



33/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
香港灣仔告士打道 5 號稅務大樓 33 樓

ACE-EIA Paper 2/2024
For advice on 14 October 2024

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report

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

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report on “Development of Integrated Waste Management Facilities Phase 2 (I·PARK2)” (“the Project”) submitted under Section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-307/2024). The Waste Infrastructure Division of the Environmental Protection Department of the HKSAR Government (“the Applicant”) and its consultants will present the report at the meeting of the EIA Subcommittee.

ADVICE SOUGHT

2. Members’ views are sought on the findings and recommendations of the EIA report. The Director of Environmental Protection (DEP) will take into account the comments from the public and the Advisory Council on the Environment (ACE) in deciding whether or not to approve the EIA report under Section 8(3) of the EIAO.

BACKGROUND

3. In February 2021, the Government promulgated the “Waste Blueprint for Hong Kong 2035” (the Waste Blueprint) which sets out the vision to move away from the reliance on landfills for direct disposal of municipal solid waste (MSW) by around 2035. As set out in the Waste Blueprint, development of a network of advanced and highly efficient modern waste-to-energy (WtE) facilities, including modern MSW incineration facilities, is an important strategy to move away from the reliance on landfills for direct disposal of MSW and transform waste into useful energy resources.

4. The Applicant submitted the EIA report for the Project under Section 6 of the EIAO. DEP, in consultation with relevant authorities, considered that the EIA report met the requirements in the EIA Study Brief and the Technical Memorandum on EIA Process (TM), for the purpose of its exhibition for public inspection under Section 7(4) of the EIAO.

NEED FOR THE PROJECT

5. Implementation of the Project is an important step to move away from Hong Kong's reliance on landfills for direct disposal of MSW.

DESCRIPTION OF THE PROJECT

6. The Project is located at the Tsang Tsui Middle Ash Lagoon, with an associated seawater outfall situated at the seawall at Tsang Tsui West Ash Lagoon (as shown in Figure 1). The facility is designed to handle approximately 6,000 tonnes of MSW per day, and comprises the following key components: -

- (i) MSW reception, storage and feeding system;
- (ii) Berthing facility;
- (iii) Incinerator furnace and boiler system;
- (iv) Steam turbine generator and cooling system;
- (v) Power export / import system for plant electricity supply and connecting to public power grid at 132kV voltage level;
- (vi) Flue gas treatment and emission system;
- (vii) Reagent reception and storage system;
- (viii) Storage, handling and treatment systems for incinerator bottom ash, fly ash and flue gas cleaning residues;
- (ix) Process control and monitoring system;
- (x) Water supply system, which includes a desalination plant; and
- (xi) Wastewater treatment facilities.

7. The Project constitutes a Designated Project (DP) by virtue of the following items in Schedule 2 of the EIAO: -

- (i) Item G.3 – *“An incinerator with an installed capacity of more than 500 tpd”*;
- (ii) Item G.4(a) – *“A waste disposal facility (excluding any refuse collection point) with an installed capacity of more than 500 tpd for the disposal of refuse”*; and
- (iii) Item G.6 - *“A waste disposal facility for pulverized fuel ash, furnace bottom ash or gypsum”*.

ENVIRONMENTAL BENEFITS

8. The EIA report concludes that the construction and operation of the Project will be fully compliant with the EIAO requirements with no adverse residual environmental impacts. As a modern WtE incineration facility, I·PARK2 will utilise advanced technology and will be designed to integrate with community facilities. The Project is expected to yield several environmental benefits, including:

(i) **Reducing reliance on landfills for direct MSW disposal**

Regarding the development of modern WtE incinerators, with the I·PARK1 under construction and the proposed I·PARK2, Hong Kong's MSW incineration capacity will reach 9 000 tonnes per day. It will significantly reduce the amount of MSW requiring disposal in landfills, thus progressing towards the vision of minimizing landfill reliance. This change will conserve precious landfill space and extend the operational lifespan of existing landfills. Upon commissioning of the proposed I·PARK2, the NENT Landfill will completely cease MSW reception and will be transformed to receive construction waste only, which does not decay and is odourless, thereby eliminating the relevant odour problem, in response to the concerns of the residents near Hong Kong-Shenzhen boundary on the NENT Landfill;

(ii) **Resources Recovery**

I·PARK2 will recover heat energy generated from the MSW incineration process to produce electricity, which will support the facility's daily operations. Additionally, surplus electricity will be exported to the public power grid. There are also opportunities to recover valuable resources during the post-incineration phase, including ferrous and non-ferrous metals, which can be extracted from the incinerator bottom ash (IBA) through on-site treatment for recycling purposes. The treated bottom ash will be designated for off-site beneficial uses, such as in the production of construction materials. Disposal of bottom ash in landfills will only be considered as a last resort if no other beneficial uses are viable;

(iii) **Minimisation of Wastewater Discharge**

I·PARK2 is designed to minimise wastewater discharge. On-site biological wastewater treatment facilities will be established to treat wastewater, with one option being the reuse of treated wastewater (including domestic sewage and process water) within I·PARK2 for non-potable purposes; and

(iv) **Public Enjoyment**

Community amenities combining environmental education, leisure and recreational elements will be integrated into the Project design to facilitate public enjoyment, allowing members of the community to benefit from the facility.

CONSIDERATION OF ALTERNATIVE OPTIONS

9. The recommended development option of the Project has avoided any direct impact on recognised sites of conservation importance such as Country Parks and Conservation Areas. For the discharge of spent seawater cooling effluent, alternative outfall locations have been identified at West Ash Lagoon, which is situated further away from the oyster culture activities in Deep Bay, thereby reducing potential impacts on water quality and fisheries. Additionally, the Project has considered the adoption of a non-dredged method, i.e. Deep Cement Mixing (DCM), for construction of the berthing facility to minimise dredging activities and their associated potential impacts on water quality and marine ecology.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Air Quality

10. Cumulative air quality assessment results indicate that all the representative air sensitive receivers, including offices of waste facilities and industrial plants in Tsang Tsui as well as residential developments at Ha Pak Nai and Nim Wan Road, are expected to comply with the respective Air Quality Objectives (AQOs) for various air pollutants (i.e. RSP, FSP, NO₂, SO₂, CO and Pb). The waste generated by the I-PARK2 incinerator will be subjected to thorough combustion at high temperature exceeding 850°C, with sufficient air supply maintained under high turbulent for at least two seconds to ensure effective destruction of organic pollutants and dioxins.

11. The target emission levels for the incinerator shall meet the requirements set out in the standards for pollution control on the MSW incineration in Mainland China (GB 18485-2014) and Shenzhen (SZDB/Z 233-2017), as well as the best available techniques reference document for waste incineration in the European Union (EU) and the prevailing guidance note on the best practicable means (BPM) for municipal waste incineration in Hong Kong. In particular, I-PARK2 will seek to meet a more stringent target hourly NO_x emission level of 60 mg/Nm³ to minimise potential air quality impact. I-PARK2 will implement an advanced air pollution control system to ensure compliance with the target air emission levels and AQOs. The control system will incorporate selective non-catalytic reduction (SNCR) and selective catalytic reduction (SCR) to reduce NO_x emissions, dry alkaline sorbent injections combined with bag filters, semi-dry absorbers, and/or wet scrubbers to mitigate acidic gases such as HCl, HF, and SO₂, as well as dry sorbent (activated carbon) injections combined with bag filters to reduce dioxins, metals, and metalloids. Furthermore, bag filters will be employed to capture particulates. Continuous stack monitoring and air pollution control will be conducted in accordance with the BPM guidelines in Hong Kong.

12. The potential air quality impact associated with the handling of ash generated from the operation of the Project is expected to be minimal. The IBA treatment and associated equipment will be housed within an enclosed building with negative pressure. A misting system will be installed as a fugitive emission control measure inside the IBA facility. The IBA processing will utilise wet methods and fabric filters with 99% removal efficiency will be installed at the IBA facility to effectively remove dust emissions.

13. In addressing the potential odour issues, all facilities, including the wastewater treatment facility, waste reception hall, waste storage areas and waste feed system, will be fully enclosed and maintained at negative pressure. The exhaust air from these facilities will go through the combustion chamber of the incinerator. In the unlikely event of shut-down or rare circumstances where odorous air cannot be drawn into the combustion chamber, an odour control system with an odour removal efficiency exceeding 95% will be employed before discharging air into the atmosphere. The odour concentrations at all representative air sensitive receivers (ASRs) are expected to conform with the EIAO-TM criteria, with no adverse odour impacts anticipated from the operation of I·PARK2. Regular odour monitoring will be conducted throughout the operation of the Project.

Water Quality

14. The potential water quality impacts resulting from the modifications to the seawall, the construction of new berthing facility, as well as brine discharges from the desalination plant and spent cooling effluent from the seawater cooling system during operation of I·PARK2 have been assessed.

15. With the adoption of DCM for the marine construction works, water quality modelling results showed that any elevations in suspended solids and sedimentation due to the small-scale sand blanket laying works will be insignificant. Nevertheless, precautionary measures including the deployment of silt curtains will be implemented during the marine construction works. The Project will not involve the construction of a submarine outfall, and the installation of the outfall pipes will not disturb the seabed or sediments. There will be no alteration to the permeability of the geological structures of the ash lagoon during and after the Project construction. Therefore, the release of PFA leachate from the ash lagoon into the marine environment is highly unlikely.

16. During operation phase, the modelling results showed that water quality impact from brine and spent seawater cooling effluent discharges during I·PARK2 operation is expected to be localised. In sum, full compliance with water quality standards is anticipated during construction and operation phase at all representative water sensitive receivers. Other wastewater generated will undergo biologically treatment for on-site reuse or will be disposed of outside Deep Bay through the existing Urmston Road Submarine Outfall.

Ecology

Terrestrial Ecology

17. The Project site has previously served as an ash lagoon for disposal of pulverized fuel ash (PFA) from a coal-fired power plant and is currently in the process of decommissioning. Within the assessment area, no recognised sites of conservation importance, such as Country Parks and Conservation Areas, have been identified. In fact, a substantial portion of the assessment area has already been developed. In addition to reviewing past EIA findings in Tsang Tsui, a 6-month ecological baseline survey between March and August 2024, covering both wet and dry seasons, has been conducted for ecological impact assessment. The footprint of the Project will result in a direct loss of only wasteland, developed areas, and ash lagoons, all of which possess low ecological value. Upon commencement of the Project, the decommissioning of both ash lagoons will be completed and filled. Given that no loss of habitats of conservation importance is anticipated due to the Project, compensation measures are not considered necessary.

18. During the ecological survey at the West Ash Lagoon prior to its decommissioning, fauna species of conservation importance, such as the Little Grebe, were recorded. However, as illustrated in Figure 1, the proposed seawater outfall and associated pipe-laying works of the Project will not directly impact the West Ash Lagoon. Moreover, the recorded fauna species of conservation importance, including mammals, avifauna, and butterfly species, are known to be highly mobile. The pond-like status currently observed at the West Ash Lagoon is merely a transient stage in the overall life-cycle of the lagoon, which has been in operation before 1998. Environmental precautionary measures have been initiated since mid-December 2023, which include covering the ash surface with fill materials to prevent potential environmental impacts from the ash deposited in the lagoon. Subsequently, the filled West Ash Lagoon will be covered with a minimum of 1 meter of general fill as part of the separate project titled “Decommissioning of West Ash Lagoon in Tsang Tsui”. To further mitigate potential indirect impacts and human disturbances to the Little Grebe during construction, good site practices will be implemented. A quieter piling method will be employed for foundation construction to minimise disturbances. Additionally, silencers or mufflers will be installed on construction equipment, and lighting will be directed towards the Project site to reduce potential light spill beyond the Project boundary. As a precautionary measure, site checks conducted by qualified ecologists before the commencement of construction will verify the absence of breeding activity of avifauna species of conservation importance within the Project site. With the effective implementation of the recommended mitigation measures, it is anticipated that no unacceptable ecological impact will be resulted from the construction and operation of the Project. Furthermore, no floral species of conservation importance have been identified within the Project site. Given that no loss of species of conservation importance is anticipated due to the Project, compensation measures are not considered necessary.

Marine Ecology

19. The overall ecological impact of marine ecology due to the Project was considered to be low. No marine species of conservation importance are identified in the vicinity of the Project site. The intertidal habitats in and around the Project site primarily consist of artificial seawalls. Isolated patches of unhealthy and small coral colonies of common species have been observed along the artificial shore, which possess low ecological value. Furthermore, the coastal waters around the Project site and the adjacent areas have recorded no presence of Chinese White Dolphin density since 2014. The non-dredged method will be adopted for construction to mitigate the potential ecological impacts.

20. No adverse water quality impact is predicted at all identified marine ecological sensitive receivers, including Pak Nai Sites of Special Scientific Interest (SSSI) and Sha Chau and Lung Kwu Chau Marine Park located over 3.7 km and 4.5 km away from the Project site respectively. Since no loss of habitat or species of conservation importance due to the Project is anticipated, compensation measures are considered not necessary. MSW containing vessel will be equipped with GPS tracker to provide real time vessel location, which serves as surveillance measure to avoid waste dumping at sea.

Health

21. The health risks from air pollutants, including both carcinogenic and non-carcinogenic risks, are expected to be negligible. Radon emissions from the handling of pulverized fuel ash (PFA) during construction are also considered insignificant.

Other Environmental Impacts

22. Other environmental impacts including noise, waste management, landfill gas hazards, fisheries and visual, are relatively minor and have also been addressed in the EIA report. With the implementation of the recommended mitigation measures, the Project will comply with the relevant requirements of the EIA Study Brief and TM.

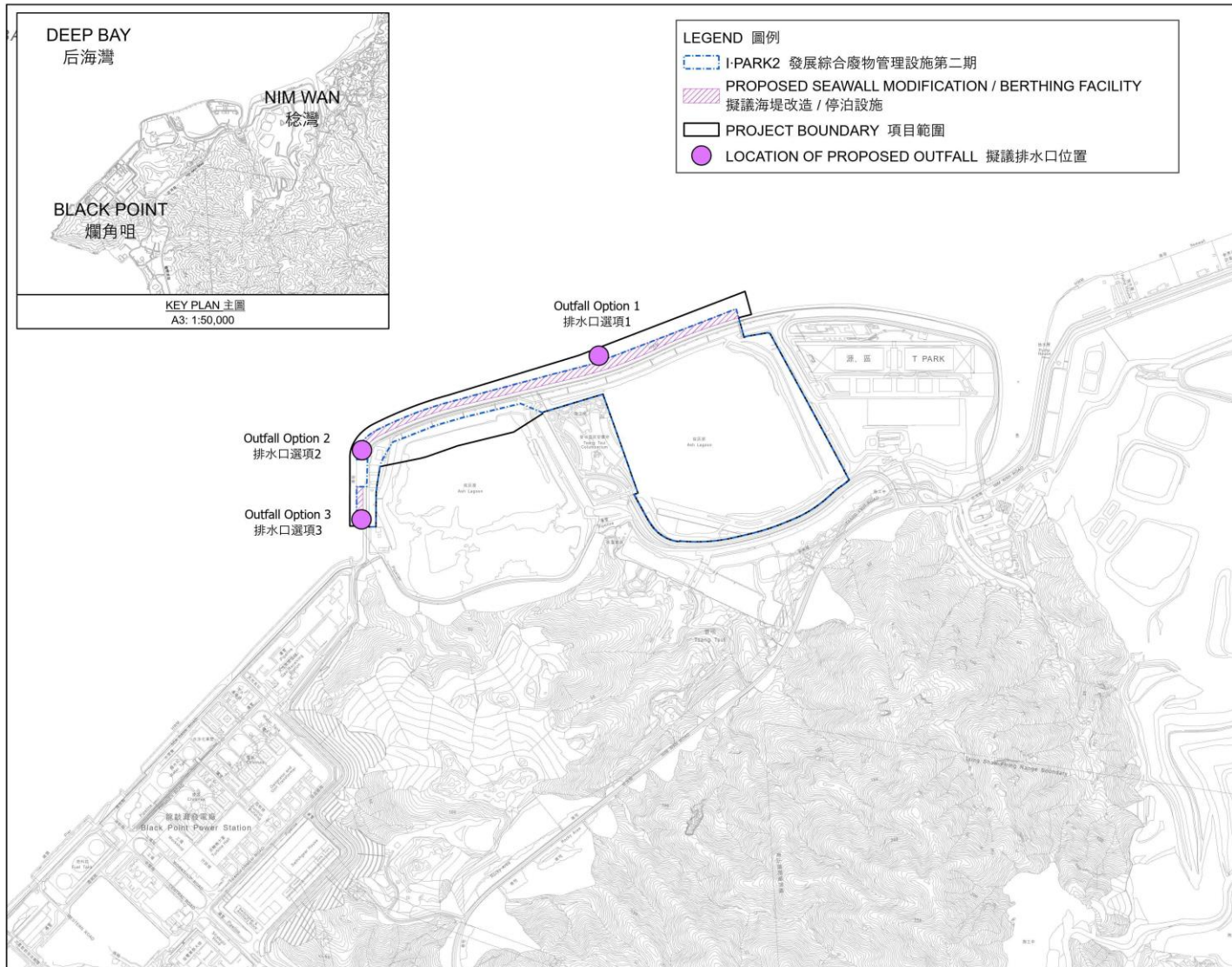
ENVIRONMENTAL MONITORING AND AUDIT


23. The EIA report has included an Environmental Monitoring and Audit (EM&A) Manual, which recommends an EM&A programme during the construction and operation phases of the Project. Key recommended EM&A requirements cover air quality, water quality and landfill gas hazards. The EIA report has also recommended commissioning test to confirm validity of the emission rates assumed in the EIA report.

PUBLIC CONSULTATION

24. The Applicant has made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO from 12 September to 11 October 2024. A summary of all public comments received by the Environmental Protection Department during the public inspection period and a gist of the main concerns raised in the public comments will be provided separately.

October 2024
Environmental Assessment Division
Environmental Protection Department



Project Title:	Development of Integrated Waste Management Facilities Phase 2 (I-PARK2)	EIA Application No.:	
Figure 1	Project Layout Plan [Remarks: This figure is prepared based on Figure 1.1 of the EIA Executive Summary]	EIA - 307/2024	