2 Project Description

2.1 Context

At present, Hong Kong relies heavily on landfills for direct disposal of municipal solid waste (MSW). The service life of landfills and the after-use of closed landfills are, however, both limited. As land resources are scarce and extremely precious in Hong Kong, landfilling is not a sustainable solution to meet Hong Kong's long-term MSW disposal needs.

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 MSW by around 2035. The Government's strategy has two main directions. The first is to mobilise the entire community to practise waste reduction and waste separation for recycling in the upstream to reduce the overall waste disposal amount. The second is to proactively drive the development of downstream waste-to-energy (WtE) facilities for sustainable disposal of the remaining MSW.

As set out in the Waste Blueprint, development of a network of advanced and highly efficient modern WtE facilities, including modern WtE 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. The modern WtE incineration facilities will adopt advanced technology and integrate with community facilities that will meet the needs of the public to allow members of the public to benefit.

2.2 Need and Benefits of the Project

2.2.1 Moving away from the reliance on landfills for direct disposal of MSW

The land resource in Hong Kong is limited. Landfills, which is an essential element of any sustainable waste management chain, need notable land resource on the contrary. Landfill space must be regarded as one of the city's most precious assets, and therefore be more prudently used as a last resort. Besides, the decomposition of MSW in landfills produces greenhouse gases, contributing a portion to local carbon emissions. Waste is the third major source of carbon emissions in Hong Kong, contributing about 7.7% of the total emissions according to the Hong Kong greenhouse gas emission inventory for 2022 and up to 90% of such emissions came from decomposition of MSW in landfills.

While the waste amount in Hong Kong is huge, the two strategic landfills, namely the West New Territories (WENT) Landfill in Tuen Mun and the North East New Territories (NENT) Landfill in Ta Kwu Ling, in Hong Kong currently receive an average of about 11,000 tonnes of MSW in total daily. To achieve the vision of moving away from the reliance on landfills for direct disposal of MSW, the Government is on one hand committed to mobilising the entire community to practise waste reduction and waste separation for recycling in the upstream to reduce the overall waste disposal amount, and on the other hand proactively driving the development of downstream WtE facilities to handle the remaining MSW in a sustainable manner.

The Government is proactively building a network of advanced and highly efficient modern WtE facilities, including modern incineration facilities (I·PARKs), with a view to moving away from the reliance on landfill for direct disposal of MSW and transforming waste into useful energy resources. I·PARK1, which is now being built on an artificial island near Shek Kwu Chau, will be the first WtE incinerator project in Hong Kong that adopts advanced incineration technology to treat MSW. I·PARK1 is targeted for commissioning in 2025 with a treatment capacity of 3,000 tonnes of MSW per day. As promulgated in the Chief Executive's (CE's) 2022 Policy Address, the Government is also pressing ahead with the planning and development of the second modern WtE incinerator (the Project, I·PARK2) with a view to transforming more unrecyclable MSW into resources as well as boosting the portion of electricity generation from WtE sources. On top of I·PARK1, the additional WtE treatment capacity to be provided by I·PARK2 can reduce the amount of MSW to be disposed of at landfills substantially, progressing on materialising the vision of moving away from the reliance on landfills for direct disposal of MSW.

2.2.2 Resources Recovery

I·PARK2 will recover heat energy from the MSW incineration process for electricity generation to support its daily operation and surplus electricity will be exported to the public power grid. This can help reduce electricity generation by fossil fuel and carbon emission[1].

Another benefit of I·PARK2 is the opportunity to recover useful resources in the post-incineration process. Metals such as ferrous metals and non-ferrous metals can be recovered from incinerator bottom ash (IBA) through on-site treatment for recycling use. Treated IBA can also be recycled for off-site beneficial uses (e.g. construction material).

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[1] Taking I·PARK1 as an example, I·PARK1 will reduce 3,000 tonnes of MSW to be disposed of at landfills per day and the associated greenhouse gas emissions such as methane generated from decomposition of MSW in landfills. Upon full operation, I·PARK1 can generate electricity for its daily operation and export surplus electricity estimated at 480 million kilowatt-hours (kWh) each year to the power grid. 440 000 tonnes of greenhouse gas emissions (CO_2-equivalent) per year would be avoided according to the Green Bond Report 2023 (https://www.hkgb.gov.hk/en/others/documents/Green_Bond_Report_2023_EN_August_2023.pdf).

I·PARK2 will reduce 6,000 tonnes of MSW to be disposed of at landfills per day. With reference to the experience from I·PARK1, the proposed I·PARK2 is expected to export up to about 960 million kWh of surplus electricity to the power grid annually.

2.3 Scenario with the Project

With the additional WtE treatment capacity to be provided by the proposed I·PARK2, the amount of MSW to be disposed of at landfills can be substantially reduced. Precious landfill space can be conserved and the landfill life can be extended. Besides, the production of greenhouse gases due to landfilling of MSW can be reduced, thus helping to reduce local carbon emissions.

Implementation of I·PARK2 is an important step to move away from the reliance on landfills for direct disposal of MSW. It can also make good use of valuable land resources, and at the same time transform waste into useful resources, thereby achieving a "multi-win situation".

2.4 Scenario without the Project

If no additional WtE treatment capacity is developed in Hong Kong (i.e. scenario without the Project), large amount of MSW would continue to be disposed of at landfills, placing burden on the limited landfill capacity in Hong Kong and shortening the life of the landfills in a rapid rate as well as generating a notable amount of greenhouse gases. The possible consequences of not implementing this Project may also include the need to build more landfills for MSW disposal. More land resources will be utilized for landfill construction. The benefits associated with WtE treatment as described in **Section 2.2** will also be lost.

Inevitably, the Government will not be able to deliver on its commitment to move away from the reliance on landfills for direct disposal of MSW as set out in the Waste Blueprint.

2.5 Project Background

In 2006, the Government commissioned a site search consultancy to identify potential sites for developing Integrated Waste Management Facilities (IWMF) in Hong Kong. An artificial island off Shek Kwu Chau and the northern portion of Tsang Tsui Middle Ash Lagoon (TTMAL) at Nim Wan, Tuen Mun were shortlisted, amongst a list of over 20 potential / alternative sites, and recommended for further investigation.

In 2008, the Government commissioned a consultancy "CE 29/2008 (EP) – Engineering Investigation and Environmental Studies for the IWMF Phase 1 – Feasibility Study (FS)" to determine the overall suitability of the two recommended sites. The consultancy comprised an Environmental Impact Assessment (EIA) study for development of the IWMF Phase 1 with a design treatment capacity of 3,000 tonnes of MSW per day. The EIA study concluded that developing the IWMF Phase 1 at either of the recommended sites or concurrently at both sites would be environmentally acceptable, provided that advanced technologies are installed and appropriate mitigation measures are implemented. Having considered the spatial distribution of the waste management facilities, environmental factors and transport efficiency, the Government selected the artificial island off Shek Kwu Chau as the site for the IWMF Phase 1 (I·PARK1). The Design-Build-Operate (DBO) contract for I·PARK1 was awarded in November 2017.

Following the promulgation of the Waste Blueprint in February 2021, the Government announced in January 2022 that the TTMAL in Tuen Mun was identified to be the site for developing the second waste-to-energy facility (I·PARK2) to handle MSW, with a daily treatment capacity preliminarily set at around 4,000 tonnes, and a fresh round of both the EIA and the technical studies would be conducted for the site. As mentioned above, when planning for the development of IWMF Phase 1, the Government carried out an in-depth study and considered both TTMAL in Tuen Mun and the artificial island off Shek Kwu Chau were suitable sites for developing WtE facilities. Comparing with other locations in Hong Kong, the conditions of the TTMAL are relatively mature for developing WtE facilities. This will be conducive to the expeditious commencement and completion of the construction works for I·PARK2.

The investigation and design study on the development of I·PARK2 commenced in January 2023. In-depth studies and detailed discussions with the trades and contractors have been conducted, and it is concluded that the estimated treatment capacity of the proposed I•PARK2 could be increased by 50% from 4 000 to 6 000 tonnes per day (tpd) upon effective utilisation of the proposed I•PARK2 site and the application of the state-of-the-art technology.

2.6 Site Location and History

The proposed I·PARK2 is located in the TTMAL site at Nim Wan, Tuen Mun. The proposed seawater outfall and associated pipe laying works as well as temporary works for access roads will be located at Tsang Tsui West Ash Lagoon (TTWAL). The existing artificial seawall to the north of the Project site will be modified for construction of berthing facility and / or seawater outfall to support operation of I·PARK2. The total area of the Project Site would be 28.6 ha (**Figure 2.1**).

The Tsang Tsui ash lagoons at Nim Wan, Tuen Mun were constructed in 1980's and were divided by bunds into the East, Middle and West Lagoons. The TTMAL, along with the adjoining East and West Ash Lagoons, was leased to the Castle Peak Power Company Limited (CAPCO) for the storage and disposal of pulverised fuel ash (PFA), a by-product of the coal-burning.

The TTMAL was surrendered to the Government in 2015. The Project area of I·PARK2 at TTMAL is currently a works area for decommissioning works under the Environmental Permit No.: FEP-01/618/2022 which mainly involved site clearance and covering the levelled PFA surface by at least 1m thick general fill. The Project site, which occupies an area of approximately 18 ha of the TTMAL is largely disturbed by human activities. The existing artificial seawall to the north of the Project site will be modified for construction of berthing facility to support operation of I·PARK2.

The proposed seawater outfall and associated pipe laying works as well as the temporary works for access road will be located at TTWAL to the west of Tsang Tsui Columbarium. The TTWAL was constructed and operated before the EIAO came into effect on 1 April 1998, so the original operation at the ash lagoon was exempted from the EIAO. The TTWAL was surrendered to the Government in 2023. The Government has been taking appropriate environmental precautionary measures since mid-December 2023, including covering the PFA surface with fill materials, to prevent the PFA deposited in the ash lagoon from causing potential environmental impacts. Permission to apply directly for an environmental permit was granted on 30 August 2024 for the decommissioning works at TTWAL.

While the Tsang Tsui Columbarium and Garden of Remembrance are located between the Project site at TTMAL and TTWAL, the existing T·PARK and Y·PARK are located immediately to the east of the Project site. Other existing industrial facilities in the vicinity include the Black Point Power Station (BPPS) to the southwest and the West New Territories (WENT) Landfill (as well as its extension commenced) and its associated waste reception facilities to the southeast, as well as a precast concrete product company to the south. To the north and west of the Project site is the coastal area of Deep Bay.

2.7 Project Scope and Scale

2.7.1 Operation of I·PARK2

2.7.1.1 Treatment Scheme and Capacity

The I·PARK2 will treat about 2.2 million tonnes of MSW per annum with an average treatment capacity of around 6,000 tonnes of MSW per day under normal operation. Similar to I·PARK1, state-of-the-art moving grate incineration technology will be adopted for treatment of MSW to substantially reduce the bulk size of mixed waste. MSW contains abundant organic combustible materials which offer rich energy content and will be used as the fuel source in the incineration process for electricity generation.

2.7.1.2 Project Facilities and Layout

The Project would comprise the following key facilities:

- MSW reception, storage and feeding system.
- Berthing facility.
- Incinerator furnace and boiler system.
- Steam turbine generator and cooling system.

- Power export/import system for electricity supply within the facility and connecting to power grid at 132kV voltage level.
- Flue gas treatment and emission system.
- Reagent reception and storage system.
- Incinerator bottom ash, fly-ash and flue gas cleaning residues storage, handling and treatment system.
- Process control and monitoring system.
- Water supply system (including desalination plant).
- Wastewater treatment facilities.

Design-Build-Operate (DBO) contract arrangement would be adopted for the Project. Under this contract arrangement, a DBO contractor would be engaged to conduct the detailed design, construction and operation of the I·PARK2.

For the purpose of the EIA Study, a reference design for the I·PARK2 was prepared to demonstrate engineering feasibility and environmental acceptability of the Project. The preliminary layout showing the I·PARK2 is presented in **Appendix 2A**. During the detailed design, the I·PARK2 contractor may review the operation parameters in the reference design and will be required to ensure compliance with relevant environmental legislations as well as the criteria set out in the EIAO-TM.

2.7.1.3 Energy Recovery

The heat produced during the incineration process will be recovered and used for electricity generation. The electricity generated from the incineration process will be used to support operation of the facilities within the I·PARK2. Surplus energy will be exported to the public power grid. For exporting the surplus electricity from the I·PARK2, construction of a substation will be required. The surplus electricity will be delivered through laying underground cables, to be constructed by the power company, to the nearby power station. Details of the grid connection will be agreed with the power company.

2.7.1.4 Building Structures and Dimensions

Subject to the detailed design to be carried out by the future I·PARK2 contractor, the incineration plant consists of six incinerator units, each with a design capacity of 1,000 tpd, as proposed in the reference design. Most of the facilities of the I·PARK2 would be housed inside buildings. The incineration plant, IBA treatment facility and administration building are the major building structures in the I·PARK2. The approximate dimensions of the major building structures in I·PARK2, as per the information from the reference design, is shown in **Table 2-1**.

Table 2-1 Dimensions of Major Building Structures of I·PARK2

Major Building Structures	Area (ha)	Maximum Height	
		(m above ground)	(mPD)
Incineration Plant	7.3	25 – 65	75.5
Stack	-	70	81.5
IBA Treatment Facility	1.4	23	34.5
Administrative Building	0.3	20	31.5

Overall view of the area with the Project in place is presented in the photomontage in **Appendix 9C**. Besides, a 3D visualization has also been prepared to provide the overall view of the area with the Project in place.

2.7.1.5 Stack Emission Limits

The incinerator furnace shall be designed to ensure effective destruction of combustible substances in the waste gas. Combustion gas temperature, residence time, air supply and gas turbulence shall be adequately and properly controlled to achieve this requirement. The incinerator shall be designed, equipped, built and operated in such a way that the waste is thoroughly combusted at high temperature above 850℃ with sufficient air supply under high turbulent condition. The flue gas is required to stay at this high temperature for at least two seconds to breakdown organic compounds including dioxin. Air pollutants generated from the incineration process will be treated by advanced air pollution control system prior to emission into the atmosphere via the stack of I·PARK2.

The I·PARK2 shall be designed to meet the target air emission levels for the incinerator in **Table 2-2** by making reference to the standards for pollution control on the MSW incineration in the Mainland China (GB 18485-2014) and Shenzhen (SZDB/Z 233-2017), the best available techniques (BAT) reference document for waste incineration in the European Union (EU), as well as the prevailing guidance note on the best practicable means (BPM) for incinerators (municipal waste incineration) in Hong Kong. In addition, with a view to minimising potential air quality impact, the I·PARK2 will meet a more stringent target hourly NOx emission level of 60 mg/Nm^3. The air pollution control system will include a combination of the following techniques:

- Selective non-catalytic reduction (SNCR) and selective catalytic reduction (SCR) to reduce NOx emissions;
- Dry alkaline sorbent (sodium bicarbonate or lime) injection(s) combined with bag filter(s), semi-dry absorber and/or wet scrubber to reduce acidic gases such as HCl, HF and SO_2;

- Dry sorbent (activated carbon) injection combined with bag filter to reduce dioxin, metals and metalloids; and
- Bag filter(s) to reduce particulates.

Table 2-2 Target Air Emission Levels for I·PARK2

Pollutant name	Unit	Target Emission Limit [1]	
		Daily Average	Hourly Average
Particulates	mg/Nm^3	5	10
Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC)	mg/Nm^3	10	10
Carbon Monoxide (CO)	mg/Nm^3	30	50
Nitrogen Oxides, expressed as Nitrogen Dioxide (NO_2)	mg/Nm^3	60 [5]	60 [5]
Sulphur Dioxide (SO_2)	mg/Nm^3	30	30
Hydrogen Chloride (HCl)	mg/Nm^3	6	8
Hydrogen Fluoride (HF)	mg/Nm^3	1	2
Ammonia (NH_3)	mg/Nm^3	10	15
Mercury (Hg) [2]	mg/Nm^3	0.02	
Cadmium (Cd) & Thallium (Tl) [2]	mg/Nm^3	0.02	
Metals and Metalloids [2] [3]	mg/Nm^3	0.3	
Dioxins & Furans [4]	ng I-TEQ/Nm^3	0.04	

Notes:

[1] Emission limits are at normal condition, i.e., 0°C and 101.325 kPa, dry and 11% oxygen content conditions.
[2] Average values over a sampling period of a minimum of 30 minutes and a maximum of 8 hours.
[3] Including Antimony (Sb), Arsenic (As), Lead (Pb), Cobalt (Co), Chromium (Cr), Copper (Cu), Manganese (Mn), Vanadium (V) and Nickel (Ni).
[4] Average values over a sampling period of a minimum of 6 hours and a maximum of 8 hours.
[5] As compared with the concentration limit of 80 mg/Nm^3 for NOx emissions from municipal waste incinerators set out in BPM 12/1(24), more stringent target NOx emission level of 60 mg/Nm^3 is adopted for the incinerator of I·PARK2 to minimise the air quality impact.

2.7.1.6 Cooling System

The heat energy of the air getting out from the incinerator furnace will be transmitted to water through waste heat boiler, converting the water to high pressure steam. The high-pressure steam will be used to rotate the steam turbine and generate electricity. After the electricity generation process, the high-pressure steam will become low-pressure steam, which is further cooled down by air-cooled or water-cooled system such as evaporative water-cooled system or once-through seawater cooling system. Conventional air-cooled system is considered proven and reliable with lower operation and maintenance requirements and would not involve spent cooling water discharge, but once-through seawater cooling system is generally more energy efficient than air-cooled system and also evaporative water-cooled system, and the use of seawater for cooling will minimise fresh water consumption and preserve precious fresh water resources. While once-through seawater cooling system will involve discharge of spent seawater into nearby water body, the potential environmental impacts can be practically minimised or mitigated by limiting dosage of chemicals. With consideration of the above factors, both air-cooled system and once-through seawater cooling system are considered as feasible options in the reference design. For once-through seawater cooling system, seawater will be abstracted for exchange of the heat from the low-pressure steam to the seawater and the spent cooling seawater will be discharged back into the sea through the seawater outfall.

2.7.1.7 Fresh Water Supply

As there is currently no fresh water supply to the proposed I·PARK2 site, an on-site desalination plant is proposed in the reference design for supplying fresh water to the I·PARK2. The desalination plant would involve membrane separation of dissolved ions such as chloride ions from seawater. The brine water generated from the desalination process would also be discharged back into the sea via the seawater outfall. No boiling or burning activities would be involved in the desalination processes.

2.7.1.8 Wastewater Treatment Facilities

The I·PARK2 would be designed to minimise wastewater discharge into Deep Bay Water Control Zone during operation. One of the options considered is to reuse all treated wastewater including domestic sewage and process wastewater (e.g. leachate and wash water) within I·PARK2 for non-potable purposes. This option would not cause any adverse water quality impact but this option may not be feasible when the water demand is less than the amount of wastewater generated and treated. Another option is to make use of the spare capacity of the existing sewerage system connecting to the Urmston Road Submarine Outfall for discharge of treated effluent into North Western Water Control Zone outside Deep Bay. This option would not be subject to limitation of amount of wastewater generated but the discharge of effluent would potentially affect the water quality in the NW WCZ. However, the associated potential impact is expected to be minimal according to the water quality impact assessment (see to Section 5). For both options, wastewater treatment facilities would be provided on-site to treat the wastewater and ensure compliance with relevant effluent reuse or discharge standards, and there will be no discharge of treated or untreated process and sanitary wastewater into Deep Bay from the I·PARK2 operation other than spent cooling seawater and brine water discharge as described in **Section 2.7.1.6** above. Sludge generated from the wastewater treatment facilities would be dewatered and treated in the incineration plant within I·PARK2.

2.7.1.9 MSW and Ash Transportation

About 6,000 tpd MSW currently delivered to the berth of WENT Landfill by marine vessels in sealed containers (for MSW from refuse transfer stations (RTS)) or delivered directly to landfills by land transport (for MSW from local districts, e.g. Tuen Mun and Lung Kwu Tan) will be diverted to I·PARK2. While the MSW transportation arrangement would be subject to review of the newly developed/re-developed local and external transport connectivity under the Planning and Engineering Study for Lung Kwu Tan Reclamation and the Re-planning of Tuen Mun West Area, it is anticipated that the number of waste collection vehicles passing through the existing Lung Kwu Tan Road will be kept similar to or within the prevailing scenario of MSW delivery to WENT Landfill upon the full operation of I·PARK2.

Bottom ash generated from I·PARK1 will be transported to I·PARK2 for treatment and the treated bottom ash from both I·PARK1 and I·PARK2 would be transported off-site for beneficial uses by marine vessels, subject to detailed design. According to the preliminary design, only 1 to 2 additional trips of marine vessels per day (for transporting MSW/ashes to/from I·PARK2 or WENT Landfill Extension) as compared with the prevailing scenario for transporting MSW to WENT Landfill would be anticipated during operation of the Project. Stabilized fly ash / APC residues generated from I·PARK2 would be disposed of at the landfill site adjacent to I·PARK2 by truck (i.e. WENT Landfill or WENTX).

The potential environmental impacts associated with MSW and ash transportation under the I·PARK2 project have been addressed in the subsequent sections of this EIA report and no adverse environmental impacts are anticipated.

2.7.1.10 Maintenance Dredging

Under the current operation, most of the MSW is delivered to the WENT Landfill via marine route. This marine route passes through the seafront of the I.PARK2 site. During the operational phase of I.PARK2, MSW will be delivered to I.PARK2 using the same marine route. Maintenance dredging of the existing marine route to facilitate navigation of waste delivery vessels to and from the proposed berthing facility may be required on an as-needed basis subject to the seabed level, which would be similar to the current operation associated with the WENT Landfill. Since the maintenance dredging work is an existing operation, additional maintenance dredging during the I.PARK2 operation would not be anticipated.

2.7.2 Construction of I·PARK2

2.7.2.1 Land-based Construction

The TTMAL within the Project site would be decommissioned under separate project, namely "Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui

(Decommissioning Project)"[2, 3]. The Decommissioning Project mainly involves site clearance, levelling of Pulverized Fuel Ash (PFA) surface and covering of the entire Project site with at least one-metre thick general fill. The Decommissioning Project is scheduled for completion before the construction of I·PARK2.

The major land-based construction activities of the I·PARK2 include foundation works, civil and building works, installation of electrical and mechanical (E&M) plants and equipment for various systems of the I·PARK2, construction of internal access roads, utilities, services and landscaping works.

The foundation works for most of the I·PARK2 plant structures will be conducted by non-percussive piling using pre-bored steel H piles. Raft / pad footing will be considered for low rise facilities such as site office, workshop and covered car parks.

The proposed piling works and the shallow raft / pad foundation would not significantly disturb the PFA stored underneath the surface fill material. Any PFA excavated from the earth works and construction activities of this Project will be reused for backfilling on-site. No off-site disposal of the PFA is proposed.

Temporary off-site supporting areas such as site office or storage area (e.g. storage of construction materials and treated bottom ash products) may be required by the future contractor during construction and operation of I·PARK2. As these temporary off-site supporting areas would normally occupy developed areas and would not encroach into ecological sensitive areas or involve major construction activities, adverse environmental impact is not anticipated. Environmental Team (ET) and Independent Environmental Checker (IEC) shall be employed to certify and verify the environmental acceptability of the temporary off-site supporting areas if any.

2.7.2.2 Marine-based Construction

A permanent berthing facility and proposed seawater outfall will be constructed for I·PARK2, by modifying the existing sloping seawall along the TTMAL and TTWAL. Dredging is a traditional method to remove the underlying sediments or soft materials by which to enhance the stability of marine structures to be built. The dredging method would however disturb the seabed and potentially cause a release of fines and sediment-bound contaminants into the water column.

In order to minimize the potential water quality impact, non-dredged ground treatment method, i.e. Deep Cement Mixing (DCM) is proposed for construction of the foundation of the permanent berthing facility. The DCM involves injecting controlled volumes of cement into the

[2] EIAO Register No. PP-649/2022 Project Profile of Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui

[3] Environmental Permit of Decommissioning of Remaining Portion of Middle Ash Lagoon in Tsang Tsui (No.: FEP-01/618/2022)

underlying materials whilst simultaneously mixing the cement with the *in-situ* materials to improve their strength. A blanket layer of sand fill would be placed on top of the treatment works area prior to the DCM installation to prevent the escape of cement slurry into the water and release of sediment fines during the mixing. The marine deposits will be left *in-situ* during the DCM process. No dredging is proposed for construction of the Project.

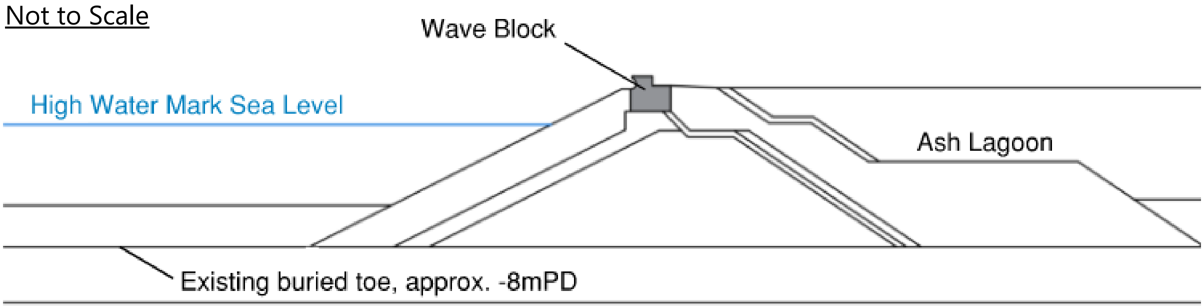
Removal of the rock armour on the existing sloping seawall will be carried out prior to the sand blanket laying and DCM operation. The proposed rock armour removal work will not disturb the existing fill materials and filter layers inside the lagoon. No release of existing fill and PFA would be expected from the berth construction.

Precast concrete structures will then be placed on top of the DCM treated area to form a new vertical seawall. Any backfilling activities will be carried out behind the precast seawall blocks. The indicative section view of the permanent berthing facility is illustrated in **Exhibit 2-1** below.

Exhibit 2-1 Typical Arrangement of Berthing Facility

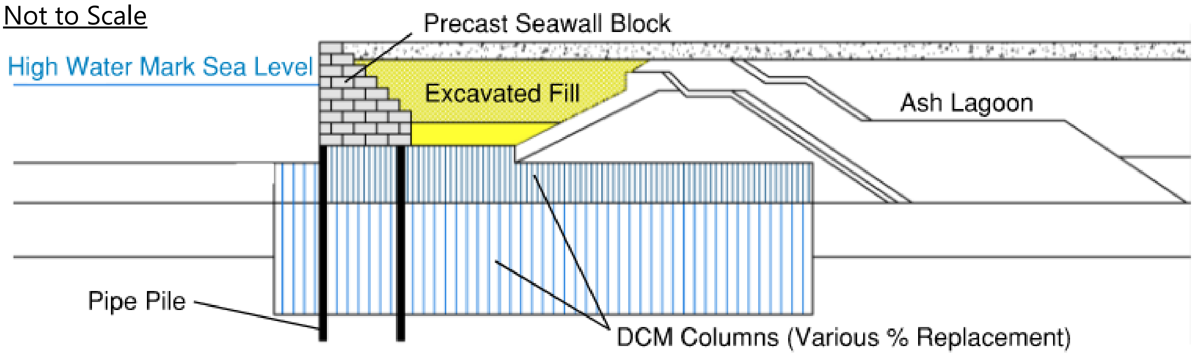
<u>Existing Seawall (Section View):</u>

Not to Scale



Proposed Berthing Facility (Section View):

Not to Scale



2.8 Project Implementation Programme

The construction of I·PARK2 is tentatively scheduled to commence in 2026 for completion in early 2030s. The land-based construction and marine-based construction of the Project would be carried out concurrently, with a view to shortening the total duration of construction period and facilitate early completion of the Project. I·PARK2 is expected to be commissioned in early 2030s.

2.9 Consideration of Alternatives

2.9.1 Alterative Design

2.9.1.1 MSW Thermal Treatment Technologies

For the development of I·PARK2, alternative thermal treatment technologies currently available around the world which include fluidized bed incineration, rotary kiln incineration, gasification and pyrolysis were considered.

The fluidized bed incineration, conventional gasification, plasma gasification and pyrolysis have strict requirements on feedstock, which requires pretreatment of MSW. This is not suitable for complex and mixed composition of Hong Kong's MSW which is the intended feedstock of this Project. For rotary kiln incineration, conventional gasification, plasma gasification and pyrolysis, achieving the operation scale of 6,000 tpd is not practicable since the process units of these technologies with proven record available in the current market are in the treatment scale of below several hundreds only. In order to achieve the treatment scale of 6,000 tpd, there is a need to occupy a larger area to accommodate a large number of process units that is highly unfavourable to meet space constraints of this Project.

In addition, applications of these alternative technologies for the treatment of MSW are uncommon worldwide and limited to relatively small scale, not to mention the fact that there is no proven record of any operating facilities adopting these technologies at large scale. Therefore, these alternative technologies are not well proven and hence, not included for further evaluation in terms of environmental benefits and dis-benefits.

Moving grate incineration technology is well-established and is the most commonly used thermal treatment technology for MSW globally. It can handle complex waste compositions with minimal feedstock requirements and is widely proven at large scale for a range of waste feedstocks. It is considered that moving grate incineration is the most preferable option for I·PARK2.

2.9.1.2 MSW Treatment Capacities

The design MSW treatment capacity for I·PARK1 is 3,000 tonnes per day. Given the geographical constraints together with the supporting facilities required by I·PARK2, the site area available for development is limited and hence the design daily treatment capacity of I·PARK2 was preliminarily set at around 4,000 tonnes. To make good use of valuable land resources and technology, the Government decided to explore the feasibility to increase the daily treatment capacity of the proposed I.PARK2 as far as practicable taking into account the maximum land footprint available at the Project site, engineering feasibility and environmental opportunities / constraints. To optimize the utilization of the limited site area and promote the development of I·PARK2, multiple exchanges with major overseas and Mainland waste incineration enterprises have been undertaken. From in-depth studies and detailed discussions with the trades and contractors that the estimated treatment capacity of the proposed I·PARK2 could be increased by 50% from 4,000 to 6,000 tonnes per day upon effective utilization of the proposed I·PARK2 site and the application of the state-of-the-art technology.

The total site area available for I·PARK2 at TTMAL is approximately 20.1 hectares including the area for berthing facilities. In addition to the accommodation of necessary equipment, areas shall be reserved for greening areas, implementation of measures related to green building design as well as enhancements on architectural elements (such as vertical greening and green roof). With the above considerations, I·PARK2 will have a design treatment capacity sufficient to handle around 6,000 tpd MSW.

The environmental benefits and dis-benefits of the alternative treatment capacities are summarized in the following table.

Table 2-3 Environmental Benefits and Dis-benefits of Alternative Treatment Capacities

Options	Environmental Benefits	Environmental Dis-benefits
3,000 tpd or 4,000 tpd	• Lower treatment capacity may have less aerial emissions	• Ineffective use of land resources with lower level of WtE benefit • Handling less MSW by WtE and thus more burden to and negative environmental impacts associated with landfilling
6,000 tpd (recommended option)	• Effective use of land resources with higher level of WtE benefit • Handling more MSW by WtE and thus lowering the burden to and negative environmental impacts associated with landfilling, with adoption of advanced air pollution control system to ensure compliance with the target air emissions and relevant criteria for evaluating air quality impact set out in Annex 4 of the EIAO-TM.	• Higher treatment capacity may give rise to more aerial emissions. With the proposed target air emission levels for the incinerator in **Table 2.2** and adopting advanced incineration technology and effective air pollution control system, the air quality and health impacts have been assessed under this EIA to be acceptable

Options	Environmental Benefits	Environmental Dis-benefits
		(see **Section 3** and **Section 10**).

2.9.1.3 Cooling Systems

Alternative cooling systems, including air-cooled or water-cooled system such as evaporative water-cooled system or once-through seawater cooling system, were considered. The once-through seawater cooling system is generally more energy efficient than air-cooled system and evaporative water-cooled system, and the use of seawater for cooling will minimise freshwater consumption and preserve precious freshwater resources. The once-through seawater cooling system involves abstraction of marine water for exchange of the heat of the low-pressure steam and discharge of the heated water back into the sea. The evaporative water-cooled system would employ seawater or fresh water for heat exchange and the heat in the water would be removed by evaporation. The water used in the evaporative water-cooled system would be recirculated within the system with no discharge into the sea. An air-cooling system involves exchange of the heat of the low-pressure steam to air, which is then discharged to the atmosphere.

The evaporative water-cooled system would not involve any discharge to the sea but it would require a larger footprint to accommodate the cooling tower, having a lower heat exchange efficiency and larger energy consumption for operation of the cooling tower as compared to the once-through seawater cooling system. In particular, evaporative cooling using fresh water would consume freshwater resources and is less sustainable. Seawater is a non-intermittent renewable source of cooling, and usually has a lower temperature than the ambient air temperature. The once-through seawater cooling system is therefore more reliable for larger scale applications. It can more efficiently dissipate heat, enabling better cooling performance and larger energy saving benefit under heavy loads. Conventional air-cooled system is considered proven and reliable with lower operation and maintenance requirements and would not involve spent cooling water discharge, but the efficiency of the air-cooling system is subject to ambient temperature and therefore the system has a lower energy efficiency and require more energy to operate. Air-cooling systems also tend to be noisier due to the operation of fans or air blowers, but adverse operational fixed plant noise impact is not expected due to the adoption of quieter equipment and distance attenuation given that the nearest representative noise sensitive receiver (Ha Pak Nai) is located over 1.5 km away from the Project site (see **Section 4**).

With consideration of the above factors, both air-cooled system and once-through seawater cooling system are considered as feasible options in the reference design for I·PARK2. While once-through seawater cooling system will involve discharge of spent seawater into the sea, the potential environmental impacts can be practically minimised or mitigated by limiting dosage of chemicals. The water quality, marine ecological and fisheries impacts caused by the seawater cooling discharge have been assessed under this EIA to be acceptable and minor (see **Section 5**, **Section 7** and **Section 8**).

The environmental benefits and dis-benefits of the alternative cooling systems are summarized in the table below.

Table 2-4 Environmental Benefits and Dis-benefits of Alternative Cooling Systems

Options	Environmental Benefits	Environmental Dis-benefits
Once-through seawater cooling system (recommended as feasible option for consideration by the I·PARK2 contractor during detailed design)	• Higher energy efficiency • Lower operational fixed plant noise • Preservation of fresh water resources	• Potential water quality, marine ecological and fisheries impacts in Deep Bay due to spent cooling seawater discharge, which have been assessed under this EIA to be acceptable (see **Section 5**, **Section 7** and **Section 8**).
Evaporative water-cooled system using fresh water	• No spent cooling water discharge and no water quality / marine ecological / fisheries impact in Deep Bay	• Larger footprint compared with once-through seawater cooling system • Lower energy efficiency • Negative impact on fresh water preservation
Evaporative water-cooled system using seawater	• No spent cooling water discharge and no water quality / marine ecological / fisheries impact in Deep Bay • Preservation of fresh water resources	• Larger footprint compared with once-through seawater cooling system • Lower energy efficiency
Air-cooled system (recommended as feasible option for consideration by the I·PARK2 contractor during detailed design)	• No spent cooling water discharge and no water quality / marine ecological / fisheries impact in Deep Bay • Preservation of fresh water resources	• Larger footprint compared with once-through seawater cooling system • Lower energy efficiency • Higher operational fixed plant noise, which have been assessed under this EIA to be acceptable (see **Section 4**).

2.9.1.4 Desalination Technologies

Seawater reverse osmosis (SWRO) and Multi-stage flash desalination (MSF) are two major technologies commonly used in desalination applications.

The SWRO process involves membrane separation, by pumping pressure, of dissolved ions such as chloride ions from seawater. The brine water generated from the desalination process would also be discharged back to the sea. Seawater will be drawn from the seawater intake system for the desalination process. Chlorine is dosed periodically into the intake seawater for control of microbial growth at the intake and the associated screening system. No boiling or burning activities would be involved in the desalination processes.

In the MSF process, seawater is heated in a vessel called the brine heater. This heated seawater then flows into another vessel, called a stage, where the ambient pressure is lower, causing the water to boil. An MSF unit would involve a series of stages set at increasingly lower atmospheric pressures. The feed water could pass from one stage to another and be boiled repeatedly without adding more heat. Typically, a MSF plant can contain from 15 to 25 stages. The vapour steam generated by the process will be converted to fresh water.

The MSF technology requires higher energy input for boiling and poor recovery of 10% to 25%, i.e. less efficient in producing fresh water. The MSF technology would therefore incur a relatively higher carbon footprint.

The typical recovery rate of SWRO process would range from about 30% to 90%, i.e. more effective in producing fresh water. Also, as no boiling is required, impact of air quality would be minimized. The SWRO also requires a smaller footprint and thus minimizing the requirement of land resource. The SWRO technology is recommended as the preferred method for desalination process.

The environmental benefits and dis-benefits of the alternative desalination technologies are summarized in the table below.

Table 2-5 Environmental Benefits and Dis-benefits of Alternative Desalination Technologies

Options	Environmental Benefits	Environmental Dis-benefits
SWRO (recommended option)	• Smaller footprint • Lower energy consumption	• Brine discharge may cause potential water quality, marine ecological and fisheries impacts in Deep Bay, which have been assessed under this EIA to be minor and acceptable (see **Section 5**, **Section 7** and **Section 8**).
MSF	No environmental benefit is identified as compared to the SWRO option	• Larger footprint • Higher energy consumption • Heated brine discharge may cause water quality, marine ecology and fisheries impacts in Deep Bay • Lower recovery rate

2.9.1.5 Effluent Outfall

New effluent outfall is needed for discharge of brine and seawater cooling effluent into the sea. Seawall outfall and submarine outfall options have been considered.

For seawall outfall, effluent will be discharged at the seafront and the marine water depth along the seafront is generally less than 5 m. Although the water depth near the outfall is relatively shallow, which may not be favourable to effluent dispersion, it is located in an area with a low fisheries production yield of < 50 kg/ha and low marine ecological value. Alternative seawall outfall locations have also been considered either near the proposed berthing facilities of I·PARK2 or at the seawall of TTWAL. For the latter, pipe laying works at TTWAL would be required for the connection of facilities in I·PARK2 and the outfall, but the outfall would be located further away from the oyster culture activities in Deep Bay, which would reduce the potential water quality impact on the oyster culture activities due to discharge of brine water and spent cooling seawater.

The alternative submarine outfall option involves the diversion of effluent discharge to a deeper water away from the Project site, which may enhance the effluent dispersion and dilution effect. The marine water in the outer area of Deep Bay including the area off the Black Point Power Station (BPPS) to the west of the Project site would have a relative larger water depth. However, such location would conflict with other existing utilities including the submarine pipeline for supplying gas to BPPS. The deeper water to the west of the Project would have a higher fisheries production yield of >50 to <100 kg/ha as shown in **Figure 8.2**. Construction of the submarine outfall would involve the laying of new outfall diffuser in the deeper water. Installation of the new outfall diffuser may disturb the seabed sediments and cause a release of sediment and sediment-bounded contaminants during the construction phase. During the operation, the outfall diffuser will induce permanent loss of seabed in Outer Deep Bay. The submarine outfall option is therefore not further considered.

The environmental benefits and dis-benefits of the alternative outfall options are summarized in the table below.

Table 2-6 Environmental Benefits and Dis-benefits of Alternative Outfall Options

Options	Environmental Benefits	Environmental Dis-benefits
Seawall Outfall – at TTWAL (Recommended Option)	• Minimal impact on loss of fishing ground and marine habitat during construction and operational phases due to smaller affected area with low ecological value and low fisheries production. • No disturbance to seabed sediment and no release of	• Relatively poorer effluent dispersion capacity in shallower water during operational phase. The water quality impact, however, has been assessed to be acceptable (see **Section 5**). The increases in pollution level at the representative water sensitive receivers and oyster culture

Options	Environmental Benefits	Environmental Dis-benefits
	sediment-bound contaminants in Deep Bay. • Further away from the oyster culture activities in Deep Bay	activities in Deep Bay were predicted to be minor. • Minor dust, noise and water quality impacts associated with pipe laying within TTWAL
Seawall Outfall – at I·PARK2 (Recommended for discharge of brine water from the proposed desalination plant only)	• Minimal impact on loss of fishing ground and marine habitat during construction and operational phases due to smaller affected area with low ecological value and low fisheries production. • No disturbance to seabed sediment and no release of sediment-bound contaminants in Deep Bay.	• Relatively poorer effluent dispersion capacity in shallower water during operational phase. The water quality impact associated with discharge of brine water from the proposed desalination plant has been assessed to be acceptable (see **Section 5**). The increases in pollution level at the representative water sensitive receivers and oyster culture activities in Deep Bay due to discharge of brine water from the proposed desalination plant were predicted to be minor. • Relatively closer to the oyster culture activities in Deep Bay
Submarine Outfall	• Potentially better effluent dispersion and dilution capacity in deeper water during operational phase.	• Release of sediments and sediment-bounded contaminants (e.g. heavy metals) during construction of new outfall diffuser and inducing additional marine water quality, fisheries and marine ecological impacts. • Temporary loss of fishing ground in Outer Deep Bay during the construction of the new outfall diffuser. • Permanent loss of seabed and marine habitat during operational phase. • More adverse waste management implications due to the need for disposal of potentially contaminated sediments.

2.9.2 Alternative Siting

The TTMAL site is a wasteland, overgrown with ruderal and herb species, located within an existing industrial urban landscape. As mentioned in Section 2.5, when planning for the development of IWMF Phase 1, the Government carried out an in-depth study and considered both TTMAL in Tuen Mun and the artificial island off Shek Kwu Chau were suitable sites for developing WtE facilities. Comparing with other locations in Hong Kong, the conditions of the

TTMAL site are relatively mature for developing WtE facilities. This will be conducive to the expeditious commencement and completion of the construction works for I·PARK2. It is considered that I·PARK2 shall be strategically located at the proposed TTMAL site from the waste management viewpoint. The TTMAL site can make use of the existing MSW transportation route to WENT Landfill, thus, no change in MSW transportation and associated environmental impact during operation when comparing with the current disposal arrangement to WENT Landfill. In addition, the TTMAL site is relatively remote from residential areas. Also, it is close to the existing power plant and surplus energy generated from the I·PARK2 can easily be connected to the power grid.

2.9.3 Alternative Construction Methods

2.9.3.1 Land-based Construction Methods

2.9.3.1.1 Alternative Piling Methods

Extensive site formation works are not expected from this Project. Piling will be the key construction activity of the Project for providing the foundation for new facilities. Alternative piling methods, namely quieter piling method and percussive piling method have been considered.

Quieter piling method, namely pre-bored steel H piles, would involve a hole formed by rotary drill into the ground and to the rock where the upper section in soil is supported by a steel casing. The steel H piles are then inserted and grout is pumped into the hole while the steel casing is removed. No percussive action is required for forming the hole. It is therefore proposed to use this method as far as practicable to minimize the noise disturbance in the area.

Percussive piling method is applicable to all ground conditions with less construction time required. Percussive piles will however induce a relatively high disturbance in term of noise level during the construction stage. With this consideration, application of percussive piling should be avoided as far as practicable.

The environmental benefits and dis-benefits of the alternative piling methods are summarized in the table below.

Table 2-7 Environmental Benefits and Dis-benefits of Alternative Piling Methods

Options	Environmental Benefits	Environmental Dis-benefits
Quieter Piling Methods (e.g. pre-bored steel H piles) (Recommended Option)	• Lower level of noise disturbance in Tsang Tsui.	• Longer duration of piling period and noise disturbance.

Options	Environmental Benefits	Environmental Dis-benefits
Percussive Piling	• Shorter duration of piling period and noise disturbance.	• Higher level of noise disturbance in Tsang Tsui.

2.9.3.1.2 Other Construction Activities

Other civil & structural works including the excavation and concrete construction works would be carried out for the Project. Use of quieter construction methods and equipment has been proposed in the noise impact assessment in **Section 4**. It is recommended that construction by precast or prefabrication units should be adopted as far as practicable to shorten the construction schedule and minimize the environmental impact. For electrical and mechanical (E&M) works, general fixing and installation of treatment plants and facilities are required. For building services works, utilities installations such as pipe-laying, ducting and cabling would be conducted. The E&M and building services works are considered to create less environmental impact (dust and noise emissions). Alternative methods or phasing of the above construction activities are not further considered.

2.9.3.2 Marine-based Construction Methods

Construction of the new berthing facility for I·PARK2 would require marine construction work. The underlying marine mud or the soft materials on the existing seabed would affect the stability of the new berth. Alternative methods, namely conventional dredging method and non-dredged ground treatment method have been considered for construction of the foundation of the new berth.

The conventional open dredging method would disturb the seabed sediments and cause a release of sediment and sediment-bounded contaminants into the open water. Disposal of contaminated sediment is potentially required, which may create secondary environmental impact at the disposal site. The dredging method would create more adverse impact in terms of marine water quality, marine ecology, fisheries and waste management implications and is therefore not recommended.

Advanced ground treatment method is proposed to avoid dredging and the associated environmental impacts. In recent years, deep cement mixing (DCM) method, a non-dredged ground improvement technique, has been adopted in several local large-scale reclamation works. It has been in practice and proven to provide robust ground improvement solution and is therefore proposed as a feasible ground treatment option for I·PARK2. The DCM operation would reinforce the marine mud *in-situ*. Precautionary measures such as the placement of sand blanket on top of the DCM treatment area and deployment of silt curtains would minimize the release of fines and contaminants from the treatment work.

The environmental benefits and dis-benefits of the alternative marine construction methods are summarized in the table below.

Table 2-8 Environmental Benefits and Dis-benefits of Alternative Marine Construction Methods

Options	Environmental Benefits	Environmental Dis-benefits
Non-dredged ground treatment method (Recommended Option)	• No disturbance to seabed sediment and no release of sediment-bound contaminants in Deep Bay. • No disposal of contaminated sediments	• Potential release of cement slurry and fines, which can be practically mitigated with suitable mitigation measures.
Dredging method	No environmental benefit is identified as compared to the non-dredged ground treatment method	• Release of sediments and sediment-bounded contaminants (e.g. heavy metals) during construction and inducing additional marine water quality, fisheries and marine ecological impacts. • More adverse waste management implications due to the need for disposal of potentially contaminated sediments.

2.9.4 Alternative Construction Sequences

Phased construction of the Project such as to construct the new berthing facility before the commencement of land-based construction works has been considered. This option could minimize the amount of active construction works area and number of concurrent construction plant working at the same time and thus reduce the level of environmental impact at one time. Phased construction would however involve a longer construction period and duration of environmental impact. It is not a feasible option to meet the tight construction programme of the Project.

Due to the urgency to implement I·PARK2, concurrent construction of different Project facilities is proposed. The key environmental issue would be the disturbance impact on the environment. Since the construction of the berthing facility would unlikely result in adverse air quality impact and considering that no extensive excavation works are proposed, no significant dust emissions are expected from this construction approach. There is no noise sensitive receiver (NSR) identified within 300 m from the Project site. As discussed in **Section 2.9.3.1.1**, non-percussive piling method is proposed and percussive piling should be avoided as far as practicable to minimize the construction noise impact. Practical mitigation measures and good site practices are also recommended in **Section 3** to **Section 11** to minimize the indirect disturbances to the environment. No unacceptable environmental impact due to the concurrent construction of different Project facilities would arise, provided that all the recommended mitigation measures are properly in place.

The environmental benefits and dis-benefits of the alternative construction sequences are summarized in the table below.

Table 2-9 Environmental Benefits and Dis-benefits of Alternative Construction Sequences

Options	Environmental Benefits	Environmental Dis-benefits
Phased construction of the Project	• Phased construction may reduce the total construction emissions (e.g. air quality and noise) at one time and minimize the level of environmental impacts.	• This option may imply a relative longer construction period. The overall duration of construction phase impact on the environment may be lengthened.
Concurrent construction of different Project facilities (Recommended Option)	• This option may imply a relatively shorter construction period. The overall duration of construction phase impact on the environment would be shortened. • The shorter construction period could avoid / shorten potential cumulative construction environmental impacts with other concurrent projects.	• The cumulative or total pollution emissions (air quality and noise) at a time could be higher during the construction phase. Mitigation measures and good site practices would be properly implemented to minimize the disturbance impact on the environment.

2.10 Interfacing and Concurrent Projects

This section describes the interfacing and concurrent projects based on the best available information at the time of preparing this EIA Report. The identified potential concurrent projects in the vicinity of the Project during construction and operation phases are listed in **Table 2-10** and the locations of the concurrent projects are presented in **Figure 2.2**.

Table 2-10 Potential Concurrent Projects

Concurrent Project	Construction Programme		
	Start	Complete	Reference for Programme
West New Territories Landfill Extension	2023	2037	Supporting Document for Variation of EP
Nim Wan Road (South)	Not Available	Not Available	N/A
Upgrading of Nim Wan Road (North) and Deep Bay Road	Not Available	Not Available	N/A
Lung Kwu Tan Reclamation and the Re-planning of Tuen Mun West Area	2027	2030–31	PWSC Paper No. (2023-24)25; ESB-367/2024
Decommissioning of West Ash Lagoon in Tsang Tsui	2026	2026	Project Profile (DIR-305/2024)

The description of the concurrent projects is presented below that would be subject to changes and further updates by the respective project proponents.

2.10.1 West New Territories Landfill Extension

The WENTX contract was awarded in August 2023. It involves the development of a landfill extension with a waste filling area of about 94 ha and a target void space of no less than 76 Mm^3 on the western side of the existing WENT Landfill.

The WENTX comprises 4 stages, i.e. construction, operation, restoration and aftercare phases and will start to receive waste upon closure of the existing WENT Landfill. The construction of waste filling cells for WENTX would be divided into phases. The initial works phase will be conducted from 2023 to 2026 tentatively, including the following major construction activities:

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

The Tsang Kok Stream Outfall will be modified to form a site for construction of the WENTX such as for placing of the rock crushing plant, storage of construction materials, etc. The related outfall modification works will be commenced in 2024 tentatively.

Locations of these key elements of WENTX are shown in **Figure 2.2**. The remaining works phase for the construction of other landfill cells would continue until late 2030s, subject to the actual waste intake. During the excavation period, the rock crushing plant at Eastern Platform and Tsang Kok Stream Outfall area would be under operation and the surplus excavated material would be transported off-site via the proposed barging points.

It is anticipated that waste filling at WENTX would commence in 2026. Waste infrastructure, such as leachate treatment facilities, LFG treatment facilities and LFG power generators, would be under operation.

The WENTX activities will be carried out concurrently with both the construction and operational phases of I·PARK2.

2.10.2 Nim Wan Road (South)

The proposed Nim Wan Road (South) serves to enhance the road accessibility to the government facilities in Nim Wan area by providing an alternative route for the existing Nim Wan Road. The design including the latest layout of the proposed Nim Wan Road (South) is under review and the proposed construction programme is not yet available at the time of preparing this EIA report.

2.10.3 Upgrading of Nim Wan Road (North) and Deep Bay Road

The proposed works serve to upgrade the Nim Wan Road (North) and Deep Bay Road from an existing single lane carriageway with two-way traffic to a single two-lane carriageway to meet the latest traffic need and current design standards, including reducing sharp curves, improving driving sightline and traffic safety. The design including the latest layout of the proposed Nim Wan Road (North) is under review and the proposed construction programme of the proposed Upgrading of Nim Wan Road (North) and Deep Bay Road is not yet available at the time of preparing this EIA report. The Deep Bay Road to be upgraded would be more than 4 km away from I·PARK2 and would not be the major MSW delivery route to I·PARK2.

2.10.4 Lung Kwu Tan Reclamation and the Re-planning of Tuen Mun West Area

According to the PWSC paper, the planning and engineering study for the proposed Lung Kwu Tan Reclamation and the Re-planning of Tuen Mun West Area serves to increase the supply of land for housing and industries in the medium to long term. According to the Project Profile of Lung Kwu Tan Reclamation (ESB-367/2024), the reclamation and associated works are tentatively intended to commence in 2027 the soonest with a view to provide first piece of "developable land" to meet development needs starting from 2030–2031. As checked with the project proponent, the project is still under study / planning and no detailed information except the reclamation footprint is available for assessment at the time of preparing this EIA report. The development of I·PARK2 shall be taken into account and potential cumulative impact would be addressed in the EIA study of Lung Kwn Tan Reclamation.

2.10.5 Decommissioning of West Ash Lagoon in Tsang Tsui

According to the Project Profile of the decommissioning project (DIR-305/2024), the proposed works for decommissioning of the west ash lagoon mainly involve covering of at least one-meter thick general fill above the PFA at west ash lagoon, as well as installation of temporary surface drainage. Site clearance such as vegetation clearance might be required prior to the decommissioning works. The decommissioning project will be located within the TTWAL in Tsang Tsui. The tentative programme for the decommissioning work would be approximately 6 months, and tentatively scheduled to commence in 2026. The construction works of I·PARK2 within the TTWAL would be commenced after the completion of the decommissioning works of TTWAL.

2.11 Public Concerns

Major public comments received on the Project Profile during application of EIA Study Brief were related to the potential impacts on air quality and human health, ecology, water quality and waste management. **Table 2-11** summarizes the main public concerns raised on the Project and how the relevant concerns have been addressed in the EIA study.

Table 2-11 Responses to Key Public Comments

Item No.	Discipline	Summary of Public Comments	Responses to Public Comments
1	Air Quality and Human Health	Air Quality Impact during the operation of the Project; monitoring of toxic or carcinogenic substances; regional emission within Pearl River Delta; contingency plan in response to human health	During the operation of the I·PARK2, the potential sources of air quality impacts would be the air emissions from the stacks of incineration process and the odor nuisance. The I·PARK2 shall be designed to meet the target air emission levels for the incinerator. Air pollution control and stack monitoring system for the pollutants including toxic or carcinogenic substances will be implemented to ensure that the emissions from the stacks will meet the proposed target emission limits. The cumulative air quality and odor impact assessment results show that all the air sensitive receivers in the vicinity of the Project site would comply with the EIAO-TM. Cumulative air quality impact assessment, taking consideration of existing and planned projects in the assessment area as well as the regional emissions based on PATH model, has been undertaken in the EIA study. A Project-specific emergency response / contingency plan for potential accident events shall be developed and implemented to minimize associated health impacts. Details of the operational air quality impact assessment and health impact assessment are presented in **Section 3** and **Section 10**.
2	Ecology	Potential impact to the Chinese White Dolphin and Eurasian Otter;	The proposed marine works area of the Project is heavily disturbed by existing human activities such as heavy marine traffic and maintenance dredging works associated with existing landfill operation and the proposed marine works for construction of berthing facilities is only confined to near shore area and small in scale. No Chinese White Dolphin (CWDs) were sighted in Deep Bay at all in 2022 and the coastal waters around TTAL and the adjacent waters recorded zero dolphin density since 2014. The coastal waters around the marine works with shallow water depths are not considered as a preferred habitat of CWD from the long-term marine mammals monitoring data. Potential impact to CWD is not expected. No Eurasian Otter has been recorded within 500m assessment area. Details are presented in **Section 7**.

Item No.	Discipline	Summary of Public Comments	Responses to Public Comments
3	Ecology	The Project and concurrent projects would cause direct impacts and loss in habitat or indirect disturbance to bird species / wildlife and ecological sensitive areas near Pak Nai.	The existing TTMAL and TTWAL within the Project site will become developed area covered with general fill upon the completion of the decommissioning works which are subject to the requirements under separate environmental permits. The proposed Project would cause a direct loss of about 24.2 ha of developed area / wasteland / ash lagoon with limited ecological value within the land-based area of the Project site. Indirect impacts from disturbances (including human activities, noise, water quality impacts and light and glare) to the ecological sensitive areas near the Project site (e.g. Pak Nai) and their associated fauna (e.g. birds) would be mitigated by good site practices, use of quality powered mechanical equipment and control of construction site run-off, etc. Details of the ecological impact assessment including the cumulative ecological impacts are presented in **Section 7**.
4	Water Quality	Suggestion on the use of non-dredged reclamation method as far as practicable and avoid discharge of wastewater; Zero discharge Policy should be strictly observed for discharge of wastewater.	Non-dredged method is proposed for construction of the marine facility to minimize the water quality impact. I·PARK2 would be designed to minimise wastewater discharge into Deep Bay Water Control Zone during operation. The wastewater would be treated either for reuse within I·PARK2 for non-potable purposes or for discharge into North Western Water Control Zone via the sewerage system connecting to the Urmston Road Submarine Outfall. There is no discharge of wastewater (including treated / untreated process water and sewage effluent) into Deep Bay from the I·PARK2 operation except for spent cooling seawater and brine water from the desalination process, and discharge of effluent during construction and operation of the Project are controlled by the discharge licence issued under the Water Pollution Control Ordinance. Details of the construction method and water quality impact assessment results presented in **Section 5**.
5	Water Quality and Ecology	Impacts of thermal pollution and antifouling agents on marine water, ecology, oyster farms in Deep Bay.	Potential thermal impacts and discharge of antifouling agent (i.e. total residual chlorine) were evaluated by means of mathematical modelling. Full compliances with the water quality objective for temperature and assessment criteria for total residual chlorine were predicted at all identified water sensitive receivers, ecological sensitive receivers and area granted or to be granted for operation of oyster rafts. Details of the impact assessments are presented in **Sections 5, 7 and 8**.
6	Waste Management	The solid wastes generated from the proposed Project, including Construction and Demolition (C&D) materials,	The solid wastes generated from the proposed Project, including C&D materials, chemical wastes, general refuse, IBA (from both I·PARK1 and I·PARK2), fly ash and dewatered sludge generated during construction /

Item No.	Discipline	Summary of Public Comments	Responses to Public Comments
		chemical wastes, IBA (from both I·PARK1 and I·PARK2), fly ash, etc. should be properly stored, transported and finally disposed of at designated facilities in accordance with the regulations.	operation of the Project shall be properly stored, transported, treated and finally disposed of at designated facilities in accordance with the regulations. The treated IBA will be delivered for off-site beneficial uses while fly ash / APC residues will be treated and tested prior to disposal at landfill site. Dump trucks shall be equipped with real-time tracking and monitoring devices to deter illegal dumping of construction waste. The MSW containing vessel will be equipped with GPS Trackers to provide real time vessel location, which serves as an effective surveillance measure to avoid waste dumping at sea. Mitigation measures if required are also recommended to minimize the environmental impacts. Details are provided in **Section 6**.
7	Waste Management	Overall waste management strategy and the superiority of WtE technology to landfilling in combating climate change.	As set out in the "Waste Blueprint for Hong Kong 2035", development of more advanced WtE facilities is an important strategy to move away from the reliance on landfills for direct MSW disposal. The waste management strategy and the need and benefits of the Project are provided in **Section 2**. Carbon audit will be conducted (under separate contractual requirement/ by I·PARK2 contractor.