

**STATUS**  
階段

**SCALE**  
比例

**DIMENSION UNIT**  
尺寸單位

A1 1 : 4000 METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號

**AGREEMENT NO.**  
協議編號

60236239

**SHEET TITLE**  
圖紙名稱

**LOCATIONS OF REPRESENTATIVE  
AIR SENSITIVE RECEIVERS**  
具代表性的空氣敏感受體位置圖

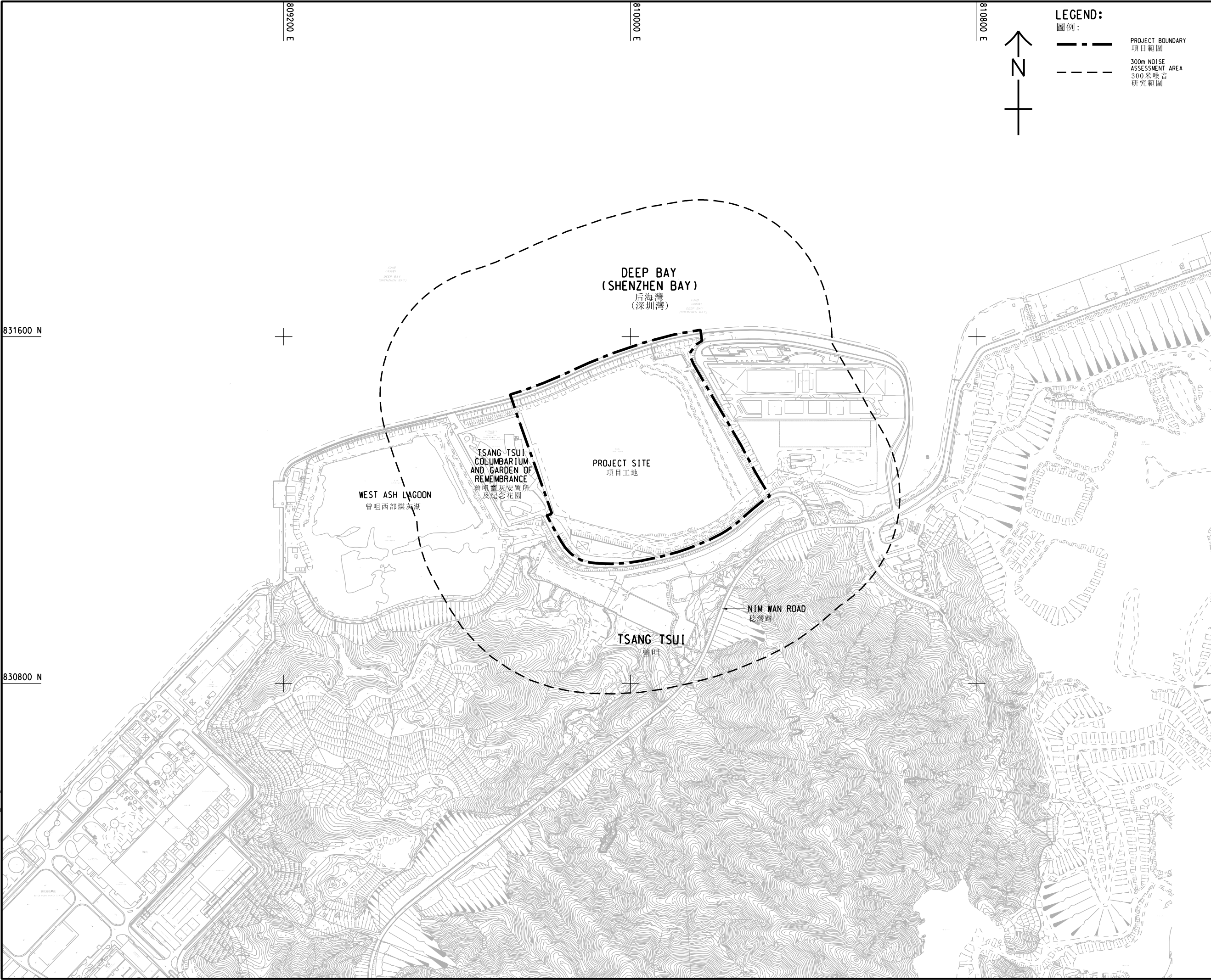
**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE 3.1  
60236239/PP/圖3.1

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PATH P:\PROJECTS\60236239\DRAWING\REPORT\PPP-732.dgn

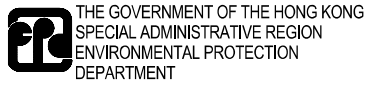


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**PROJECT**  
項目  
**DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
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修訂	日期	修改描述	校核

**STATUS**  
校核

**SCALE**  
比例  
A1 1 : 4000

**DIMENSION UNIT**  
尺寸單位  
METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號  
60236239

**AGREEMENT NO.**  
協議編號

**SHEET TITLE**  
圖紙名稱

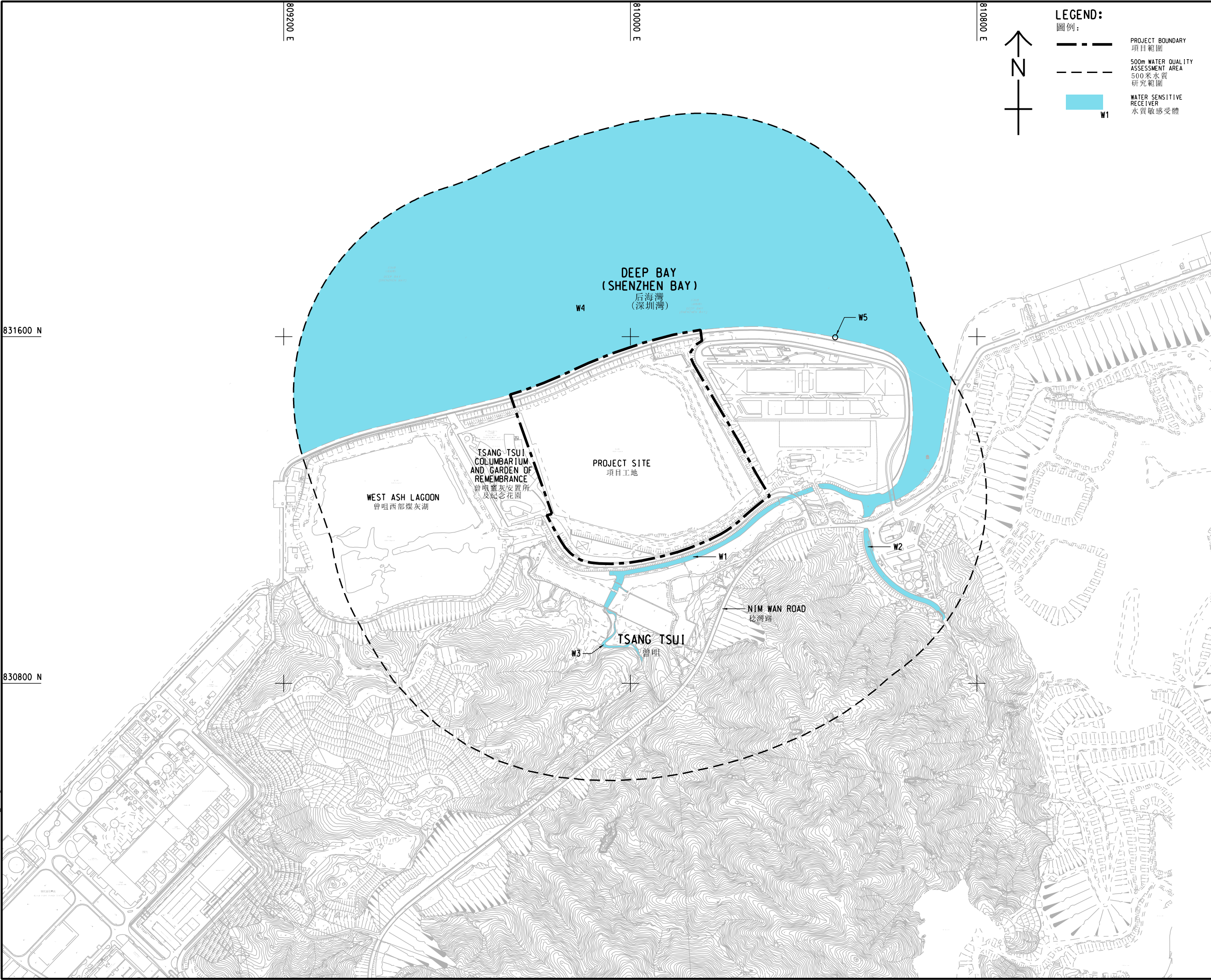
**LOCATIONS OF REPRESENTATIVE  
NOISE SENSITIVE RECEIVERS**  
具代表性的噪音敏感受體位置圖

**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE 3.2  
60236239/PP/圖3.2



ISO A1 594mm x 841mm  
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2022/8/10  
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PATH: P:\PROJECTS\60236239\DRAWING\REPORT\PP\PP\_733.dgn



**LEGEND:**  
圖例:

PROJECT BOUNDARY  
項目範圍

500m WATER QUALITY ASSESSMENT AREA  
500米水質研究範圍

WATER SENSITIVE RECEIVER  
水質敏感受體

W1

**PROJECT**  
項目

**DECOMMISSIONING OF REMAINING PORTION OF MIDDLE ASH LAGOON IN TSANG TSUI**  
曾咀中部煤灰湖其餘部分的解除運作工程

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**STATUS**  
校核

**SCALE**  
比例

**DIMENSION UNIT**  
尺寸單位

A1 1 : 4000

METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號

**AGREEMENT NO.**  
協議編號

60236239

**SHEET TITLE**  
圖紙名稱

LOCATIONS OF WATER SENSITIVE RECEIVERS  
水質敏感受體位置圖

**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE 3.3  
60236239/PP/圖3.3



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Plot File by: ZHLZ

- LEGEND: 圖例:
- PROJECT BOUNDARY 項目範圍
  - WALK TRANSECT 調查路線
  - 500m AREA FROM THE PROJECT AREA 500米核查區
  - T1 INTERTIDAL SAMPLING LOCATION 潮間帶生物調查採樣點
  - F1 FRESHWATER SAMPLING LOCATION 水生動物調查採樣點

- HABITAT 生境
- WASTELAND 荒地
  - DEVELOPED AREA 已發展區
  - SEAWALL 海堤
  - ASH LAGOON 煤灰湖
  - WOODLAND 林地
  - PLANTATION 植林區
  - SHRUBLAND 灌木地
  - GRASSLAND 草地
  - WATERCOURSE 水道
  - ENHANCEMENT POND 生態改善池

SPECIES OF CONSERVATION IMPORTANCE 具保育價值的物種  
FLORA 植物

- P1 CIBOTIUM BARMETZ 金毛狗
- P2 DIOSPYROS VACCINIODES 小果柿
- P3 GNETUM LUOFUENSE 羅浮買麻藤

FAUNA 動物  
AVIFAUNA 鳥類

- A1 EURASIAN TEAL 綠翅鴨
- A2 TUFTED DUCK 鳳頭潛鴨
- A3 LITTLE GREBE 小鸕鶿
- A4 CHINESE POND HERON 池鷺
- A5 GREY HERON 蒼鷺
- A6 GREAT EGRET 大白鷺
- A7 LITTLE EGRET 小白鷺
- A8 GREAT CORMORANT 普通鸕鶿
- A9 BLACK KITE 黑鳶
- A10 LESSER COUCAL 小鴉鵒
- A11 EURASIAN COOT 骨頂雞
- A12 COMMON EMERALD DOVE 綠翅金鳩
- A13 GREATER COUCAL 褐翅鴉鵒
- A14 COLLARED CROW 白頸鴉

BUTTERFLY 蝴蝶

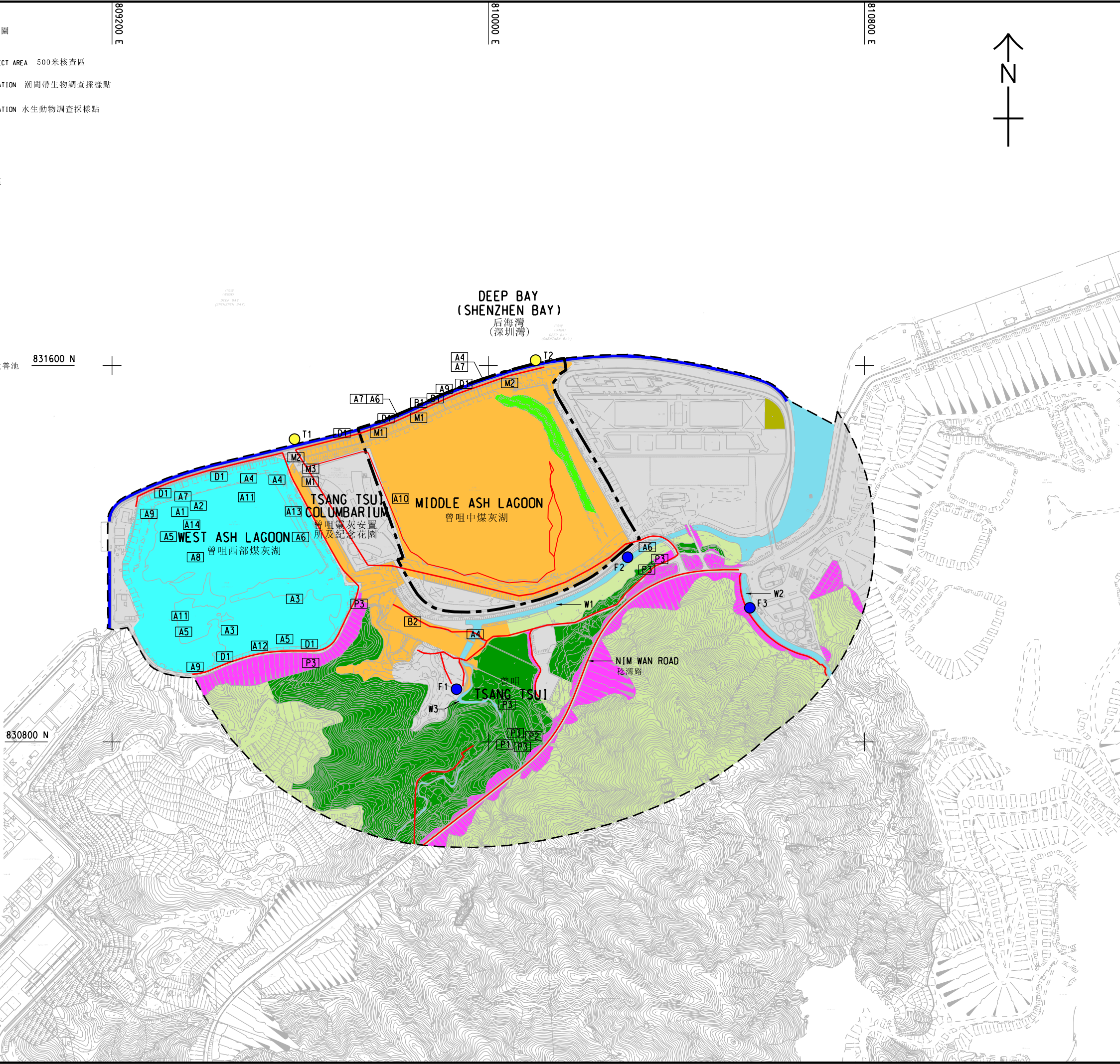
- B1 BANDED AWL 雙斑趾弄蝶
- B2 SMALL CABBAGE WHITE 菜粉蝶

ODONATE 蜻蜓

- D1 COASTAL GLIDER 高翔澹蜻

MAMMAL 哺乳類

- M1 CHINESE HORSESHOE BAT 中華菊頭蝠
- M2 JAPANESE PIPISTRELLE 東亞家蝠
- M3 CHINESE PIPISTRELLE 灰伏翼



AECOM

PROJECT 項目

DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
曾咀中部煤灰湖其餘部分  
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STATUS 階段

SCALE 比例 DIMENSION UNIT 尺寸單位

A1 1 : 4000 METRES

KEY PLAN 索引圖

PROJECT NO. 項目編號

60236239

SHEET TITLE 圖紙名稱

HABITAT MAP AND LOCATION OF  
SPECIES OF CONSERVATION  
IMPORTANCE  
生境地圖及具保育價值物種

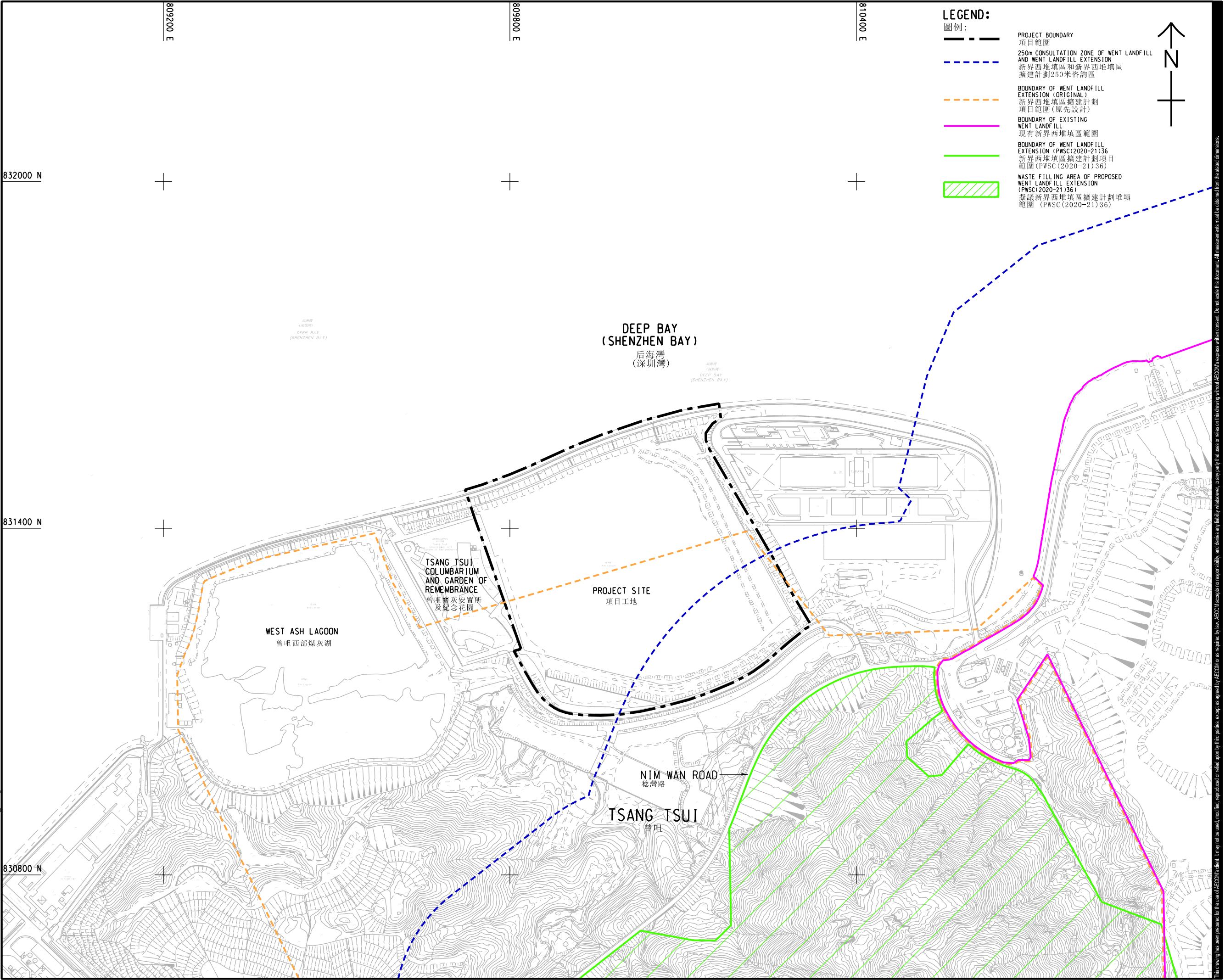
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60236239/PP/FIGURE 3.4  
60236239/PP/圖3.4

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**LEGEND:**  
圖例:

PROJECT BOUNDARY  
項目範圍

250m CONSULTATION ZONE OF WENT LANDFILL AND WENT LANDFILL EXTENSION  
新界西堆填區和新界西堆填區擴建計劃250米諮詢區

BOUNDARY OF WENT LANDFILL EXTENSION (ORIGINAL)  
新界西堆填區擴建計劃項目範圍 (原先設計)

BOUNDARY OF EXISTING WENT LANDFILL  
現有新界西堆填區範圍

BOUNDARY OF WENT LANDFILL EXTENSION (PWSC(2020-21)36)  
新界西堆填區擴建計劃項目範圍 (PWSC(2020-21)36)

WASTE FILLING AREA OF PROPOSED WENT LANDFILL EXTENSION (PWSC(2020-21)36)  
擬議新界西堆填區擴建計劃堆填範圍 (PWSC(2020-21)36)



**AECOM**

**PROJECT**  
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**DECOMMISSIONING OF REMAINING PORTION OF MIDDLE ASH LAGOON IN TSANG TSUI**  
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STATUS				
校核				
SCALE		DIMENSION UNIT		
比例		尺寸單位		
A1 1 : 3000		METRES		
KEY PLAN				
索引圖				

**PROJECT NO.**  
項目編號

60236239

**AGREEMENT NO.**  
協議編號

**SHEET TITLE**  
圖紙名稱

CONSULTATION ZONE OF WENT LANDFILL AND WENT LANDFILL EXTENSION  
新界西堆填區和新界西堆填區擴建計劃諮詢區

**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE 3.5  
60236239/PP/圖3.5

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## APPENDIX A

---

Representative Photographs of Habitats and  
Species of Conservation Importance Recorded  
within 500m Area from the Project Site Boundary







Project Site



Wasteland – Project Site (Dry Season)



Wasteland – Project Site (May - Wet Season)



Wasteland – Project Site (June - Wet Season)



Wasteland – Project Site (July - Wet Season)



Developed Area – Project Site

**AECOM**

**Decommissioning of Remaining  
Portion of Middle Ash Lagoon in  
Tsang Tsui**

**Representative Photographs of  
Habitats and Species of Conservation  
Importance Recorded within 500m  
Area from Project Site Boundary**

SCALE

N.T.S.

DATE

Nov 2021

CHECK

LAMCCG

DRAWN

CHENGKHK

JOB NO.

60236239





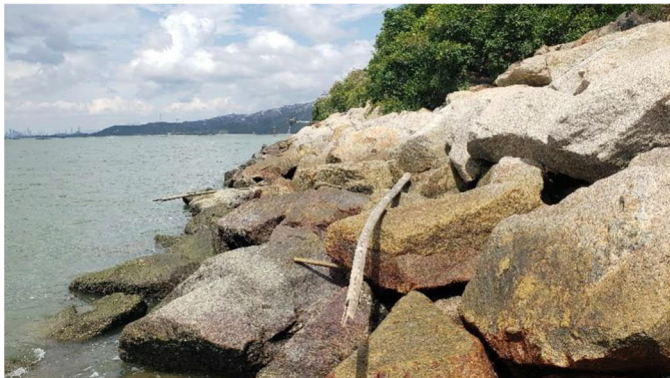


Appendix No.

A

Rev

-

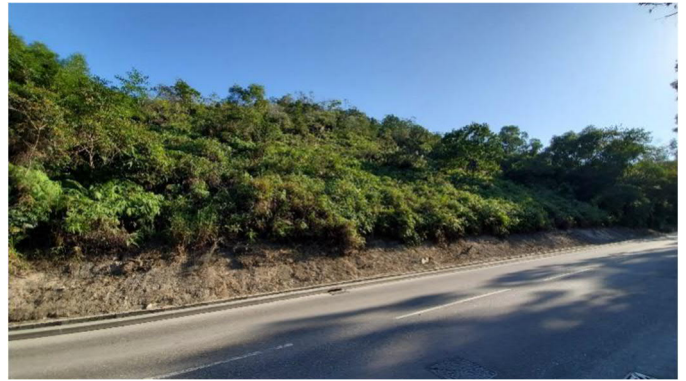


					
Grassland – Project Site		Seawall – Project Site			
					
Wasteland		Developed Area			
					
Seawall		Ash Lagoon			
	Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui	SCALE	N.T.S.	DATE	Nov 2021
	Representative Photographs of Habitats and Species of Conservation Importance Recorded within 500m Area from Project Site Boundary	CHECK	LAMCCG	DRAWN	CHENGKHK
		JOB NO.	60236239	Appendix No. A	Rev -





Woodland



Plantation



Shrubland



Watercourse – W1



Watercourse – W2



Watercourse – W3

**AECOM**

**Decommissioning of Remaining  
Portion of Middle Ash Lagoon in  
Tsang Tsui**

**Representative Photographs of  
Habitats and Species of Conservation  
Importance Recorded within 500m  
Area from Project Site Boundary**

SCALE

N.T.S.

DATE

Nov 2021

CHECK

LAMCCG

DRAWN

CHENGKHK

JOB NO.

60236239

Appendix No.

A

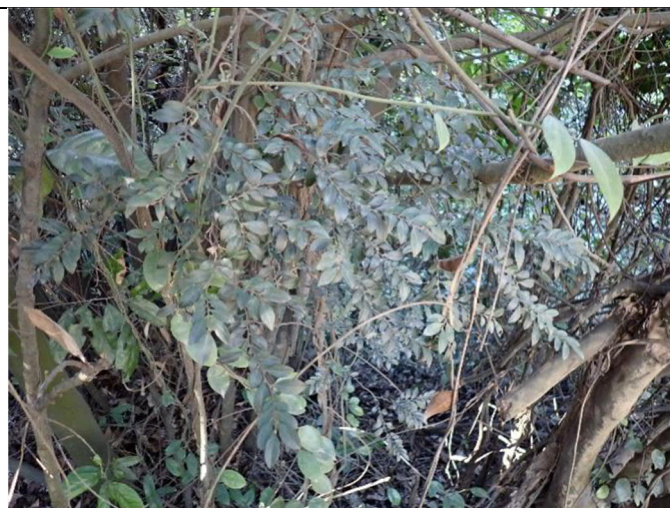
Rev

-





*Cibotium barometz*



*Diospyros vaccinioides*



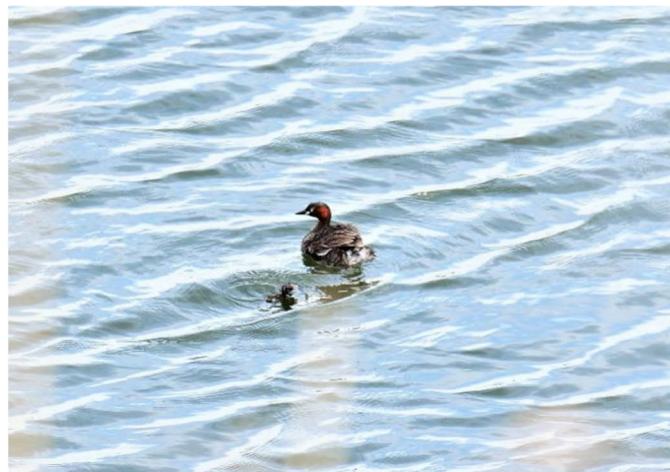
*Gnetum luofuense*




Eurasian Teal



Tufted Duck



Little Grebe (adult and juvenile)

	<b>Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui</b>	SCALE	N.T.S.	DATE	Nov 2021
		CHECK	LAMCCG	DRAWN	CHENGKHK
	<b>Representative Photographs of Habitats and Species of Conservation Importance Recorded within 500m Area from Project Site Boundary</b>	JOB NO.	60236239	Appendix No.  A	Rev  -





Little Grebe's nest



Grey Heron



Great Egret



Little Egret



Eurasian Coot



Common Emerald Dove

**AECOM**

**Decommissioning of Remaining  
Portion of Middle Ash Lagoon in  
Tsang Tsui**

**Representative Photographs of  
Habitats and Species of Conservation  
Importance Recorded within 500m  
Area from Project Site Boundary**

SCALE

N.T.S.

DATE

Nov 2021

CHECK

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DRAWN

CHENGKHK

JOB NO.





60236239

Appendix No.

A

Rev

-

					
Collared Crow		Banded Awl			
		N/A			
Coastal Glider		N/A			
N/A		N/A			
N/A		N/A			
	Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui	SCALE	N.T.S.	DATE	Nov 2021
	Representative Photographs of Habitats and Species of Conservation Importance Recorded within 500m Area from Project Site Boundary	CHECK	LAMCCG	DRAWN	CHENGKHK
		JOB NO.	60236239	Appendix No. A	Rev -

## APPENDIX B

---

Flora Species Recorded during the Ecological Site Check



Appendix B: Flora Species Recorded within the Assessment Area

						Project Area				Assessment Area									
Common Name	Scientific Name	Growth Form	Native / Exotic to Hong Kong	Distribution in Hong Kong <sup>(1)</sup>	Protection Status <sup>(3)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	GL	WTE	EP
Ear-leaved Acacia, Ear-pod Wattle	<i>Acacia auriculiformis</i>	tree	exotic	common	-										+				
Taiwan Acacia	<i>Acacia confusa</i>	tree	exotic	-	-						+				++	+			
Big-leaved Acacia	<i>Acacia mangium</i>	tree	exotic	-	-										+				
Copper Leaf	<i>Acalypha wilkesiana</i>	shrub	exotic	common	-	+				+									
Spiny Bears Breech	<i>Acanthus ilicifolius</i>	shrub	native	common	-													+	
Leather Fern, Mangrove Fern	<i>Acrostichum aureum</i>	herb	native	restricted; common <sup>(2)</sup>	-					+									
Mock Lime, Chu-lan Tree	<i>Aglaia odorata</i>	shrub or small tree	exotic	common	IUCN Red List (ver. 2021.2): Near Threatened														+ <sup>[4]</sup>
Chinese Alangium	<i>Alangium chinense</i>	shrub or tree	native	common	-									+					
Giant Alocasia, Alocasia	<i>Alocasia macrorrhizos</i>	perennial herb	native	very common	-									+					
Green Amaranth	<i>Amaranthus viridis</i>	herb	native	very common	-	+				+									
Kuling Ampelopsis	<i>Ampelopsis heterophylla</i> var. <i>kulingensis</i>	woody vine	native	-	-				+			+							
Chinese Laurel, Bignay Chinalaurel	<i>Antidesma bunius</i>	tree	native	common	-				+			+							
Glutene-rice Grass	<i>Apluda mutica</i>	perennial herb	native	very common; common <sup>(2)</sup>	-					+									
Aporosa, Common Aporosa	<i>Aporosa dioica</i>	tree	native	very common	-									++		+			
Chinese Apea Ear-ring	<i>Archidendron lucidum</i>	tree	native	common	-									+					
Hilo Holly	<i>Ardisia crenata</i>	shrub	native	common	-									++					
Wild Asparagus	<i>Asparagus cochinchinensis</i>	climbing herb	native	common	-								+						
Carambola	<i>Averrhoa carambola</i>	small tree	exotic	cultivated; common	-													++	
Dwarf Mountain Pine, Shrubby Baeckea	<i>Baeckea frutescens</i>	shrub or small tree	native	very common	-										+				
Bamboo spp.	<i>Bambusa</i> spp.	clumped tree bamboo	-	-	-									++					
-	<i>Bauhinia</i> spp.	-	-	-	-		+				+			+					
White Gourd, Wax Gourd	<i>Benincasa hispida</i>	herbaceous vine	exotic	-	-										+				
-	<i>Bidens alba</i>	herb	exotic	very common	-	++				+++	+		+	+	+	++		+	
Oriental Blechnum	<i>Blechnum orientale</i>	herb	native	very common	-								+		+				
Tree Cotton, Red Kapok Tree	<i>Bombax ceiba</i>	tree	exotic	-	-	+				+									
Australian Bluestem	<i>Bothriochloa bladhii</i>	perennial herb	native	very common	-					+									
Brazil Bougainvillea, Beautiful Bougainvillea	<i>Bougainvillea spectabilis</i>	climbing shrub	exotic	cultivated	-						+			++					
Blunt Signal-grass	<i>Brachiaria mutica</i>	herb	exotic	common <sup>(2)</sup>	-								+			+			
Waxy Leaf	<i>Breynia fruticosa</i>	shrub	native	very common	-	+				+		+		+					
Pop-gun Seed, Pikpoktai	<i>Bridelia tomentosa</i>	shrub or small tree	native	very common	-	+			+	++		+	++	++					+
False Sumac, Java Brucea	<i>Brucea javanica</i>	shrub or small tree	native	common	-								+	+					
Gray Nickers	<i>Caesalpinia bonduc</i>	climber: vine	native	restricted	-											+			
Scarab-like Cajanus	<i>Cajanus scarabaeoides</i>	climber: vine	native	common	-										+				
Freshy Lady-fern	<i>Callipteris esculenta</i>	herb	native	common; uncommon <sup>(2)</sup>	-	+				+									
-	<i>Cansjera rheedii</i>	climbing shrub	native	restricted	-								+						
India Carallia	<i>Carallia brachiata</i>	tree	native	common	-									+					
Papaya	<i>Carica papaya</i>	tree	exotic	common	-										+				
Fishtail Palm	<i>Caryota maxima</i>	tree palm	exotic	-	-								+						
Cassytha	<i>Cassytha filiformis</i>	parasitic climber: twining herb	native	very common	-								+						
Horsetail Tree	<i>Casuarina equisetifolia</i>	tree	exotic	rare; but common cultivated	-						+					+			
Chinese Bitter-sweet	<i>Celastrus hindsii</i>	climber: vine	native	very common	-									+					



Appendix B: Flora Species Recorded within the Assessment Area

						Project Area				Assessment Area									
Common Name	Scientific Name	Growth Form	Native / Exotic to Hong Kong	Distribution in Hong Kong <sup>(1)</sup>	Protection Status <sup>(3)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	GL	WTE	EP
Chinese Hackberry	<i>Celtis sinensis</i>	tree	native	common	-	++			+++	+++		+++	+	+++	+				
Bur Grass	<i>Cenchrus echinatus</i>	herb	exotic	common	-					+									
Peacock-plume Grass	<i>Chloris barbata</i>	herb	native	very common	-					++									
Lamb of Tartary	<i>Cibotium barometz</i>	large herb	native	very common	Protected under Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586); Rare and Precious Plants in Hong Kong (Status in China): Category 2 (Vulnerable); Listed in Wild Plants under State Protection: Category II									+					
Glorybower, Gloryberry	<i>Clerodendrum fortunatum</i>	shrub	native	common	-									+					
Snail Seed	<i>Cocculus orbiculatus</i>	climber: vine	native	common	-	+				+				+					
Diffuse Day-flower	<i>Commelina diffusa</i>	herb	native	common; very common <sup>(2)</sup>	-													++	
-	<i>Coryza canadensis</i>	herb	exotic	very common	-	+				+									
-	<i>Coryza sumatrensis</i>	herb	exotic	-	-	+				+									
Yellow Cow Wood	<i>Cratogeomys cochinchinense</i>	shrub or tree	native	very common	-								+	+					
Chinese Dodder	<i>Cuscuta chinensis</i>	parasitic herb	native	common	-										+				
Interrupted Tri-vein Fern	<i>Cyclosorus interruptus</i>	herb	native	common; very common <sup>(2)</sup>	-					+									
Wood-fern, Parasitic Tri-vein Fern	<i>Cyclosorus parasiticus</i>	herb	native	very common	-									++				+	
Umbrella Plant, Fanshaped Umbrellasedge	<i>Cyperus involucreatus</i>	herb	exotic	restricted; common <sup>(2)</sup>	-													++	
Malacea Galingale	<i>Cyperus malaccensis</i>	herb	native	common; uncommon <sup>(2)</sup>	-														++
-	<i>Cyperus</i> spp.	herb	-	-	-														++
Crow-foot Grass	<i>Dactyloctenium aegyptium</i>	herb	native	common	-					+	+			+	+				
Bentham's Rosewood	<i>Dalbergia benthamii</i>	climber: vine	native	common	-					+		+	+	+					
Hong Kong Rosewood	<i>Dalbergia millettii</i>	climber: vine	native	common	-									+					
Derris	<i>Derris trifoliata</i>	climbing shrub	native	common	-							+						+	
-	<i>Desmodium heterocarpon</i> var. <i>strigosum</i>	subshrub	native	-	-					+									
Desmos	<i>Desmos chinensis</i>	shrub	native	common	-								+	++					
Dichotomy Forked Fern	<i>Dicranopteris pedata</i>	herb	native	very common	-	+++				+++			+	+	+	+			
Longan	<i>Dimocarpus longan</i>	tree	exotic	restricted but widely cultivated <sup>(1)</sup>	Threatened Species List of China's Higher Plants: Vulnerable; Rare and Endangered Plants and National Key Protected Plants in Guangdong: Near Threatened; IUCN Red List (ver. 2021.2): Near Threatened									++					
Small Persimmon	<i>Diospyros vaccinioides</i>	shrub	native	very common	Threatened Species List of China's Higher Plants: Endangered; IUCN Red List (ver. 2021.2): Critically Endangered									+					
American Wormseed	<i>Dysphania ambrosioides</i>	herb	exotic	common	-										+				
Goose Grass, Yard Grass	<i>Eleusine indica</i>	herb	native	very common	-					+									
Twig-hanging Embelia	<i>Embelia laeta</i>	climber: vine	native	very common	-									++					
Tassel Flower	<i>Emilia sonchifolia</i>	herb	native	very common	-										+				
Swamp Mahogany	<i>Eucalyptus robusta</i>	tree	exotic	cultivated	IUCN Red List (ver. 2021.2): Near Threatened										+				
-	<i>Eucalyptus</i> spp.	tree	exotic	cultivated; common	-										+++				
Thyme-leaved Spurge	<i>Euphorbia thymifolia</i>	herb	native	common	-					+									
Shining Eurya	<i>Eurya nitida</i>	shrub or small tree	native	very common	-									+					
Hairy Fig, Hairy Mountain Fig	<i>Ficus hirta</i>	shrub or small tree	native	common	-									+					
Opposite-leaved Fig, Rough-leaved Stem-fig	<i>Ficus hispida</i>	shrub or small tree	native	very common	-					++			++	+					
Chinese Banyan, Small-fruited Fig	<i>Ficus microcarpa</i>	tree	native	common	-	+			++	+		++	++	+		+			

Appendix B: Flora Species Recorded within the Assessment Area

						Project Area				Assessment Area									
Common Name	Scientific Name	Growth Form	Native / Exotic to Hong Kong	Distribution in Hong Kong <sup>(1)</sup>	Protection Status <sup>(3)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	GL	WTE	EP
Japanese Superb Fig	<i>Ficus subpisocarpa</i>	tree	native	common	-							+							
Common Red-stem Fig	<i>Ficus variegata</i>	tree	native	common	-								+	+				+	
-	<i>Fimbristylis</i> spp.	herb	native	common	-														+
Luofushan Joint-fir	<i>Gnetum luofuense</i>	woody vine	native	very common	IUCN Red List (ver. 2021.2): Near Threatened									+	+				
Cudeweed	<i>Grangea maderaspatana</i>	herb	native	common	-			++									++		
Cuban Bast, Sea Hibiscus	<i>Hibiscus tiliaceus</i>	shrub or tree	native	very common	-													++	
Rough-leaved Holly, Plum-leaved Holly	<i>Ilex asprella</i>	shrub	native	very common	-									++					
Downy Holly	<i>Ilex pubescens</i>	shrub	native	very common	-									++					
Lalang Grass	<i>Imperata cylindrica</i> var. <i>major</i>	perennial herb	native	very common	-	+			+	+	+	+							
Water Spinach, Swamp Morning-glory	<i>Ipomoea aquatica</i>	herb	exotic	very common; common <sup>(2)</sup>	-					+									
Gairo Morning Glory, Morning-glory	<i>Ipomoea cairica</i>	climber: twining herb	exotic	very common	-					+									
-	<i>Ipomoea triloba</i>	herbaceous climber	exotic	common	-					+									
-	<i>Kandelia obovata</i>	shrub or small tree	native	common	-													+	
Lantana	<i>Lantana camara</i>	shrub	exotic	very common	-	+			++	++	+	++		+					
Chinese Lasianthus	<i>Lasianthus chinensis</i>	shrub	native	common	-									++					
White Popinac	<i>Leucaena leucocephala</i>	small tree	exotic	common	-	++++			+	+++	++	+	+	+		++		+	
Chinese Privet	<i>Ligustrum sinense</i>	shrub or small tree	exotic	common	-										++				++
Lychee	<i>Litchi chinensis</i>	tree	exotic	restricted but widely planted	List of Wild Plants under State Protection: Category II; Threatened Species List of China's Higher Plants: Endangered; Rare and Endangered Plants and National Key Protected Plants in Guangdong: Near Threatened									++					
Tanoak	<i>Lithocarpus glaber</i>	tree	native	common; also planted	-									++					
Fragrant Litsea, Mountain-pepper	<i>Litsea cubeba</i>	shrub or small tree	native	common	-									++					
Pond Spice	<i>Litsea glutinosa</i>	tree	native	very common	-									++					
Oblong-leaved Litsea, Long-leaved Litsea	<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	shrub	native	very common	-									+++					
Brisbane Box	<i>Lophostemon confertus</i>	tree	exotic	-	-										++				
-	<i>Ludwigia erecta</i>	herb	exotic	-	-													+	
Primrose Willow	<i>Ludwigia octovalvis</i>	perennial herb	native	common; very common <sup>(2)</sup>	-														+
-	<i>Ludwigia perennis</i>	herb	native	restricted	-														+
Climbing Fern	<i>Lygodium japonicum</i>	climbing herb	native	very common	-					+					++	+++			
Elephant's Ear, Common Macaranga	<i>Macaranga tanarius</i> var. <i>tomentosa</i>	tree	native	common	-	++			+	++		+	+	++	+	+			
Purple-bean	<i>Macroptilium atropurpureum</i>	creeping herb	exotic	common	-					+									
Turn-in-the-wind, Panicked Mallotus	<i>Mallotus paniculatus</i>	shrub or tree	native	very common	-									+					
Mango	<i>Mangifera indica</i>	tree	exotic	-	-									+++					
Common Melastoma	<i>Melastoma malabathricum</i>	shrub	native	common	-									+		+			+
Blood-red Melastoma	<i>Melastoma sanguineum</i>	shrub	native	common	-									+					
China-berry, Persian Lilac	<i>Melia azedarach</i>	tree	exotic	common	-									+					
Redtop, Creeping Rhynchelytrum	<i>Melinis repens</i>	perennial herb	exotic	very common	-					++			+						
Microcos	<i>Microcos nervosa</i>	shrub or small tree	native	common	-									++		+			
Mile-a-minute Weed	<i>Mikania micrantha</i>	climbing herb	exotic	very common	-	++				++	+			+		+		++	
Glittering-leaved Millettia	<i>Millettia nitida</i>	climbing shrub	native	very common	-										+				
Sensitive Plant	<i>Mimosa pudica</i>	herb	exotic	very common	-					+									
-	<i>Mirabilis odorata</i>	perennial herb	exotic	-	-										+				

Appendix B: Flora Species Recorded within the Assessment Area

Common Name	Scientific Name	Growth Form	Native / Exotic to Hong Kong	Distribution in Hong Kong <sup>(1)</sup>	Protection Status <sup>(3)</sup>	Project Area				Assessment Area									
						WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	GL	WTE	EP
Many-flowered Silvergrass, Japanese Silvergrass	<i>Miscanthus floridulus</i>	perennial herb	native	common	-								+						
Chinese Silvergrass, Eulalia	<i>Miscanthus sinensis</i>	perennial herb	native	very common	-	++				++			+	+					
Orange-jessamine	<i>Murraya paniculata</i>	small tree	exotic	common	-									+					
Common Banana, Banana	<i>Musa x paradisiaca</i>	perennial herb	exotic	common; cultivated	-						+								
Burma-reed, Reed-like Grass	<i>Neyraudia reynaudiana</i>	perennial herb	native	very common; common <sup>(2)</sup>	-	++			+	+++		+	+++	+	++	+		+	
Composite Oplismenus	<i>Oplismenus compositus</i>	herb	native	very common	-									+					
Chinese Feervine	<i>Paederia scandens</i>	climber: vine	native	very common	-	++			+	++		+		+					
-	<i>Pandanus austrosinensis</i>	herb	native	-	-									+					
Screw Pine, Pandanus	<i>Pandanus tectorius</i>	shrub or small tree	native	very common	-						+								
Guinea Grass	<i>Panicum maximum</i>	perennial herb	exotic	very common	-	+				+++				+	+				
-	<i>Paspalum</i> sp.	perennial herb	-	-	-														+
Passion Flower	<i>Passiflora foetida</i>	herbaceous vine	exotic	very common	-	+				+				+					
Plume Grass	<i>Pennisetum alopecuroides</i>	perennial herb	native	common	-	+				++			+						
Chinese Knotweed, Smartweed	<i>Persicaria chinensis</i>	herb	native	very common	-													+	
White Smartweed	<i>Persicaria lapathifolia</i>	herb	native	common <sup>(2)</sup>	-			++									++		
Spiny Date Palm	<i>Phoenix loureiroi</i>	shrub or tree palm	native	common	-					+			+					+	
Common Reedgrass	<i>Phragmites australis</i>	perennial herb	native	very common; common <sup>(2)</sup>	-					+			++					+	
Vietnam Leaf-flower	<i>Phyllanthus cochinchinensis</i>	shrub	native	very common	-									+					
Reticulated Leaf-flower	<i>Phyllanthus reticulatus</i>	shrub	native	common	-									+					
Chinese Red Pine	<i>Pinus massoniana</i>	tree	native	common	-									+					
Pittosporum	<i>Pittosporum tobira</i>	shrub or small tree	exotic	rare; cultivated	-						+								
Golden-hair Grass, Crinite Pogonatherum	<i>Pogonatherum crinitum</i>	perennial herb	native	common	-													+	
Hong Kong Gordonia, Gordonia	<i>Polyspora axillaris</i>	shrub or small tree	native	very common	-										++				
Wild Bean	<i>Pongamia pinnata</i>	tree	native	common	-														++
-	<i>Praxelis clematidea</i>	perennial herb	exotic	very common	-	+				+				+	+			+	
Guava	<i>Psidium guajava</i>	tree	exotic	common	-									+					
Wild Coffee, Red Psychotria	<i>Psychotria asiatica</i>	shrub or tree	native	very common	-									++		+			
Sword Brake	<i>Pteris ensiformis</i>	herb	native	common	-									++					
Semi-pinnated Brake	<i>Pteris semipinnata</i>	herb	native	very common	-									++					
Ladder Brake	<i>Pteris vittata</i>	herb	native	very common	-	+				+									
Hong Kong Hawthorn	<i>Rhaphiolepis indica</i>	shrub or small tree	native	very common	-														+
Rose Myrtle, Downy Rosemyrtle	<i>Rhodomyrtus tomentosa</i>	shrub	native	very common	-									+					
Sumac	<i>Rhus chinensis</i>	shrub or small tree	native	common	-	+				+++			+	+	+				
Sumac	<i>Rhus hypoleuca</i>	shrub or small tree	native	common	-									+					

Appendix B: Flora Species Recorded within the Assessment Area

Common Name	Scientific Name	Growth Form	Native / Exotic to Hong Kong	Distribution in Hong Kong <sup>(1)</sup>	Protection Status <sup>(3)</sup>	Project Area				Assessment Area									
						WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	GL	WTE	EP
Wax Tree	<i>Rhus succedanea</i>	shrub or small tree	native	common	-				+			+	+	+	+	+			
Little-leaved Rourea, Red Leaf of Autumn	<i>Rourea microphylla</i>	climbing shrub	native	common	-									+					
-	<i>Ruellia coerulea</i>	herb	exotic	-	-		+				+								
Trisetiferous Dock, Dock	<i>Rumex trisetifer</i>	herb	native	common <sup>(2)</sup>	-			+									+		
Hedge Sageretia	<i>Sageretia thea</i>	shrub	native	very common	-				++	+++		++	+	++				+	
Mountain Tallow Tree	<i>Sapium discolor</i>	small tree	native	very common	-									+					
Chinese Tallow Tree	<i>Sapium sebiferum</i>	tree	native	common	-	+				+				+					
Ivy Tree	<i>Schefflera heptaphylla</i>	tree	native	very common	-				+	+		+	++	++	+	++		++	
-	<i>Scleria</i> sp.													++					
Dhaincha	<i>Sesbania cannabina</i>	subshrub	exotic	common	-	+				++									
Glabrous Greenbrier	<i>Smilax glabra</i>	climbing shrub	native	very common	-										+				
Shining-fruit Nightshade	<i>Solanum americanum</i>	herb	exotic	very common	-					+								+	
Australian Smut-grass	<i>Sporobolus fertilis</i>	perennial herb	native	very common	-					+									
Jamaica Vervain	<i>Stachytarpheta cayennensis</i>	herb	exotic	-	-										+				
Lance-leaved Sterculia, Scarlet Sterculia	<i>Sterculia lanceolata</i>	semi-deciduous tree	native	very common	-				+			+		++		+			
Goat Horns, Divaricate Strophanthus	<i>Strophanthus divaricatus</i>	woody vine	native	common	-									+					
Chinese Tamarisk	<i>Tamarix chinensis</i>	shrub or tree	exotic	-	-	+				+									
-	<i>Tectaria subtriphylla</i>	herb	native	common	-									+					
Melia-leaved Evodia	<i>Tetradium glabrifolium</i>	tree	native	common	-									+					
India-charcoal Trema	<i>Trema tomentosa</i>	shrub or small tree	native	common	-									+	+				
Tridax	<i>Tridax procumbens</i>	perennial herb	exotic	very common	-								++	+					
Ovate Tylophora	<i>Tylophora ovata</i>	slender woody vine	native	common	-									+					
Iron-weed	<i>Vernonia cinerea</i>	herb	native	very common	-										+				
-	<i>Wedelia trilobata</i>	perennial herb	exotic	common; also widely cultivated	-									+					
Indian Wikstroemia	<i>Wikstroemia indica</i>	shrub	native	common	-								+		+				
Prickly Ash	<i>Zanthoxylum avicennae</i>	tree	native	common	-									+	+				
Shiny-leaved Prickly Ash	<i>Zanthoxylum nitidum</i>	climbing shrub	native	very common	-								+	+					
-	<i>Zanthoxylum piperitum</i>	shrub	exotic	-	-									++					

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.

(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) Protection statuses follow:

Protected under the Forests and Countryside Ordinance (Cap. 96)

Protected by the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)

Hu, Q.M., Wu, T.L., Xia, N.H., Xing F.W., Lai, C.C.P. & Yip, K.W. (2003). Rare and Precious Plants of Hong Kong. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong. 234pp.

"List of Wild Plants Under State Protection" (promulgated by the Ministry of Forestry in 1999)

Fu, K.L. (1992). China Plant Red Data Book. Vol. 1 - Rare and Endangered Plants. Science Press, Beijing. 736pp. (In Chinese only)

Qin, *et al.* (2017). Threatened Species List of China's Higher Plants. *Biodiversity Science* **25**(7):696-747

International Union for the Conservation of Nature (IUCN) (2021). The IUCN Red List of Threatened Species. Version 2021-2. <http://www.iucnredlist.org>. Downloaded on 31 December 2019.

Feng, Z.-J., Li, Z.-K., Li, B.-T., Xue, C.-G., Liu, J.-B. & He, Y.-Q. (2002). Study on Rare and Endangered Plants and National Key Protected Plants in Guangdong. *Journal of South China Agricultural University* **3**:24-27.

Wu, D.L. & Hu, C.X. (1988). Illustrations of Rare and Endangered Plants in Guangdong Province. China Environmental Science Press, Beijing. 46pp. (In Chinese only).

(4) The species is artificially introduced to the habitat, thus it is not considered as species of conservation importance.

Code for Abundance: ++++=abundant; +++=frequent; ++=occasional; +=scarce

Species of conservation importance is in bold type face.

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond

## APPENDIX C

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Fauna Species Recorded during the Ecological Site Check



Appendix C: Fauna Species Recorded during the Ecological Site Check

Avifauna									Project Site				500m Area from the Project Site								
Common Name <sup>(1)</sup>	Scientific Name	Distribution in Hong Kong <sup>(3)</sup>	Principal Status <sup>(4)</sup>	Level of Concern <sup>(5)</sup>	Protection Status in China <sup>(6)</sup>	China Red Data Book <sup>(7)</sup>	Red List of China's Vertebrates <sup>(8)</sup>	IUCN Red List (Version 2021.3) <sup>(9)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP
Chinese Spot-billed Duck <sup>(10)</sup>	<i>Anas zonorhyncha</i>	Resident and winter visitor	-	-	-	-	-	-								+					
Eurasian Teal <sup>(10)</sup>	<i>Anas crecca</i>	Common winter visitor	W	RC	-	-	-	-								++					
Tufted Duck <sup>(10)</sup>	<i>Aythya fuligula</i>	Uncommon winter visitor	W	LC	-	-	-	-								++					
Little Grebe <sup>(10)</sup>	<i>Tachybaptus ruficollis</i>	Common resident	P	LC	-	-	-	-								+++++					
Black-crowned Night Heron <sup>(10)</sup>	<i>Nycticorax nycticorax</i>	Common resident and winter visitor	P	(LC)	-	-	-	-								+					
Chinese Pond Heron <sup>(10)</sup>	<i>Ardeola bacchus</i>	Common resident	P	PRC (RC)	-	-	-	-				+				++				+	
Grey Heron <sup>(10)</sup>	<i>Ardea cinerea</i>	Common winter visitor	W	PRC	-	-	-	-								++++					
Great Egret <sup>(10)</sup>	<i>Ardea alba</i>	Common resident and winter visitor	P	PRC (RC)	-	-	-	-				+				+				+	
Little Egret <sup>(10)</sup>	<i>Egretta garzetta</i>	Common resident	P	PRC (RC)	-	-	-	-				+				+++					
Great Cormorant <sup>(10)</sup>	<i>Phalacrocorax carbo</i>	Common winter visitor	W	PRC	-	-	-	-								++++					
Black Kite <sup>(2)(10)</sup>	<i>Milvus migrans</i>	Common resident and winter visitor	W,R	(RC)	Class II	-	-	-				+				+					
White-breasted Waterhen <sup>(10)</sup>	<i>Amauornis phoenicurus</i>	Common resident	R	-	-	-	-	-								+					
Lesser Coucal	<i>Centropus bengalensis</i>	Common resident	R	-	Class II	Vulnerable	-	-	+												
Common Moorhen <sup>(10)</sup>	<i>Gallinula chloropus</i>	Common resident	R	-	-	-	-	-								+					
Eurasian Coot <sup>(10)</sup>	<i>Fulica atra</i>	Common winter visitor	W	RC	-	-	-	-								++					
Common Sandpiper <sup>(10)</sup>	<i>Actitis hypoleucos</i>	Common passage migrant and winter visitor	M,W	-	-	-	-	-				+			+	+					
Little Ringed Plover <sup>(10)</sup>	<i>Charadrius dubius</i>	Common	W,R	(LC)	-	-	-	-								+					
Spotted Dove	<i>Spilopelia chinensis</i>	Abundant resident	R	-	-	-	-	-					+			+					
Common Emerald Dove	<i>Chalcophaps indica</i>	Scarce but widespread resident	R	-	-	Vulnerable	-	-								+					
Greater Coucal	<i>Centropus sinensis</i>	Common resident	R	-	Class II	Vulnerable	-	-								+					
House Swift	<i>Apus nipalensis</i>	Abundant spring migrant and locally common resident	R,SpM	-	-	-	-	-				+			+	+					
White-throated Kingfisher <sup>(10)</sup>	<i>Halcyon smyrnensis</i>	Common resident	AM,P	(LC)	-	-	-	-						+		+					
Common Kingfisher <sup>(10)</sup>	<i>Alcedo atthis</i>	Common passage migrant and winter visitor	AM,P	-	-	-	-	-					+			+					
Pied Kingfisher <sup>(10)</sup>	<i>Ceryle rudis</i>	Uncommon resident	R	(LC)	-	-	-	-							+	+					
Long-tailed Shrike	<i>Lanius schach</i>	Common resident	R	-	-	-	-	-								+					
Black Drongo	<i>Dicrurus macrocercus</i>	Common summer visitor	M,Su	-	-	-	-	-								+					
Collared Crow <sup>(10)</sup>	<i>Corvus torquatus</i>	Uncommon resident	R	LC	-	-	Near Threatened	Vulnerable								+					
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	Abundant resident	R	-	-	-	-	-					+			++	+	+			
Chinese Bulbul	<i>Pycnonotus sinensis</i>	Abundant resident	R	-	-	-	-	-					+	+		+++		+			
Barn Swallow	<i>Hirundo rustica</i>	Abundant passage migrant and summer visitor	SpM,Su	-	-	-	-	-	+					+		+					
Dusky Warbler	<i>Phylloscopus fuscatus</i>	Common passage migrant and winter visitor	W	-	-	-	-	-								+	+				
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	Common resident	R	-	-	-	-	-								+	+				

Appendix C: Fauna Species Recorded during the Ecological Site Check

Avifauna									Project Site				500m Area from the Project Site								
Common Name <sup>(1)</sup>	Scientific Name	Distribution in Hong Kong <sup>(3)</sup>	Principal Status <sup>(4)</sup>	Level of Concern <sup>(5)</sup>	Protection Status in China <sup>(6)</sup>	China Red Data Book <sup>(7)</sup>	Red List of China's Vertebrates <sup>(8)</sup>	IUCN Red List (Version 2021.3) <sup>(9)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP
Crested Myna	<i>Acridotheres cristatellus</i>	Common resident	R	-	-	-	-	-	++				+		+	+					
Black-collared Starling	<i>Gracupica nigricollis</i>	Common resident	R	-	-	-	-	-						+		+					
Oriental Magpie Robin	<i>Copsychus saularis</i>	Abundant resident	R	-	-	-	-	-						+	+	+		+			
Daurian Redstart	<i>Phoenicurus aureus</i>	Common winter visitor	W	-	-	-	-	-								+					
Stejneger's Stonechat	<i>Saxicola stejnegeri</i>	Common passage migrant and winter visitor	W,M	-	-	-	-	-								+					
Blue Whistling Thrush	<i>Myophonus caeruleus</i>	Common resident	R	-	-	-	-	-	+												
Common Tailorbird	<i>Orthotomus sutorius</i>	Common resident	R	-	-	-	-	-									+	+			
Cinereous Tit	<i>Parus cinereus</i>	Common resident	R	-	-	-	-	-									+				
White-rumped Munia	<i>Lonchura striata</i>	Common resident	R	-	-	-	-	-	++							+					
Scaly-breasted Munia	<i>Lonchura punctulata</i>	Common resident	R	-	-	-	-	-	++++				++++								
Chestnut Munia	<i>Lonchura atricapilla</i>	Scarce resident	?	-	-	-	-	-	+												
Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	Common winter visitor and spring migrant	W	-	-	-	-	-									+				
Oriental Magpie	<i>Pica serica</i>	Common resident	R	-	-	-	-	-									+				
Grey Wagtail	<i>Motacilla cinerea</i>	Common passage migrant and winter visitor	W	-	-	-	-	-					+			+					
White Wagtail	<i>Motacilla alba</i>	Common passage migrant and winter visitor	W,R	-	-	-	-	-				+	+	+	+	+	+				
Olive-backed Pipit	<i>Anthus hodgsoni</i>	Common passage migrant and winter visitor	W	-	-	-	-	-	+							+					
Black-faced Bunting	<i>Emberiza spodocephala</i>	Common passage migrant and winter visitor	M,W	-	-	-	-	-	+												

Notes:

(1) All wild birds are protected under the Wild Animals Protection Ordinance (Cap. 170).

(2) Protected under the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586).

(3) Agriculture, Fisheries and Conservation Department (AFCD) (2020). Hong Kong Biodiversity Database.

(4) Carey *et al.* (2001): R=resident; W=winter visitor; Su=summer visitor; M=migrant; A=autumn; P=present all year, exact composition unknown; ?W=extent of migration in winter is unclear

(5) Fellowes *et al.* (2002): LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in nesting and/or roosting sites rather than in general occurrence.

(6) List of Wild Animals Under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).

(7) Zheng, G.-M. & Wang, Q.-S. (1998). China Red Data Book of Endangered Animals: Aves. First Edition. Beijing: Science Press.

(8) Jiang, Z.G., *et al.* (2016). Red List of China's Vertebrates. *Biodiversity Science* **24**(5): 500-551.

(9) International Union for the Conservation of Nature (IUCN) (2021). IUCN Red List of Threatened Species. Version 2021.3.

(10) Wetland-dependent species (including wetland-dependent species and waterbirds).

Species of conservation importance is in bold type face.

Code of Abundance: +=Rare; ++=Occasional; +++=Common; ++++=Abundant; +++++=Dominant

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond



Appendix C: Fauna Species Recorded during the Ecological Site Check

Butterfly			Project Site				500m Area from the Project Site								
Common Name	Scientific Name	Distribution in Hong Kong <sup>(3)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP
Banded Awl	<i>Hasora chromus chromus</i>	Rare				+									
Indian Palm Bob	<i>Suastus gremius gremius</i>	Uncommon	+												
-	<i>Potanthus</i> sp.	-									+				
Common Bluebottle	<i>Graphium sarpedon sarpedon</i>	Very common	+								+				
Common Jay	<i>Graphium doson axion</i>	Common								+					
Red Helen	<i>Papilio helenus helenus</i>	Very common									+			+	
Common Mormon	<i>Papilio polytes polytes</i>	Very common							+	+	+			+	
Great Mormon	<i>Papilio memnon agenor</i>	Very common									+				
Red-base Jezebel	<i>Delias pasithoe pasithoe</i>	Very common						+		+	++	+	+		
Indian Cabbage White	<i>Pieris canidia canidia</i>	Very common	+								+				
Small Cabbage White	<i>Pieris rapae crucivora</i>	Rare					+								
Common Gull	<i>Cepora nerissa nerissa</i>	Common	+												
Great Orange Tip	<i>Hebomoia glaucippe glaucippe</i>	Common	+												
Mottled Emigrant	<i>Catopsilia pyranthe pyranthe</i>	Very common							+						
Lemon Emigrant	<i>Catopsilia pomona pomona</i>	Common						+	+	+	+				
-	<i>Catopsilia</i> spp.	-						+							
-	<i>Eurema</i> spp.	-	+							+	+				
Chocolate Royal	<i>Remelana jangala mudra</i>	Common				+			+						
Transparent 6-line Blue	<i>Nacaduba kurava euplea</i>	Common									+				
Dark Cerulean	<i>Jamides bochus bochus</i>	Common					+			+	++	+	+		
Long-tailed Blue	<i>Lampides boeticus</i>	Common									+				
Tailless Line Blue	<i>Prosotas dubiosa</i>	-				+			+	+	+				
Plum Judy	<i>Abisara echerius echerius</i>	Very common		+											
Common Palmfly	<i>Elymnias hypermnestra hainana</i>	Common	+												
Dark Brand Bush Brown	<i>Mycalesis mineus mineus</i>	Very common									+				
Large Faun	<i>Faunis eumeus eumeus</i>	Common								+					
Tawny Rajah	<i>Charaxes bernardus bernardus</i>	Common									+				
Angled Castor	<i>Ariadne ariadne alterna</i>	Common	+				+		+		+				
Rustic	<i>Cupha erymanthis erymanthis</i>	Very common	+								+				
Blue Admiral	<i>Kaniska canace canace</i>	Common					+	+							
Lemon Pansy	<i>Junonia lemonias lemonias</i>	Common				+			+						
Great Egg-fly	<i>Hypolimnias bolina kezia</i>	Common	+			+			+	+	+				
Common Sailer	<i>Neptis hylas hylas</i>	Very common									+			+	
Short-banded Sailer	<i>Phaedyra columella columella</i>	Common								+					
Five-dot Sergeant	<i>Parathyma sulpitia</i>	Common												+	
White-edged Blue Baron	<i>Euthalia phemius seitzii</i>	Common	+								+				
Red Ring Skirt	<i>Hestina assimilis assimilis</i>	Common				+	+	+	+	+	+				
Ceylon Blue Glassy Tiger	<i>Ideopsis similis similis</i>	Very common									+				
Common Tiger	<i>Danaus genutia genutia</i>	Common									+		+		
Blue-spotted Crow	<i>Euploea midamus midamus</i>	Very common						+		+	+				

Notes:

(1) Protected under Wild Animals Protection Ordinance (Cap. 170).

(2) Protected under Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586).

(3) Agriculture, Fisheries and Conservation Department (AFCD) (2020). Hong Kong Biodiversity Database.

Species of conservation importance is in bold type face.

Code of Abundance: +=Rare; ++=Occasional; +++=Common; ++++=Abundant; +++++=Dominant

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond

## Appendix C: Fauna Species Recorded during the Ecological Site Check

Odonate				Project Site				500m Area from the Project Site								
Common Name	Scientific Name	Distribution in Hong Kong <sup>(1)</sup>	Level of Concern <sup>(2)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP
Common Blue Jewel	<i>Rhinocypha perforata</i>	Abundant; Very Widespread	-												+	
Common Bluetail	<i>Ischnura senegalensis</i>	Abundant; Scattered	-	+					+		+	+			+	
Yellow Featherlegs	<i>Copera marginipes</i>	Abundant; Widespread	-												+	
Black Threaddtail	<i>Prodasineura autumnalis</i>	Abundant; Widespread	-												+	
Common Flangetail	<i>Ictinogomphus pertinax</i>	Common; Widespread	-				+			+	+					
Crimson Darter	<i>Crocothemis servilia servilia</i>	Abundant; Scattered	-							+	+					
<b>Coastal Glider</b>	<b><i>Macrodiplax cora</i></b>	Common; Sparse	LC				++			+++	++					
Green Skimmer	<i>Orthetrum serapia</i>	Abundant; Widespread	-	+			+	+		+	+					
Wandering Glider	<i>Pantala flavescens</i>	Abundant; Widespread	-	+			+	+		+	+					
Variegated Flutterer	<i>Rhyothemis variegata arria</i>	Common; Widespread	-								+					
Indigo Dropwing	<i>Trithemis festiva</i>	Abundant; Widespread	-												+	

### Notes:

(1) Agriculture, Fisheries and Conservation Department (AFCD) (2020). Hong Kong Biodiversity Database.

Reels, G.T. (2019). An Annotated Check List of Hong Kong Dragonflies and Assessment of Their Local Conservation Significance.

(2) Fellowes *et al.* (2002): LC=Local Concern

Species of conservation importance is in bold type face.

Code of Abundance: +=Rare; ++=Occasional; +++=Common; ++++=Abundant; +++++=Dominant

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond

Appendix C: Fauna Species Recorded during the Ecological Site Check

Herpetofauna								Project Site				500m Area from the Project Site									
Common Name	Scientific Name	Distribution in Hong Kong <sup>(2)</sup>	Level of Concern <sup>(3)</sup>	Protection Status in China <sup>(4)</sup>	China Red Data Book <sup>(5)</sup>	Red List of China's Vertebrates <sup>(6)</sup>	IUCN Red List (Version 2021.3) <sup>(7)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP	
Amphibian																					
Gunther's Frog	<i>Hylarana guentheri</i>	Widely distributed	-	-	-	-	-							+							
Reptile																					
Changeable Lizard	<i>Calotes versicolor</i>	Widely distributed	-	-	-	-	-							+							

Notes:

(1) Protected under Wild Animals Protection Ordinance (Cap. 170).

(2) Agriculture, Fisheries and Conservation Department (AFCD) (2020). Hong Kong Biodiversity Database.

(3) Fellowes *et al.* (2002)

(4) List of Wild Animals Under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).

(5) Zhao, E.M. (1998). China Red Data Book of Endangered Animals. Amphibia and Reptilia. First Edition. Beijing: Science Press.

(6) Jiang, Z.G., *et al.* (2016). Red List of China's Vertebrates. *Biodiversity Science* **24**(5): 500-551.

(7) International Union for the Conservation of Nature (IUCN) (2021). IUCN Red List of Threatened Species. Version 2021.3.

Species of conservation importance is in bold type face.

Code of Abundance: +=Rare; ++=Occasional; +++=Common; ++++=Abundant; +++++=Dominant

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond

Appendix C: Fauna Species Recorded during the Ecological Site Check

Mammal								Project Site				500m Area from the Project Site									
Common Name	Scientific Name	Distribution in Hong Kong <sup>(3)</sup>	Level of Concern <sup>(4)</sup>	Protection Status in China <sup>(5)</sup>	China Red Data Book <sup>(6)</sup>	Red List of China's Vertebrates <sup>(7)</sup>	IUCN Red List (Version 2021.3) <sup>(8)</sup>	WAL	DA	GL	SWA	WAL	DA	SWA	ASL	WL	PL	SL	WTE	EP	
Chinese Horseshoe Bat <sup>(1)</sup>	<i>Rhinolophus sinicus</i>	Very Common	-	-	-	-	-				+	+									
Japanese Pipistrelle <sup>(1)</sup>	<i>Pipistrellus abramus</i>	Very Common	-	-	-	-	-				+	+									
Chinese Pipistrelle <sup>(1)</sup>	<i>Hypsugo pulveratus</i>	Rare; Species of Conservation Concern	(LC)	-	-	Near Threatened	-					+									

Notes:

(1) Protected under Wild Animals Protection Ordinance (Cap. 170).

(2) Protected under Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586).

(3) Agriculture, Fisheries and Conservation Department (AFCD) (2019). Hong Kong Biodiversity Database.

(4) Fellowes et al. (2002): LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern.

Letters in parentheses indicate that the assessment is on the basis of restrictedness in nesting and/or roosting sites rather than in general occurrence.

(5) List of Wild Animals Under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).

(6) Wang, S. (1998). China Red Data Book of Endangered Animals. Mammalia. First Edition. Beijing: Science Press.

(7) Jiang, Z.G., et al. (2016). Red List of China's Vertebrates. *Biodiversity Science* **24**(5): 500-551.

(8) International Union for the Conservation of Nature (IUCN) (2020). IUCN Red List of Threatened Species. Version 2021.3.

Species of conservation importance is in bold type face.

Code of Abundance: +=Rare; +=Occasional; +++=Common; ++++=Abundant; +++++=Dominant

WAL=Wasteland; DA=Developed Area; GL=Grassland; SWA=Seawall; ASL=Ash Lagoon; WL=Woodland; PL=Plantation; SL=Shrubland; WTE=Watercourse; EP=Enhancement Pond

# Appendix C: Fauna Species Recorded during the Ecological Site Check

## Freshwater Communities

Species / Family Name	Common Name	Family	Distribution in Hong Kong <sup>(1)</sup>	Level of Concern <sup>(3)</sup>	China Red Data Book <sup>(4)</sup>	Red List of China's Vertebrates <sup>(5)</sup>	IUCN Red List (Version 2021.3) <sup>(6)</sup>	Sampling Locations		
								F1	F2	F3
Insect										
-	Mayfly (larvae)	Baetidae	Very common <sup>(2)</sup>	-	-	-	-	++		
	Caddisfly	Hydropsychidae	Very common <sup>(2)</sup>	-	-	-	-	+		
	Caddisfly	Leptoceridae	-	-	-	-	-	+		
-	Stonefly	Perlidae	-	-	-	-	-	+		
<i>Euphaea decorata</i>	Black-banded Gossamerwing (nymph)	Euphaeidae	Abundant; Very Widespread	-	-	-	-	+		
Crustacean										
<i>Caridina cantonensis</i>	-	Atyidae	Very Common	-	-	-	-	++		
<i>Uca lactea</i>	Fiddler Crab	Ocypodidae	Common	-	-	-	-		+	
<i>Parasesarma</i> sp.	-	Sesarmidae	-	-	-	-	-		++	
Freshwater Fish										
<i>Mugil cephalus</i>	Grey Mullet, Striped Mullet, Flathead Mullet	Mugilidae	Common	-	-	-	-		+	

### Notes:

(1) AFCD (2020). Hong Kong Biodiversity Database.

(2) Dudgeon D. (2003). Hong Kong Field Guides: Hillstreams.

(3) Fellowes, J.R., Lau, M.W. N., Dudgeon, D., Reels, G. T., Ades, G. W. J., Carey, G. J., Chan, B. P. L., Kendrick, R. C., Lee, K. S., Leven, M. R., Wilson, K. D. P. & Yu, Y.T. (2002). Wild animals to watch: terrestrial and freshwater fauna of conservation concern in Hong Kong. Memoirs of the Hong Kong Natural History Society.

(4) Yue P. and Chen Y. (1998). China Red Data Book of Endangered Animals: Pisces. Science Press, Beijing.

(5) Zheng, G. M. and Wang, Q. S. (1998). China Red Data Book

(6) IUCN (2021). IUCN Red List of Threatened Species. Version 2021.3.

Species of conservation importance is in bold type face

Code of Abundance: +=Rare; +=Occasional; +++=Common; ++++=Abundant

## Appendix C: Fauna Species Recorded during the Ecological Site Check

### Raw Data Recorded during the Intertidal Surveys

#### Dry Season

##### Intertidal Sampling Point T1

Taxa / Species		Low Tide	High Tide	Walk through
Algae	<i>Chroccus</i> sp.	30%		x
	<i>Gelidium pusillum</i>	5%		x
	<i>Hildenbrandia rubra</i>			x
Bivalve	<i>Saccostrea cucullata</i>	40%	1%	x
Barnacle	<i>Balanus amphitrite</i>	2%		
Gastropod	<i>Echinolittorina radiata</i>			x
	<i>Echinolittorina trochoides</i>		1	x
	<i>Littoraria articulata</i>			x
	<i>Nerita albicilla</i>	1		x
	<i>Thais clavigera</i>	1		x

##### Intertidal Sampling Point T2 (Within Project Site)

Taxa / Species		Low Tide	High Tide	Walk-through
Algae	<i>Chroccus</i> sp.	25%		x
	<i>Gelidium pusillum</i>	5%		x
	<i>Hildenbrandia rubra</i>			x
Bivalve	<i>Saccostrea cucullata</i>	30%		x
Barnacle	<i>Balanus amphitrite</i>	2%		
Gastropod	<i>Echinolittorina radiata</i>		2	x
	<i>Littoraria articulata</i>			x
	<i>Nerita albicilla</i>	3		

## Appendix C: Fauna Species Recorded during the Ecological Site Check

### Raw Data Recorded during the Intertidal Surveys

#### Wet Season

##### Intertidal Sampling Point T1

Taxa / Species		Low Tide	High Tide	Walk through
Cyanobacteria and Algae	<i>Chroococcus</i> sp.	30%		
	<i>Lyngbya</i> sp.	2%		
	<i>Hildenbrandia rubra</i>	5%		
Bivalve	<i>Saccostrea cucullata</i>		1%	x
Barnacle	<i>Balanus amphitrite</i>	10%	5%	x
Crustacean	<i>Grapsus albolineatus</i>			x
Gastropod	<i>Echinolittorina radiata</i>			x
	<i>Echinolittorina trochoides</i>			x
	<i>Littorina articulata</i>		2	x
	<i>Nerita albicilla</i>	14		
Limpet	<i>Cellana toreuma</i>	1		
	<i>Patelloida pygmaea</i>			x
	<i>Patelloida saccharina</i>			x
Others	<i>Ligia exotica</i>	3		x

##### Intertidal Sampling Point T2 (Within Project Site)

Taxa / Species		Low Tide	High Tide	Walk through
Bivalve	<i>Septifer virgatus</i>	1	2	
	<i>Saccostrea cucullata</i>	5%	2%	x
Barnacle	<i>Balanus amphitrite</i>	10%	1%	x
Crustacean	<i>Grapsus albolineatus</i>			x
	<i>Hemigrapsus sanguineus</i>	2		
Gastropod	<i>Echinolittorina radiata</i>		16	x
	<i>Echinolittorina trochoides</i>		2	x
	<i>Littorina articulata</i>		6	x
	<i>Nerita albicilla</i>	3		
	<i>Thais clavigera</i>	1		
Limpet	<i>Nipponacmea concinna</i>	3		
	<i>Patelloida pygmaea</i>		2	x
	<i>Patelloida saccharina</i>			x
Sea Anemone	<i>Haliplanella lineata</i>	3		
Others	<i>Ligia exotica</i>			x

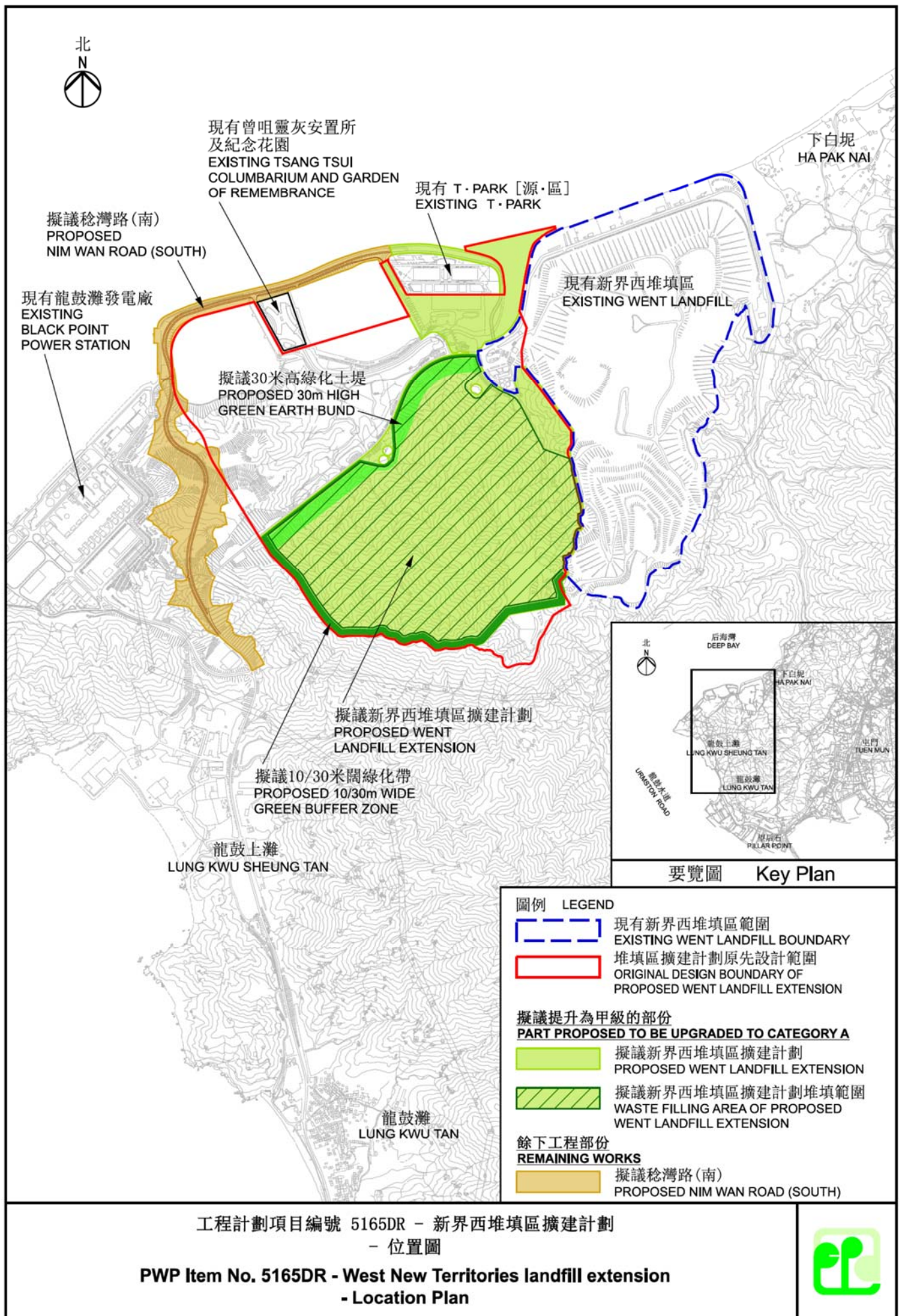
## APPENDIX D

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PWSC(2020-21)36 (PWP Item No. 5165DR)  
– WENT Landfill Extension Location Plan







## APPENDIX E

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### Historical Aerial Photographs





ISO A1 594mm x 841mm  
Approved:  
Checked:  
Designer:  
Project Management Initials:  
2022/7/6  
Plotted by: ZHILZ  
PATH: P:\PROJECTS\60236239\DRAWING\REPORT\PPP-741.dgn



LEGEND:

圖例:  
PROJECT BOUNDARY  
項目範圍



PROJECT

DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
曾咀中部煤灰湖其餘部分  
的解除運作工程

CLIENT

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ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.
01	2022/7/6	Initial Issue	ZHILZ

STATUS

SCALE

A1 1 : 1000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

60236239

AGREEMENT NO.

SHEET TITLE

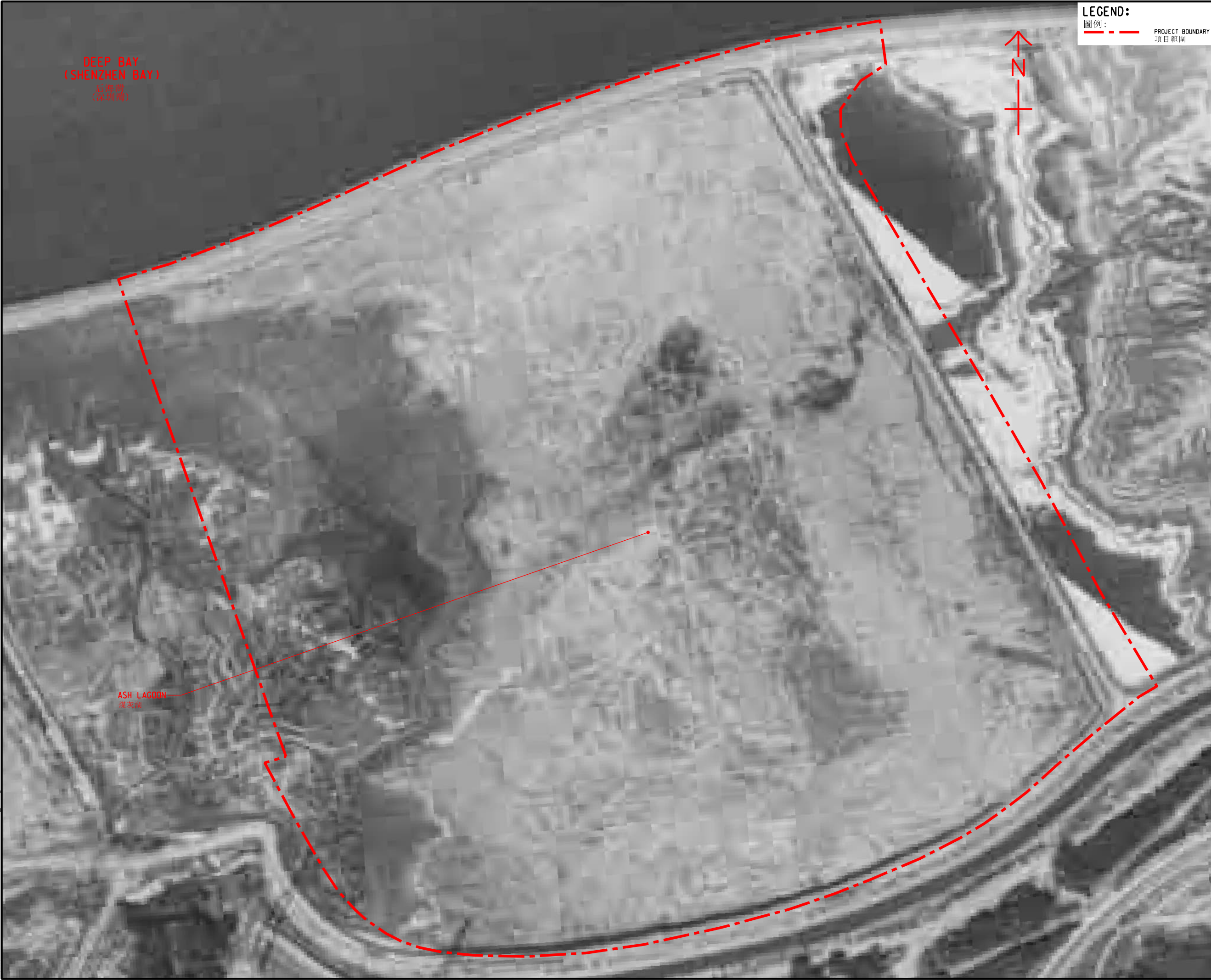
AERIAL PHOTOGRAPH 1982  
航空照片 1982

SHEET NUMBER

60236239/PP/FIGURE AP1



ISO A1 594mm x 841mm  
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Project Management Initials:  
2022/7/6  
PATH P:\PROJECTS\60236239\DRAWING\REPORT\PP-PP-742.dgn  
Plot File by: ZHILZ



LEGEND:

圖例:

PROJECT BOUNDARY

項目範圍



PROJECT  
項目  
DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
曾咀中部煤灰湖其餘部分  
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修訂			
I/R	DATE	DESCRIPTION	CHK.
修訂	日期	修改描述	核對

STATUS  
階段

SCALE	DIMENSION UNIT
比例	尺寸單位
A1 1 : 1000	METRES

KEY PLAN  
索引圖

PROJECT NO.	AGREEMENT NO.
項目編號	協議編號
60236239	

SHEET TITLE  
圖紙名稱  
AERIAL PHOTOGRAPH 1992  
航空照片 1992

SHEET NUMBER  
圖紙編號  
60236239/PP/FIGURE AP2

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Plot File by: ZHILZ



**LEGEND:**  
圖例:  
PROJECT BOUNDARY  
項目範圍



**PROJECT**  
項目  
**DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI**  
曾咀中部煤灰湖其餘部分  
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修訂	日期	修改描述	核對

**STATUS**  
階段

SCALE	DIMENSION UNIT
比例	尺寸單位
A1 1 : 1000	METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號  
60236239

**AGREEMENT NO.**  
協議編號

**SHEET TITLE**  
圖紙名稱

AERIAL PHOTOGRAPH 2002  
航空照片 2002

**SHEET NUMBER**  
圖紙編號

60236239/PP/FIGURE AP3

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2022/7/6  
PATH P:\PROJECTS\60236239\DRAWING\REPORT\PPP-744.dgn  
Plot File by: ZHILZ



**LEGEND:**  
圖例:  
PROJECT BOUNDARY  
項目範圍

**PROJECT**  
項目

**DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI**  
曾咀中部煤灰湖其餘部分  
的解除運作工程

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修訂	日期	修改描述	核對

STATUS	
待核	

SCALE	DIMENSION UNIT
比例	尺寸單位
A1 1: 1000	METRES

KEY PLAN
索引圖

PROJECT NO.	AGREEMENT NO.
項目編號	協議編號
60236239	

SHEET TITLE
圖紙名稱
AERIAL PHOTOGRAPH 2012 航空照片 2012

SHEET NUMBER
圖紙編號
60236239/PP/FIGURE AP4

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Project Management Initials:  
2022/7/6  
Plotted by: ZHILZ  
PATH P:\PROJECTS\60236239\DRAWING\REPORT\PP-PP-745.dgn



LEGEND:

圖例:

PROJECT BOUNDARY

項目範圍

AECOM

PROJECT  
項目  
DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
曾咀中部煤灰湖其餘部分  
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ISSUE/REVISION  
設計

I/R	DATE	DESCRIPTION	CHK.
設計	日期	修改描述	校核

STATUS  
階段

SCALE  
比例  
A1 1 : 1000  
DIMENSION UNIT  
尺寸單位  
METRES

KEY PLAN  
索引圖

PROJECT NO.  
項目編號  
60236239  
AGREEMENT NO.  
協議編號

SHEET TITLE  
圖紙名稱  
AERIAL PHOTOGRAPH 2021  
航空照片 2021

SHEET NUMBER  
圖紙編號  
60236239/PP/FIGURE AP5

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## APPENDIX F

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Photographic Records of Site Walkover



ISO A1 594mm x 841mm  
Approved:  
Checked:  
Designer:  
Project Management Initials:

2022/8/10  
P:\PROJECTS\60236239\DRAWING\REPORT\PP\PP\_750.dgn  
Plotted by: ZHILZ

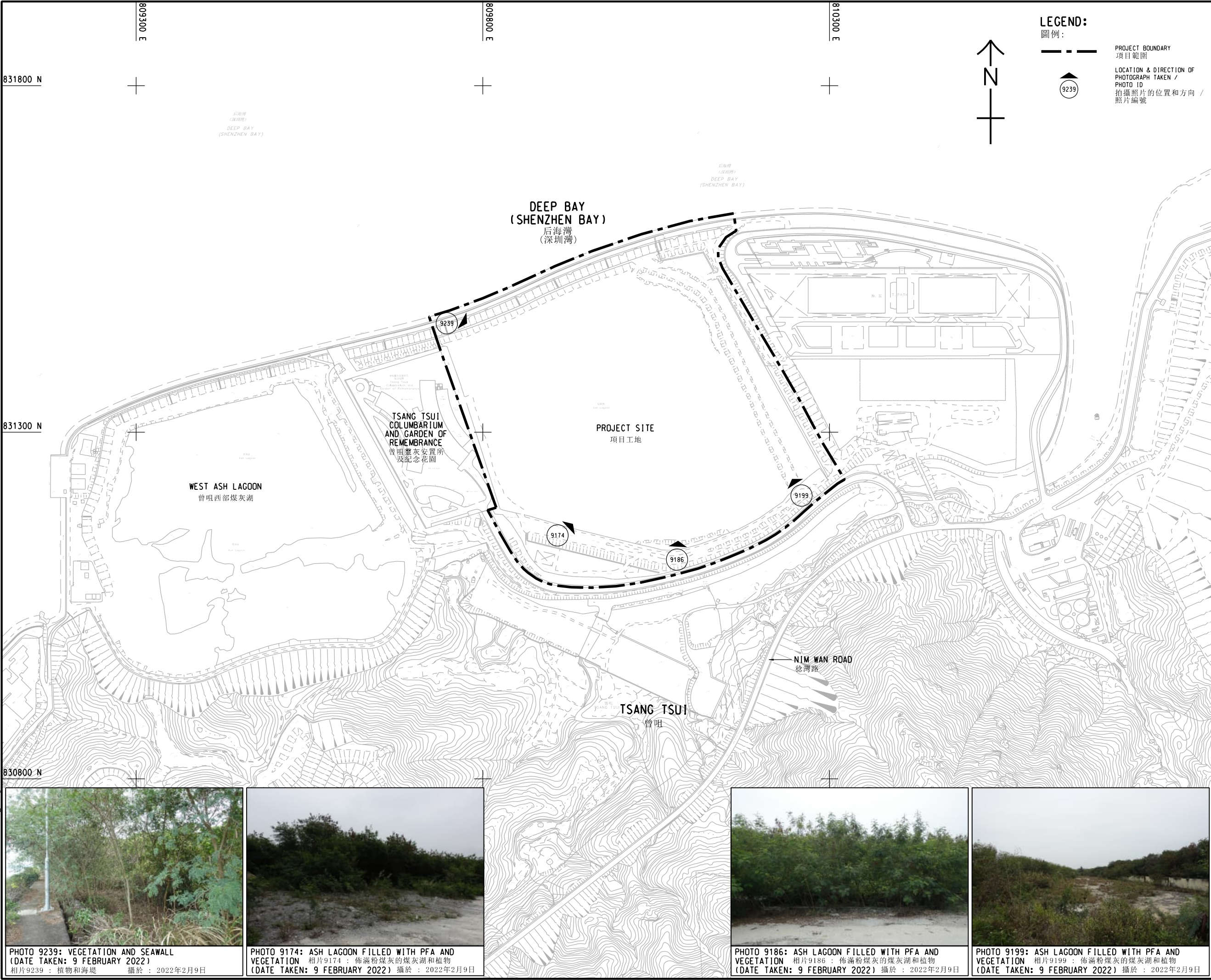


PHOTO 9239: VEGETATION AND SEAWALL  
(DATE TAKEN: 9 FEBRUARY 2022)  
相片9239: 植物和海堤 攝於: 2022年2月9日



PHOTO 9174: ASH LAGOON FILLED WITH PFA AND VEGETATION  
相片9174: 佈滿粉煤灰的煤灰湖和植物  
(DATE TAKEN: 9 FEBRUARY 2022) 攝於: 2022年2月9日



PHOTO 9186: ASH LAGOON FILLED WITH PFA AND VEGETATION  
相片9186: 佈滿粉煤灰的煤灰湖和植物  
(DATE TAKEN: 9 FEBRUARY 2022) 攝於: 2022年2月9日



PHOTO 9199: ASH LAGOON FILLED WITH PFA AND VEGETATION  
相片9199: 佈滿粉煤灰的煤灰湖和植物  
(DATE TAKEN: 9 FEBRUARY 2022) 攝於: 2022年2月9日

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PROJECT  
項目

DECOMMISSIONING OF  
REMAINING PORTION  
OF MIDDLE ASH  
LAGOON IN TSANG TSUI  
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CLIENT  
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修訂

I/R 修訂	DATE 日期	DESCRIPTION 修改描述	CHK. 校核

STATUS  
狀態

SCALE  
比例

A1 1 : 2500

KEY PLAN  
索引圖

PROJECT NO.  
項目編號

60236239

SHEET TITLE  
圖紙名稱

PHOTOGRAPHIC RECORDS  
OF SITE WALKOVER  
工地複檢相片記錄

SHEET NUMBER  
圖紙編號

60236239/PP/APPENDIX F

## APPENDIX G

---

### Site Walkover Checklist



# Annex C1

## Site Walkover Checklist

DATE OF INSPECTION 9<sup>th</sup> February, 2022

### GENERAL SITE DETAILS

SITE OWNER/CLIENT Environmental Protection Department

PROPERTY ADDRESS Middle Ash Lagoon, Tsang Tsui,

15 Nim Wan Road, Tuen Mun

### PERSON CONDUCTING THE QUESTIONNAIRE

NAME [REDACTED]

POSITION Environmental Consultant

### AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME Not Available

POSITION --

TELEPHONE --

### SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled.  
**Obtain a flow schematic if possible.**

Number of employees: Full-time: N/A

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: N/A

Typical hours of operation: N/A

Number of shifts: N/A

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas	<del>Yes</del> /No
Electricity	<del>Yes</del> /No
Coal	<del>Yes</del> /No
Oil	<del>Yes</del> /No
Other	<del>Yes</del> /No

### ***SITE DESCRIPTION***

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: Approx. 20.8 hectares

What area of the site is covered by buildings (%): 0 %

Please list all current and previous owners/occupiers if possible. Government land

Is a site plan available? If yes, please attach.    Yes/~~No~~    Refer to 60236239/PP/APPENDIX F

Are there any other parties on site as tenants or sub-tenants?    ~~Yes~~/No

If yes, identify those parties: \_\_\_\_\_

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Deep Bay

South: Woodland

East: T Park / WENT Landfill

West: Tsang Tsui Columbarium and Garden of Remembrance,  
West Ash Lagoon



# Annex C1

## Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Generally flat terrain.

State the size and location of the nearest residential communities.

Ha Pak Nai Village Houses (approx. 2 km to the east of the site, area of about 1.1 ha ).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

No.

### Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes*
1. What are the main activities/operations at the above address?	--	Ash Lagoon
2. How long have you been occupying the site?	N/A	
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	N/A	
4. Prior to your occupancy, who occupied the site?	N/A	
5. What were the main activities/operations during their occupancy?	N/A	
6. Have there been any major changes in operations carried out at the site in the last 10 years?	N/A	
7. Have any polluting activities been carried out in the vicinity of the site in the past?	N/A	
8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage?	N/A	
9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	N/A	
10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.)	N/A	No registered hazardous installations were observed on site.
11. Are any chemicals used in your daily operations? (If yes, please provide details.)	N/A	No chemicals were observed on site.
• Where do you store these chemicals?	N/A	
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	N/A	
13. Has the facility produced a separate hazardous substance inventory?	N/A	No hazardous substances were observed on site.
14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.)	N/A	

\* No interview was able to be conducted. Notes shown are based on observation from site walkover.

	Yes/No	Notes*
15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)?	Yes	Pulverized fly ash is stored in ash lagoon.
16. Do you have any underground storage tanks? (If yes, please provide details.)	N/A	
• How many underground storage tanks do you have on site?	N/A	
• What are the tanks constructed of?	N/A	
• What are the contents of these tanks?	N/A	
• Are the pipelines above or below ground?	N/A	
• If the pipelines are below ground, has any leak and integrity testing been performed?	N/A	
• Have there been any spills associated with these tanks?	N/A	
17. Are there any disused underground storage tanks?	N/A	
18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	N/A	No chemicals were observed within the site.
19. How are the wastes disposed of?	N/A	
20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	N/A	
21. Have any spills occurred on site? (If yes, please provide details.)	N/A	No traces of oil stains and stressed vegetation observed on site.
• When did the spill occur?	N/A	
• What were the substances spilled?	N/A	
• What was the quantity of material spilled?	N/A	
• Did you notify the relevant departments of the spill?	N/A	
• What were the actions taken to clean up the spill?	N/A	
• What were the areas affected?	N/A	
22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.)	N/A	
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	N/A	
24. Are there any known contaminations on site? (If yes, please provide details.)	N/A	
25. Has the site ever been remediated? (If yes, please provide details.)	N/A	

\* No interview was able to be conducted. Notes shown are based on observation from site walkover.

# Annex C1

## Site Walkover Checklist

### Observations

	Yes/No	Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	No	No chemicals or chemical storage areas were observed on site.
2. What are the conditions of the bund walls and floors?	N/A	
3. Are any surface water drains located near to drum storage and unloading areas?	No	No drums observed.
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	No	
5. Is there a storage site for the wastes?	No	
6. Is there an on-site landfill?	No	
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	No	
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	No	
9. Are there any potential off-site sources of contamination?	No	
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	No	
11. Are there any sumps, effluent pits, interceptors or lagoons on site?	Yes	Ash Lagoon.
12. Any noticeable odours during site walkover?	No	
13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam?	No	