



Appendix 11.1 Implementation Schedule of the Proposed Mitigation Measures

EIA Ref.	Environmental Protection Measures/Mitigation Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage*			Relevant Legislation & Guidelines
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Air Quality							
3.10.1	<p>Air quality control measures stipulated in the Air Pollution Control (Construction Dust) Regulation will be implemented during the construction of the Project to control potential fugitive dust emissions. Standard construction practices for dust minimisation, including a number of practical measures such as regular water spraying, provision of vehicle wheel-washing and body washing facilities and shielding or covering with impervious sheet of stockpiled materials or exposed area when it is not use, will be implemented to reduce air quality nuisance.</p> <p>Site practices such as regular maintenance and checking of the diesel-driven PMEs will be adopted to avoid any black smoke emissions and to reduce gaseous and particulate emissions. Good site practices listed below should be carried out to further minimize construction air quality impact:</p> <ul style="list-style-type: none"> Regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry season. The working area of excavation or earth moving operation shall be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet. Skip hoist for material transport shall be enclosed by impervious sheeting. Stockpile of dusty materials shall be either covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet. Except for cement and pulverized fuel ash and for cases where the moisture content of the dusty materials is a matter of concern, dusty materials shall be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. Vehicle washing facilities including a high pressure water jet shall be provided at 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation



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	<p>vehicle exit.</p> <ul style="list-style-type: none"> Construction vehicle shall be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site. Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle. Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. Imposing speed control for vehicles on site haul roads. Conduct construction phase environmental monitoring and auditing to monitor the construction air quality impact and effectiveness of the air quality control measures. <p>Moreover, all constructional plant powered by diesel fuel and operating on public works construction sites must use ULSD. Timely provision of electricity to construction sites should be arranged as soon as practicable to minimize air quality impact arising from construction machinery. Non-road mobile machineries (NRMMS) shall be switched off when not in use to control the air quality impact from NRMMS. The use of hybrid, electric or clean-fuel NRMMS should also be adopted to further minimise the emissions from NRMMS if practicable. Exempted NRMMS should also be avoided to be used at the construction site as far as practicable.</p>						
3.10.2	<p>Air pollution control and stack monitoring system will be installed for the I-PARK2 to ensure that the emissions from the stacks will meet the proposed target emission limits. The stack monitoring will follow the monitoring requirements in the prevailing guidance note on the best practicable means (BPM) for incinerators (municipal waste incineration) in Hong Kong. The IBA treatment plant will be fully enclosed with negative pressure and extracted air will be treated by a bag filter with 99% dust removal efficiency. Misting system will be provided inside the IBA treatment plant as fugitive emission control. Odorous facilities of this Project including the wastewater treatment facility, waste</p>	I-PARK2 stack emission / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> Technical Memorandum on EIA Process (EIAO-TM)



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	reception hall, waste storage areas and waste feed system will also be fully enclosed with negative pressure and the odorous air will be extracted from these facilities to the combustion chamber of the incinerator for combustion and treated by flue gas treatment system before discharge. For the waste reception hall, odour control system with odour removal efficiency of more than 95% shall be provided for treatment of odorous air before discharging into open atmosphere during a shut-down or under the circumstances that the odorous air cannot be withdrawn into the combustion chamber of the incinerator for combustion. Besides, odour patrol will be carried out during operation of the Project to ensure that there would be no adverse odour impact arising from the Project. According to the assessment results, all the representative ASRs would comply with the AQOs and criteria for evaluating air quality impact in Annex 4 of EIAO-TM and thus no further mitigation measure would be required.						
Noise							
4.6.1, Table 4-6	<p>The quieter construction methods/ equipment as listed in Table 4-6 of the EIA report adopted as far as practicable. Other quieter construction methods and construction equipment listed in EPD website (https://www.epd.gov.hk/epd/misc/construction_noise/contents/index.php/en/index.html) should be explored and adopted, as far as appropriate and necessary, to minimize the construction noise impact to the surroundings.</p> <p>EPD's "Recommended Pollution Control Clauses for Construction Contracts" should also be adopted to ensure proper control and minimization of construction noise impact. With reference to PN1/24, particular specifications should be imposed in the construction contracts to ensure implementation of the recommended quieter construction method and equipment above by the future contractor(s).</p> <p>The following good site practices should be adopted during construction of the Project to minimise noise impact to the surroundings:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • Noise Control Ordinance (NCO)



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	<ul style="list-style-type: none"> Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction phase; Mobile plant should be sited as far away from sensitive uses as possible; Machines and plant (such as trucks) 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 orientated so that the noise is directed away from sensitive uses; Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. And Noisy construction activities such as road surface breaking, should be scheduled to less sensitive hours during the day, e.g. midday, as far as practicable. 						
4.6.2	Noisy plant should be enclosed within reinforced concrete building as far as practicable. Noise control techniques such as selection of quiet equipment, use of enclosure or silencer set out in the "Good Practices on the Control of Noise from Electrical & Mechanical Systems" promulgated by EPD should be adopted as far as practicable with a view to minimising noise from fixed noise sources such as fan units during operation phase. Quieter equipment should be adopted as far as practicable.	Project Site / Design and Operational Phases	I-PARK2 Contractor	√		√	• EIAO-TM
Water Quality							
5.8.1.1	<p><u>Construction Site Runoff and Dust Suppression Sprays</u></p> <p>The site practices outlined in ProPECC PN 2/23 "Construction Site Drainage" should be followed where applicable to minimize surface runoff and the chance of erosion. Surface runoff including the spent effluent from dust suppression from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sandbag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided on site boundaries where necessary to intercept storm runoff from outside the site so that it will not wash</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/23 Water Pollution Control Ordinance (WPCO)



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	<p>across the site. Catchpits and perimeter channels should be constructed in advance of construction and earthworks.</p> <p>Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to prevent local flooding. Before disposal at the Public Fill Reception Facilities (PFRFs), the deposited silt and grit should be solicited in such a way that it can be contained and delivered by dump truck instead of tanker truck. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains. Minimum distance of 100m should be maintained between the discharge points of construction site runoff and the nearby seawater intakes.</p> <p>Construction works should be programmed to minimize soil/PFA excavation works in rainy seasons (April to September). If excavation in soil/PFA cannot be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil/PFA erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil/PFA surfaces. Arrangements should always be in place in such a way that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.</p> <p>Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.</p> <p>Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.</p> <p>Construction materials (e.g. aggregates, sand and fill material) on sites should be</p>						



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	<p>covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system or nearby water environment. The excavated PFA should be backfilled as soon as possible, and stockpiles of the excavated PFA shall be covered with tarpaulin or similar fabric during rainstorms.</p> <p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system.</p>						
5.8.1.2	<p><u>Wastewater from General Land-based Construction Activities</u></p> <p>The mitigation measures as outlined in ProPECC PN 2/23 "Construction Site Drainage" for control of various types of discharges and wastewater generated in the construction site should be observed and adopted where applicable.</p> <p><i>Boring and Drilling Water</i></p> <p>Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated and reused after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities. The treated discharges shall meet the respective effluent standards applicable to the receiving waters as set out in the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS).</p> <p><i>Wheel Washing Water</i></p> <p>All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit. Wash-water should have sand and silt settled out or removed for re-circulation or reuse as far as practicable. Any surplus treated wash-water should be discharged into storm drains. The treated discharges shall meet the respective effluent standards applicable to the receiving waters as set out in the TM-DSS. The section of construction road between the wheel washing bay and the public road should</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • ProPECC PN 2/23 • WPCO



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	be paved with backfill to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.						
5.8.1.3	<p><u>General Refuse</u></p> <p>It is recommended to clean the construction sites on a regular basis. Good site practices should be adopted to remove rubbish, debris and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. All general refuse generated on-site should be stored in enclosed bins or compaction units separately from Construction and Demolition (C&D) material. A reputable waste collector should be employed to remove general refuse from the site, separately from C&D material, on a regular basis to an approved landfill. An enclosed and covered area should be provided to reduce the occurrence of “windblown” light material.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM Waste Disposal Ordinance (Cap. 354) DEVB TC(W) No. 6/2010
5.8.1.4	<p><u>Licensing of Construction Site Discharge</u></p> <p>There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. All the runoff and wastewater generated from the works areas should be treated and the effluent discharge quality should meet the requirements specified in the discharge license and follow the TM-DSS. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimize water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO license.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/23 WPCO
5.8.1.5	<p><u>Accidental Chemical Spillage</u></p> <p>Contractor must 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.</p> <p>Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/23 WPCO



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	<p>vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.</p> <p>Disposal of chemical wastes 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 to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 						
5.8.1.6	<p><u>Sewage Effluent from Construction Workforce</u></p> <p>It is recommended to provide sufficient chemical toilets in the works areas. A licensed waste collector should be deployed to maintain the chemical toilets on a regular basis. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment. Regular environmental audit of the construction site should be undertaken to provide an effective control of any malpractices and to encourage continual improvement of environmental performance on site.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • ProPECC PN 2/23 • WPCO
5.8.1.7	<p><u>Seawall Modification and Construction of Permanent Berthing Facility</u></p> <p>The following design and mitigation measures should be adopted for the seawall modification and construction of the berthing facility.</p> <ul style="list-style-type: none"> • Adopt non-dredged method (i.e. DCM treatment) for construction of the foundation for the proposed seawall modification / berthing facility. • Place sand blanket of at least 1 m thick on top of the sediments prior to DCM 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • WPCO



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	<p>treatment to avoid seabed sediment disturbance and release of fines.</p> <ul style="list-style-type: none"> Carefully control the cement slurry injection pressure to prevent leaching out of cement slurry during the DCM operation. Control the production rate of the marine sand blanket laying to no more than 3,000 m³ per day. Silt curtain shall be deployed during the marine sand blanket laying and DCM operation. No open dumping method should be used for the sand blanket laying in marine water. Adopt a “controlled bottom placement” method for the sand blanket laying work by releasing the sand material at a point near the seabed (by closed grab dredger or other appropriate method) and at a controlled sand filling rate to prevent localized overloading of the seabed and potential instability, and to minimize loss of fines when placing the sand blanket in marine water. 						
5.8.1.8	<p><u>Good Site Practices for Construction Vessels</u></p> <p>The following good site practices should be implemented to minimize water pollution from construction vessels and marine transportation of construction materials.</p> <ul style="list-style-type: none"> Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation. Excess materials shall be cleaned from the decks and exposed fittings of barges before the vessels are moved. Plants should not be operated with leaking pipes and any pipe leakages shall be repaired quickly. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action. All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM WPCO



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	<p>by turbulence from vessel movement or propeller wash.</p> <ul style="list-style-type: none"> The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site. 						
5.8.2.1	<p><u>Discharges from Desalination Plant and Seawater Cooling System and Changes of Hydrodynamics and Water Quality</u></p> <p>All the discharges from desalination plant and seawater cooling system shall be controlled by the discharge license issued under the WPCO. The discharge quality must meet the requirements specified in the discharge license.</p>	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> EIAO-TM WPCO
5.8.2.2	<p>The practices outlined in ProPECC PN 1/23 "Drainage Plan subject to Comments by Environmental Protection Department" should be adopted where applicable for handling, treatment and disposal of operational stage effluent. Specific site effluent control measures for I-PARK2 are highlighted as follows for consideration in the detailed design stage.</p> <p>Wastewater Management Measures – Option 1</p> <ul style="list-style-type: none"> Type 1 wastewater such as leachate with high organic loading should be discharged to the on-site high strength wastewater treatment facility for treatment and the treated effluent shall be for reused on-site as process water and conveyed / handled within automatic close-loop systems to avoid direct human contact Type 2 wastewater such as domestic sewage should be discharged to the on-site low-strength wastewater treatment facility for treatment and the treated effluent shall meet the water quality standards specified in the "Technical Specifications on Grey Water Reuse and Rainwater Harvesting" issued by the WSD for beneficial reuse with possible human contact, such as irrigation, toilet flushing and washing (e.g. road washing). Type 3 wastewater with low / negligible pollution loading (e.g. boiler blowdown water) should be directly reused on-site as process water with no human contact. <p>Wastewater Management Measures – Option 2</p> <p>Wastewater generated from I-PARK2 shall be discharged to the on-site wastewater</p>	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> EIAO-TM ProPECC PN 1/23 WPCO



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	<p>treatment system for proper treatment prior to discharging to the Urmston Road Submarine Outfall. A discharge licence for discharge of effluent from I-PARK2 shall be applied under the Water Pollution Control Ordinance. The quality of effluent discharged from I.PARK2 shall meet the requirements specified in the discharge licence. With reference to the requirements stipulated in Annex 6 of EIAO-TM for effluent discharge into the NW WCZ, secondary treatment plus nitrogen removal and disinfection shall be adopted for the on-site wastewater treatment system under the Option 2.</p> <p>Site Effluent Control Measures for Option 1 and Option 2</p> <ul style="list-style-type: none"> • MSW / ash handling and treatment areas should be located within buildings or covered areas to prevent the generation of contaminated rainwater runoff. • All wastewater (e.g. washing down from the waste reception facilities) collected by drainage outlets provided in covered areas should be discharged to the on-site wastewater treatment facility for treatment. • Backup power supply in the form of dual power supply or ring main supply or emergency generator(s) should be provided for all on-site wastewater treatment facilities and rainwater reuse treatment system to secure electricity supply. • Regular maintenance and checking of all on-site wastewater treatment facilities and rainwater reuse treatment system as well as conveying facilities should be carried out to prevent equipment and pipe failure. • The harvested roofing rainwater shall be collected and treated by the rainwater reuse treatment facilities provided on-site and the treated effluent shall meet the water quality standards specified in the "Technical Specifications on Grey Water Reuse and Rainwater Harvesting" issued by the WSD for beneficial reuse with possible human contact (e.g. irrigation, toilet flushing and washing). • Standby main treatment units and standby equipment parts / accessories should be provided for all on-site wastewater treatment facilities and rainwater reuse treatment system to prevent the occurrence of plant failure. • Any effluent discharges from the I-PARK2 should be pre-treated to comply with the 						



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	<p>WPCO requirements, and sited away from the natural water streams.</p> <p>An Emergency Response Plan (ERP) should be developed by the future operators of the on-site wastewater treatment systems to deal with emergency situations caused by malfunctioning of the on-site wastewater treatment systems. The ERP should cover the following information:</p> <ul style="list-style-type: none"> • Programme of daily or regular integrity checking of the on-site wastewater treatment and conveying systems to inspect malfunctions. • Details of best management practices and maintenance programme of the on-site wastewater treatment and conveying systems. • Details of design and operation of backup power supply as well as the duty and standby treatment facilities of suitable capacities for emergency replacement. • Emergency response and rectification procedures to initiate emergency repairs, restore normal operation of the on-site wastewater treatment systems and other preventive measures such as the provision of temporary wastewater holding facility and / or alternative treatment facility where appropriate to avoid emergency discharge. • List of contact information including the names and contact information of key personnel and their responsibilities in the ERP. <p>The ERP should be submitted to the EPD for approval before commencement of the operation.</p>						
5.8.2.3	<p>Best Management Practices (BMPs) to reduce storm water and non-point source pollution are also proposed as follows:</p> <p><u>Design Measures</u></p> <ul style="list-style-type: none"> • Exposed surface shall be avoided within the proposed Project site to minimize soil erosion. Development site shall be either hard paved or covered by landscaping area where appropriate to reduce soil erosion. • The drainage system of the Project should be designed to avoid any case of flooding. 	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> • EIAO-TM • ProPECC PN 1/23 • WPCO



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	<p><u>Surface Runoff Control Measures</u></p> <ul style="list-style-type: none"> Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system. A low flow interceptor drainage system shall be deployed at uncovered paved areas within the Project site for handling / delivery of MSW containers and MSW delivery trucks to intercept and convey the first flush of any potentially contaminated surface runoff to the on-site wastewater treatment facility for treatment. Roofing rainwater would be harvested and treated for beneficial reuse with possible human contact. Surface runoff from uncovered paved and development areas within the Project site (except the first flush and roofing rainwater) should be discharged to stormwater drains after removal of the particles by appropriate facilities (e.g. road gullies with standard design and silt traps). <p><u>Administrative Measures</u></p> <ul style="list-style-type: none"> Good management measures such as regular cleaning and sweeping of road surface / open areas is proposed. The road surface / open area cleaning should also be carried out prior to occurrence of rainstorm. Manholes, as well as storm water gullies, ditches provided among the development areas should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall. 						
Waste Management Implications							
6.6.1.1	<p><u>General</u></p> <p>The management of C&D materials follows the same hierarchy as for other wastes i.e. in descending order of desirability: avoidance, minimization, reuse/recycling, treatment and safe disposal of waste.</p> <p>Training of construction staff should be undertaken by the Contractor about the concept</p>	Construction Sites, Transportation Route of Waste / Construction	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM Waste Disposal Ordinance (WDO) ETWB TC(W) No. 19/2005.



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	<p>of site cleanliness and appropriate waste management procedures. The Contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance workers' awareness in handling, sorting, reuse and recycling of C&D materials. Requirements for staff training should be included in the Contractor's Environmental Management Plan (EMP). The EMP shall be submitted to the Engineer for approval before construction works in accordance with ETWB TC(W) No. 19/2005.</p> <p>Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimize the damage or contamination of construction materials.</p> <p>Where waste generation is unavoidable, the potential for recycling or reuse should be explored. If waste cannot be recycled, disposal routes described in the EMP shall be followed. A recording system for the amount of wastes generated, recycled, delivered and disposed (including the delivery destinations / disposal sites) should be implemented. In order to monitor the delivery / disposal of C&D material and solid wastes at public fill reception facilities (PFRFs) and landfills and to control fly-tipping, a trip-ticket system should be included. DEVB TC(W) No. 6/2010 shall be referenced for details. Dump trucks shall be equipped with real-time tracking and monitoring devices as a means to prevent illegal dumping.</p>	Phase				<ul style="list-style-type: none"> DEVB TC(W) No. 6/2010 	
6.6.1.2	<p><u>Best Management Practice</u></p> <p>The proposed mitigation measures are as below:</p> <ul style="list-style-type: none"> An on-site environmental coordinator should be identified at the outset of the works. The EMP incorporating waste management shall be prepared in accordance with the requirements set out in the ETWB TC(W) No. 19/2005. The EMP shall include monthly and yearly Waste Flow Tables (WFT) that indicate the amounts of waste generated, recycled, delivered and disposed of (including final delivery destination / disposal site), and which shall be regularly updated. The reuse/recycling of all materials on site shall be investigated prior to treatment/delivered / disposal off-site. 	Construction Sites, Transportation Route of Waste / Construction Phase	I-PARK2 Contractor		√	<ul style="list-style-type: none"> EIAO-TM WDO ETWB TC(W) No. 19/2005 DEVB TC(W) No.6/2010 DEVB TC(W) No. 8/2010 	



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	<ul style="list-style-type: none"> • Good site practices shall be adopted from the commencement of works to avoid the generation of waste, reduce cross contamination of waste and to promote waste minimization. • All waste materials shall be sorted on-site into inert and non-inert C&D materials, and where the materials can be recycled or reused, they shall be further segregated. Inert C&D materials will comprise stone, rock, masonry, brick, concrete, and soil which is suitable for land reclamation and site formation whilst non-inert C&D materials include all other wastes generated from the construction process such as plastic packaging and vegetation (from site clearance). • The Contractor shall be responsible for identifying what materials can be recycled/ reused, whether on-site or off-site. In the event of the latter, the Contractor shall make arrangements for the collection of the recyclable materials. The remaining non-inert C&D materials shall be collected and disposed of to the landfills whilst inert C&D materials shall be re-used on site where practicable. Alternatively, if inert C&D materials cannot be reused on-site, the materials would be delivered to PFRFs for beneficial reuse. • With reference to DEVB TC(W) No.6/2010, a trip ticket system should be established at the outset of the construction to monitor the delivery / disposal of C&D materials and solid wastes from the site to PFRFs and landfills. Dump trucks shall be equipped with real-time tracking and monitoring devices for monitoring of the transportation of construction waste. • Under the Waste Disposal (Chemical Waste) (General) Regulation, the Contractor shall register as a Chemical Waste Producer if chemical wastes such as spent lubricants and paints are generated on site. Only licensed chemical waste collectors shall be employed to collect any chemical waste generated at site. The handling, storage, transportation, and disposal of chemical wastes shall be conducted in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes and A Guide to the Chemical Waste Control Scheme both published by EPD. • A sufficient number of covered bins shall be provided on site for the containment of 						



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	<p>general refuse to prevent visual impacts and nuisance to the sensitive surroundings. These bins shall be cleared daily and the collected waste disposed of at landfill as designated by EPD after recyclable materials (e.g. food scraps, paper, metals, aluminium cans, etc.) have been sorted out. Further to the issue of DEVB TC(W) No. 8/2010, the Contractor is required to maintain a clean and hygienic site throughout the Project works.</p> <ul style="list-style-type: none"> The Contractor shall prepare and submit the C&DMMP in accordance with the Project Administrative Handbook for Civil Engineering Works for approval. The contractor should prepare a Waste Management Plan (WMP) as part of EMP in accordance with ETWB TC(W) No. 19/2005. The WMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted. The Contractor shall comply with all relevant statutory requirements and guidelines and their updated versions that may be issued during the course of Project construction. 						
6.6.1.3	<p><u>On-site Sorting, Reuse and Recycling</u></p> <p>All waste materials should be segregated into categories covering:</p> <ul style="list-style-type: none"> Inert C&D materials suitable for reuse on-site. Inert C&D materials suitable for PFRFs. Recyclable non-inert C&D materials for recycling. Remaining non-inert C&D materials for landfill. Chemical waste. Recyclable general refuse for recycling Remaining general refuse for landfill. <p>Proper segregation and disposal of construction waste and general refuse should be implemented. Separate containers should be provided for inert and non-inert C&D materials. Separate recycling bins should be provided to facilitate recovery of recyclable</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM WDO DEVB TC(W) No. 6/2010



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	<p>materials from general refuse generated from construction workforce.</p> <p>Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert components. Yard waste portion of non-inert C&D materials such as bamboo, timber, vegetation, should be collected and delivered to Yard Waste Recycling Centre (Y-PARK) for recycling where practicable. Other non-inert C&D materials such as packaging waste and other organic materials should be reused and recycled where practicable and disposed to the designated landfill only as a last resort. Inert C&D materials such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reused in this or other projects (subject to approval by the relevant parties in accordance with the DEVB TC(W) No. 6/2010) before delivered to a public filling facility operated by CEDD. Steel and other metals should be recovered from demolition waste stream and recycled. Recyclables (e.g. wastepaper from office, aluminium cans) should be recovered from the general refuse for proper collection by waste recyclers for off-site recycling or reuse.</p>						
6.6.1.4	<p><u>Construction and Demolition Material</u></p> <p>Inert C&D materials should be temporarily stored on-site for use as backfill where practicable. It should be properly covered with tarpaulin or similar impervious sheeting to prevent dust nuisance and site runoff. Surplus inert C&D materials should be delivered to PFRFs.</p> <p>Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include:</p> <ul style="list-style-type: none"> • Stockpiling areas should be enclosed where space is available. • Stockpiled soil in open space should be properly covered with tarpaulin especially when heavy rainstorms are predicted. • Surface of any uncovered stockpiled soil should be regularly wetted with water 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • WDO • DEVB TC(W) No. 6/2010



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	<p>especially during dry season.</p> <ul style="list-style-type: none"> Disturbance of stockpiled soil should be minimized. Stockpiling location should be away from the water bodies. An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area. <p>Disposal of non-inert C&D materials to landfill shall only be a last resort. Proper segregation of inert and non-inert C&D materials shall be carried out in the construction sites.</p> <p>The Public Fill Committee of CEDD should be consulted for delivery of inert C&D materials to PFRFs while EPD should be consulted for disposal of non-inert C&D materials to landfill. Disposal of C&D materials to landfill must not have more than 50% (by weight) inert material. The C&D materials delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.</p> <p>In order to avoid dust impacts, any vehicle leaving a works area carrying inert or non-inert C&D materials should have their load covered up before leaving the construction site.</p> <p>C&D materials should be delivered to / disposed of at designated PFRFs or landfills. Delivery / disposal of these materials for the use at other construction projects is subject to the approval of the relevant project proponents and Public Fill Committee of CEDD. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The delivery / disposal of C&D materials will be controlled through trip-ticket system in accordance with DEVB TC(W) No. 6/2010.</p>						
6.6.1.5	<p><u>Chemical Waste</u></p> <p>Should any chemical waste be generated, the Contractor must register with EPD as a chemical waste producer. Chemical waste is defined in the Waste Disposal (Chemical Waste) (General) Regulation. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM WDO Code of practice on the packaging labelling and



EIA Ref.	Environmental Protection Measures/Mitigation Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage*			Relevant Legislation & Guidelines
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	<p>and generation rates. An updated list of licensed chemical waste collector can be obtained from EPD.</p> <p>Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.</p> <p>Suitable containers should be used for specific types of chemical wastes. The containers should be properly labelled (in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secured. Stored volume should not be kept more than 450 litres unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.</p> <p>Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is larger. Waste collected from oil interceptors should be collected and disposed of by a licensed chemical waste collector.</p> <p>Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. The chemical waste shall be collected by licensed chemical waste collectors.</p> <p>The registered chemical waste producer (i.e. the Contractor) has to arrange for the chemical waste to be collected by licensed chemical waste collector. The licensed</p>					storage of chemical wastes	



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	<p>chemical waste collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the CWTC in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.</p> <p>No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.</p>						
6.6.1.6	<p><u>General Refuse</u></p> <p>General refuse should be disposed of to landfill as designated by EPD only after recyclable materials (e.g. food scraps, paper, metals, aluminum cans, etc.) have been sorted out.</p> <p>The Contractor should nominate approved site personnel to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site. Training of site personnel about site cleanliness, proper waste management and chemical handling procedures should be provided. Recyclable materials such as papers and aluminum cans should be segregated and collected by waste recycler. An adequate number of waste containers should be provided to avoid spillage of waste.</p> <p>General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill by reputable waste collector. The removal of waste from the site should be arranged on a daily basis by the Contractor to minimize any potential odour impacts, minimize the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • WDO • Public Health and Municipal Services Ordinance
6.6.1.7	<p><u>Floating Refuse</u></p> <p>The Contractor should regularly check and clean any refuse trapped or accumulated along the seawall. Collected floating refuse shall be disposed of as general refuse</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> • EIAO-TM • WDO • Public Health and Municipal Services Ordinance



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6.6.2	<p>The following measures are recommended for the MSW handling:</p> <ul style="list-style-type: none"> 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. The MSW shall be fully enclosed in sealed containers or covered entirely to prevent accidental leakage from vessels or vehicles during transportation. The containers shall be in good condition and free from damage or any other defects. The unloading and transferring of MSW shall be carried out under negative pressure to ensure no leakage of fugitive emission. 	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> EIAO-TM WDO Public Health and Municipal Services Ordinance
6.6.2.1	<p><u>Incineration By-products</u></p> <p>The following measures are recommended for the storage, handling and collection of incineration by-products:</p> <ul style="list-style-type: none"> Ash should be stored in intact storage pits / silos. Ash should be handled and conveyed in an enclosed environment with negative pressure to prevent leakage to the surrounding environment prior to treatment if needed. Ash should be wetted with water to control fugitive dust, where necessary. The bottom ash will be treated for off-site beneficial uses. Disposal of bottom ash at landfill would be the last resort if all possible options of beneficial uses/outlet are exhausted. All bottom ash to be disposed of at landfill should be tested to ensure the compliance with the proposed IRPCL and leachability criteria prior to disposal. The stabilized fly ash / APC residues would be disposed of at the landfill site. Beneficial use of stabilized fly ash and APC residues will be explored where practicable. All stabilized fly ash / APC residues to be disposed of at landfill should be tested for compliance with the proposed IRPCL and leachability criteria prior to disposal. The bottom ash and stabilized fly ash / APC residues to be disposed of at landfill 	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> Incineration Residue Pollution Control Limits



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	<p>should be stored in enclosed container during transportation.</p> <p>The Contractor should provide EPD with chemical analysis results of bottom ash and stabilized fly ash / APC residues to confirm the compliance with the proposed IRPCL before disposal of at landfill.</p>						
6.6.2.2	<p><u>Dewatered Sludge</u></p> <p>The dewatered sludge would be treated at I-PARK2 regularly. The dewatered sludge shall be stored in sealed containers to minimize associated odour impact.</p>	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> • EIAO-TM • WDO
6.6.2.3	<p><u>Chemical Waste, General Refuse and Floating Refuse</u></p> <p>The chemical waste, general refuse and floating refuse generated / collected during the operational phase would follow the same handling procedures and disposal method presented in Sections 6.6.1.5, 6.6.1.6 and 6.6.1.7 of the EIA report except that the non-recyclable general refuse shall be sent to the incineration plant of I-PARK2 for treatment (instead of to the designated landfill site).</p>	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> • EIAO-TM • WDO • Public Health and Municipal Services Ordinance • Code of practice on the packaging labelling and storage of chemical wastes
6.7.3.1	<p><u>Fuel Oil Spillage Prevention</u></p> <p>Precautionary measures to prevent fuel oil spillage include:</p> <p>a) Fuel Oil Tank Construction and Test</p> <ul style="list-style-type: none"> • The fuel tank to be installed should be of specified durability. • Double skin tanks are preferred. • Underground fuel storage tank should be placed within a concrete pit. • The concrete pit shall be accessible to allow regular tank integrity tests to be carried out at regular intervals. • Tank integrity tests should be conducted by an independent qualified surveyor or 	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> • Code of practice on the packaging labelling and storage of chemical wastes



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	<p>structural engineer.</p> <ul style="list-style-type: none"> • Any potential problems identified in the test should be rectified as soon as possible. <p>b) Fuel Oil Pipeline Construction and Test</p> <ul style="list-style-type: none"> • Installation of aboveground fuel oil pipelines is preferable; if underground pipelines are unavoidable, concrete lined trenches should be constructed to contain the pipelines. • Double skin pipelines are preferred. • Distance between the fuel oil refuelling points and the fuel oil storage tank shall be minimized. • Integrity tests for the pipelines should be conducted by an independent qualified surveyor or structural engineer at regular intervals. • Any potential problems identified in the test should be rectified as soon as possible. <p>c) Fuel Oil Leakage Detection</p> <ul style="list-style-type: none"> • Installation of leak detection device at storage tank and pipelines. • Installation and use of pressure gauges (e.g. at the two ends of a filling line) in fuel filling, which allows unexpected pressure drop or difference and sign of leakage to be detected. <p>d) Fuel Oil Storage Tank Refuelling</p> <ul style="list-style-type: none"> • Storage tank refuelling (from road tanker) should only be conducted by authorized staff of the oil company using the company's standard procedures. <p>e) Fuel Oil Spillage Response</p> <ul style="list-style-type: none"> • An Oil Spill Response Plan should be prepared by the operator to document the appropriate response procedures for oil spillage incidents in detail. General procedures to be taken in case of fuel oil spillage are presented below: <p><u>Training</u></p> <p>Training on oil spill response actions should be given to relevant staff. The training shall cover the followings:</p>						



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	<ul style="list-style-type: none"> •Tools & resources to combat oil spillage and fire, e.g. locations of oil spill handling equipment and fire fighting equipment; •General methods to deal with oil spillage and fire incidents; •Procedures for emergency drills in the event of oil spills and fire; and •Regular drills shall be carried out. <p><u>Communication</u> Establish communication channel with the Fire Services Department (FSD) and EPD to report any oil spillage incident so that necessary assistance from relevant department can be quickly sought.</p> <p><u>Response Procedures</u> Any fuel oil spillage within the Project site should be immediately reported to the Plant Manager with necessary details including location, source, possible cause and extent of the spillage.</p> <p>Plant Manager should immediately attend to the spillage and initiate any appropriate action to confine and clean up the spillage. The response procedures shall include the following:</p> <ul style="list-style-type: none"> •Identify and isolate the source of spillage as soon as possible. •Contain the oil spillage and avoid infiltration into soil/ groundwater and discharge to storm water channels. •Remove the oil spillage. •Clean up the contaminated area. •If the oil spillage occurs during storage tank refuelling, the refuelling operation should immediately be stopped. •Recovered contaminated fuel oil and the associated material to remove the spilled oil should be considered as chemical waste. The handling and disposal procedures for chemical wastes are discussed in the following paragraphs. 						
6.7.3.2	The precautionary measures to prevent improper handling/ use of chemicals and	Project Site /	I-PARK2			√	• Code of practice on



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	<p>chemical waste spillage include:</p> <p>a) Chemicals and Chemical Wastes Handling & Storage</p> <ul style="list-style-type: none"> Chemicals and chemical wastes should only be stored in suitable containers in purpose-built areas. The storage of chemical wastes should comply with the requirements of the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. The storage areas for chemicals and chemical wastes shall have an impermeable floor or surface. The impermeable floor/ surface shall possess the following properties: <ul style="list-style-type: none"> Not liable to chemically react with the materials and their containers to be stored. Able to withstand normal loading and physical damage caused by container handling The integrity and condition of the impermeable floor or surface should be inspected at regular intervals to ensure that it is satisfactorily maintained For liquid chemicals and chemical wastes storage, the storage area should be bunded to contain at least 110% of the storage capacity of the largest containers or 20% of the total quantity of the chemicals/chemical wastes stored, whichever is the greater. Storage containers shall be checked at regular intervals for their structural integrity and to ensure that the caps or fill points are tightly closed. Chemical handling shall be conducted by trained workers under supervision. <p>b) Chemicals and Chemical Wastes Spillage Response</p> <ul style="list-style-type: none"> A Chemicals and/ or Chemical Wastes Spillage Response Plan shall be prepared by the operator to document in detail the appropriate response procedures for chemicals or chemical wastes spillage incidents. General procedures to be undertaken in case of chemicals/ chemical waste spillages are presented below: <p><u>Training</u></p> <p>Training on spill response actions should be given to relevant staff. The training shall cover the followings:</p>	Operation Phase	Contractor				the packaging and labelling and storage of chemical wastes



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	<ul style="list-style-type: none"> •Tools & resources to handle spillage, e.g. locations of spill handling equipment; •General methods to deal with spillage; and •Procedures for emergency drills in the event of spills. <p><u>Communication</u> Establish communication channel with FSD and EPD to report the spillage incident so that necessary assistance from relevant department can be quickly sought.</p> <p><u>Response Procedures</u> Any spillage within the Project site should be reported to the Plant Manager. Plant Manager shall attend to the spillage and initiate any appropriate actions needed to confine and clean up the spillage. The response procedures shall include the followings:</p> <ul style="list-style-type: none"> •Identify and isolate the source of spillage as soon as possible; •Contain the spillage and avoid infiltration into soil/ groundwater and discharge to storm water channels (in case the spillage occurs at locations out of the designated storage areas); •Remove the spillage; the removal method/ procedures documented in the Material Safety Data Sheet (MSDS) of the chemicals spilled should be observed; •Clean up the contaminated area (in case the spillage occurs at locations out of the designated storage areas); and •The waste arising from the cleanup operation should be considered as chemical wastes. 						
6.7.3.3	<p><u>Preventive Measures for Incineration By-products Handling</u> The recommended measures listed below can minimize the potential contamination to the surrounding environment due to the incineration by-products:</p> <ul style="list-style-type: none"> • Ash should be stored in intact storage pits / silos. • Ash should be handled and conveyed in an enclosed environment with negative pressure to prevent leakage to the surrounding environment prior to treatment if 	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> • Incineration Residue Pollution Control Limits



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	<p>needed.</p> <ul style="list-style-type: none"> Ash should be wetted with water to control fugitive dust, where necessary. The bottom ash will be treated for off-site beneficial uses. Disposal of bottom ash at landfill would be the last resort if all possible options of beneficial uses/outlet are exhausted. All bottom ash to be disposed of at landfill should be tested to ensure the compliance with the proposed IRPCL and leachability criteria prior to disposal. The stabilized fly ash / APC residues would be disposed of at the landfill site. Beneficial use of stabilized fly ash and APC residues will be explored where practicable. All stabilized fly ash / APC residues to be disposed of at landfill should be tested for compliance with the proposed IRPCL and leachability criteria prior to disposal. The bottom ash and stabilized fly ash / APC residues to be disposed of at landfill should be stored in enclosed container during transportation. 						
6.7.3.4	<p><u>Incident Record</u></p> <p>After any spillage, an incident report should be prepared by the Plant Manager. The incident report should contain details of the incident including the cause of the incident, the material spilled and estimated spillage amount, and also the response actions undertaken. The incident record should be kept carefully and able to be retrieved when necessary.</p> <p>The incident report should provide sufficient details for the evaluation of any environmental impacts due to the spillage and assessment of the effectiveness of measures taken.</p> <p>In case any spillage or accidents results in significant land contamination, EPD should be informed immediately and the operator should be responsible for the cleanup of the affected area. The responses procedures described in Sections 6.7.3.1 and 6.7.3.2 of the EIA report should be followed accordingly together with the land contamination assessment and remediation guidelines stipulated in the <i>Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management</i> and the <i>Guidance</i></p>	Project Site / Operation Phase	I-PARK2 Contractor			√	<ul style="list-style-type: none"> Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management and the Guidance Note for Contaminated Land and Remediation



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	<i>Note for Contaminated Land and Remediation.</i>						
Ecology							
7.10.2	<p><u>Avoidance</u> The Project would avoid direct impacts on terrestrial natural habitats (i.e. woodland / shrubland and natural streams) and recognized site of conservation importance.</p> <p><i>Marine Ecology</i> Non-dredged method will be adopted for the proposed marine construction works to prevent mud dredging and seabed disturbance. Potential marine ecological impacts due to the release of bed sediments and any sediment-bound contaminants would be avoided.</p> <p>The marine construction works would be confined in close vicinity of the artificial seawall of Middle Ash Lagoon and West Ash Lagoon with low ecological value, and thus avoiding the potential impacts to natural shores and areas with high ecological sensitivity.</p> <p>The associated water quality changes, in terms of SS elevation, sedimentation and DO depletion, are predicted to be localized. Wastewater and sewage arising from operation of the Project shall be treated for reuse within I-PARK2 or discharged into the existing Urmston Road Submarine Outfall in the NWWCZ outside Deep Bay after meeting relevant standards. The receiving water in NWWCZ is an open water with strong tidal flushing to assimilate the effluent discharge. The proposed wastewater treatment and management scheme would avoid adverse marine ecological impact in the sensitive Deep Bay water.</p> <p>The proposed seawater intake and outfall systems of the Project are isolated systems and free from any process water, MSW, leachate, ash and domestic sewage. Discharges from these seawater intake and outfall systems are predicted to cause only localized and insignificant water quality changes in Deep Bay.</p>	Construction and Project Sites / Design, Construction and Operation Phases	I-PARK2 Contractor	√	√	√	<ul style="list-style-type: none"> • EIAO-TM • WPCO
7.10.3.1	<p><u>Precautionary Site Check(s)</u> As a precautionary measure, site check(s) by qualified ecologist(s) before commencement</p>	Construction Sites /	I-PARK2		√		EIAO-TM



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	of the construction phase are recommended to be carried out to confirm that there is no breeding activity of avifauna species of conservation importance within the Project site. A report shall be prepared after the site check to keep record of relevant information (e.g. date & time, route, personnel, results & etc.)	Construction Phase	Contractor				
7.10.3.1	<p><u>Environmental Awareness and Construction Works Boundary</u></p> <p>In general, as mentioned, disturbance can be in the form of human activities (construction workers), noise, run-off and dust. Construction workers should be briefed regarding the ecological resources in the nearby areas before the commencement of the works and requested not to disturb any nearby ecological sensitive areas. Furthermore, the works boundary of the Project construction should be clearly defined (i.e. fenced with screening materials) and any works beyond the boundary should be strictly prohibited.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		EIAO-TM
7.10.3.1	<p><u>Consideration of Alternative Piling Method</u></p> <p>Quieter (non-percussive) piling method, namely pre-bored steel H piles is proposed for the foundation construction of this Project to minimize the noise disturbances to the nearby habitats. Pre-bored steel H piles would involve a hole (usually 600mm dia.) 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 is then inserted and grout is pumped into the hole while the steel casing is removed. No percussive action is required for forming the holes. Based on the preliminary Ground Investigation (GI) data, this quiet piling method is suitable at the Project site.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM Noise Control Ordinance
7.10.3.1	<p><u>Good Site Practices</u></p> <p>Good site practice and noise management techniques should be adopted to reduce the noise impact from construction site activities. The following measures should be practised during construction.</p> <ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme Machines and plant (such as trucks, breakers) that may be in intermittent use should 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM NCO



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	<p>be shut down between work periods or should be throttled down to a minimum</p> <ul style="list-style-type: none"> Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from the nearby ecological sensitive areas and woodland Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works Mobile plant should be sited as far away from nearby ecological sensitive areas as possible and practicable Material stockpiles, site office and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities 						
7.10.3.1	<p><u>Use of Quality Powered Mechanical Equipment</u></p> <p>The Quality Powered Mechanical Equipment (QPME) system was developed by EPD to benchmark construction equipment items which are notably quieter and more environmentally friendly. The Contractor should source quiet plant associated with the construction works from the Powered Mechanical Equipment (PME) listed in the QPME system and other commonly used PME listed in EPD web pages as far as possible.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM NCO
7.10.3.1	<p><u>Control of Construction Site Run-off</u></p> <p>The relevant best practices including the requirements specified in the Professional Persons Environmental Consultative Committee Practice Note on Construction Site Drainage (ProPECC PN 2/23) should be followed to minimize the water quality impacts. All temporarily exposed surfaces, dusty stockpiles and earth working areas should be securely covered immediately after the works have been completed to prevent soil erosion. Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed. The construction site run-off should be collected by the temporary drainage system installed by the Contractor and then treated on-site before discharging into the storm drains via silt removal facilities.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/93 WPCO



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7.10.3.1	<p><u>Construction Dust Suppression Measures</u></p> <p>The dust control measures stipulated in the Air Pollution Control (Construction Dust) Regulations should be implemented for the construction of the proposed Project, where applicable, to minimize the construction dust impacts. Key mitigation measure include regular watering of exposed site surfaces and dusty materials, avoidance or covering open dusty material and stockpiles, tarpaulin covering of all dusty vehicle loads transported to, from and between site locations and establishment and use of vehicle wheel washing facilities at the exit points of the construction site</p>	Construction Sites / Construction Phase	I-PARK2 Contractor		√		• Air Pollution Control (Construction Dust) Regulation
7.10.3.1	<p><u>Light and Glare Control Measures</u></p> <p>All lights provided in the Project site should have the following features to minimize light and glare impact:</p> <ul style="list-style-type: none"> • The number of lighting should be kept minimum. • The lux level should be designed just sufficient for safety purpose. • Light should be pointed towards the Project site to minimize light spill outside the Project boundary. • Where light has to be pointed upward, the light direction should be adjusted to minimize light spillage outside the Project site. • Light should be shielded with hood to prevent sky glow. 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		• EIAO-TM
7.10.3.1	<p>During the operational phase, quieter equipment for fixed noise sources shall be adopted as far as practicable. Air pollution control measures, such as bag filter for particulates removal, would be implemented for the I-PARK2 operation as presented in the Air Quality Impact Assessment of this EIA. Mitigation measures such as landscape planting are recommended in the Visual Impact Assessment of this EIA to screen the visual interface and limit public access to the nearby habitat and the associated wildlife. Best Management Practices (BMP) would be implemented during the Project operation to control non-point source surface runoff. The light and glare control measures should be implemented in the I-PARK2 site. These mitigation and design measures are</p>	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	• EIAO-TM, • NCO, • Air Pollution Control Ordinance (APCO) • WPCO



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	considered sufficient for mitigating the potential disturbance impacts.						
Fisheries							
8.8.1.1	<p><u>Avoidance</u></p> <p>Non-dredged method will be adopted for the proposed marine construction works to prevent mud dredging and seabed disturbance. Potential impacts on fisheries resources due to the release of seabed sediments and any sediment-bound contaminants would be avoided.</p> <p>On-site wastewater treatment facilities and effluent reuse are proposed to prevent the discharge of process water and domestic sewage effluent from I-PARK2 into the marine environment.</p>	Construction Sites / Construction Phase	I-PARK2 Contractor	√	√	√	<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/93 WPCO
8.8.1.2	<p><u>Minimization</u></p> <p>Mitigation measures recommended in the water quality impact assessment for minimizing the potential water quality impact will also serve to protect fisheries resources and ensure no unacceptable adverse impact on fisheries.</p>	Project Site / Design and Operational Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> EIAO-TM ProPECC PN 2/93 WPCO
Visual							
9.6	<p><u>Infill Planting (OM1)</u></p> <p>Infill planting of trees, shrubs and/or groundcovers shall be provided where space is available.</p>	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> EIAO-TM
9.6	<p><u>Tree Planting along Site Boundary (OM2)</u></p> <p>Tree planting shall be provided along the site boundary as far as practicable to provide visual screening effect.</p>	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> DEVB TC(W) No. 3/2012 EIAO-TM
9.6	<p><u>Green Roof and Vertical Greening (OM3)</u></p>	Project Site / Design and	I-PARK2	√		√	<ul style="list-style-type: none"> DEVB TC(W) No.



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	Where practicable, green roof and vertical greening on the external walls without the coverage of architectural elements will be provided.	Operation Phases	Contractor				3/2012
9.6	<u>Aesthetic Design of Buildings (OM4)</u> Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to buildings, engineering structures and associated infrastructure facilities so as to blend in the buildings and structures to the adjacent landscape and visual context where practicable.	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	• EIAO-TM
9.6	<u>Control for Lighting and Glaring (OM5)</u> Maintain only essential lighting and implement suitable measures to reduce potential light nuisance during night-time and minimise nuisance caused by glare reflected from buildings or photovoltaic (PV) panels (e.g. adjusting tilting angle and orientation of the panels, and applying anti-reflective coating where appropriate) as far as practicable. The Guidelines on Industry Best Practices for External Lighting Installations should be observed with a view to minimising potential impacts arising from external lighting.	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	Guidelines on Industry Best Practices for External Lighting Installations
Health							
10.3.3	<ul style="list-style-type: none"> The storage bunker will be kept at negative pressure to ensure no leakage of fugitive emission out of the storage bunker. Bottom ash will be washed and collected at the bottom of the chamber. The wetted ash will then automatically be conveyed to the ash storage pit via an enclosed extractor. The storage and treatment of bottom ash and fly ash will be conducted within an enclosed environment with air withdrawn through the bunkers into the combustion chamber of the incinerator. Fabric filter and misting system will be installed at the IBA treatment plant for emission control. The waste and ash will be fully enclosed in sealed containers or covered entirely to ensure that the waste and ash do not leak from vessels or vehicles during transportation. 	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	



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10.3.4	<p><u>Potential Health Impacts of Fugitive Emissions during Transportation, Storage, Handling and Disposal of Waste and Ash</u></p> <p>To minimise the potential health impacts associated with transportation, storage, handling and disposal of waste and ash during operation of the Project, the following good site practices are recommended and should be properly implemented by the I-PARK2 contractor:</p> <ul style="list-style-type: none"> • Include in the environmental management system the identification of major fugitive emission sources during transportation, storage, handling and disposal of waste and ash, and definition and implementation of appropriate actions and techniques to prevent or reduce fugitive emissions; • Maintain good housekeeping in all plant areas with suitable equipment provided and maintained to clean up spilled materials; • Carry out loading, unloading, handling and storage of waste and ash in an acceptable manner (e.g. handle the waste and ash in enclosed environment and under negative air pressure, limit height of discharge, optimise moisture content, etc.) to prevent or reduce fugitive emissions; • Provide signage for clear indication of the travelling route of waste/ash trucks; • Monitor and control the traffic flow inside the reception hall of the plant; • Vehicle cleaning system should be provided to clean the waste/ash trucks before they leave the plant; • Apply good practice during unloading of MSW to waste storage pit including: provide signage to assist waste/ash truck drivers to stop at appropriate unloading position; provide sufficient training to waste/ash truck drivers; • Detection device / alarm should be installed to prevent overfilling of waste and ash storage pit; • In case manual handling of waste/ash is needed, the workers involved should wear personal protective equipment; • The on-site workers responsible for maintenance and cleaning of equipment or 	Construction and Project Sites / Design, Construction and Operation Phases	I-PARK2 Contractor	√	√	√	



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	<p>vehicles contaminated with waste/ash should wear personal protective equipment; and</p> <ul style="list-style-type: none"> Emergency plan should be established and implemented to handle the situation of accidental incineration units shut down. 						
10.4.4.1	<p>The excavated PFA will be reused for backfilling on-site so that no off-site disposal of PFA will be required in this Project. During the PFA excavation, the I-PARK2 Contractor shall be required to implement the dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation, including regular watering of the excavation area to maintain the entire surface wet and reduce dust emissions. The I-PARK2 contractor shall also be required to provide personal protective equipment including suitable dust masks to the workers, consult the Labour Department on the need to conduct occupational dust monitoring at the location where the workers conducting the excavation of PFA, observe relevant requirements promulgated by the Labour Department in respect of occupational safety and health and comply with relevant statutory requirements.</p>	Construction Sites / Construction Phases	I-PARK2 Contractor		√		
10.4.5	<p><u>Health Impact Associated with PFA due to Radon Emissions</u></p> <p>To minimise the potential health risks from radon emissions associated with PFA, the following good site practices are recommended and should be properly implemented by the I-PARK2 contractor:</p> <ul style="list-style-type: none"> Prevention of radon influx from the PFA to the I-PARK2 buildings is preferred. Apply at least 1m thick general fill / soil cover on the PFA surface can significantly reduce the influx of radon. Utilize a slab-on-grade foundation design or employ soil suction techniques to draw radon from below the building and vent it through pipes above. These measures ensure a radon-free environment in the I-PARK2 buildings. Ensure adequate ventilation within the I-PARK2 buildings by implementing both natural and forced ventilation systems to enhance air exchange rates. For basement areas, consider pressurization techniques using external fans to prevent 	Construction and Project Sites / Design, Construction and Operation Phases	I-PARK2 Contractor	√	√	√	<ul style="list-style-type: none"> ProPECC Note PN 1/99



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	<p>radon infiltration. It should be noted that most of the underground plant areas will be under negative air pressure.</p> <ul style="list-style-type: none"> Regular maintenance should be conducted on floor slabs and walls, with proper sealing of cracks and openings in the foundation to minimize radon entry. This sealing process reduces radon flow, enhances the effectiveness of other radon reduction methods, and minimizes conditioned air loss. Conduct regular measurement of radon concentrations during the work period. Observe the guidance on reduction of radon exposure outlined in EPD's ProPECC Note PN 1/99 "Control of Radon Concentration in New Buildings". 						
10.5.1	<p><u>Aerial emissions (emission discharges exceed the discharge limit)</u></p> <ul style="list-style-type: none"> Use the best practicable means requirements for the prevention of emission of air pollutants including proper operation and maintenance of equipment, supervision when in use and training and supervision of properly qualified staff and conduct regular monitoring and checking to ensure optimal performance. <p><u>Transportation, storage and handling</u></p> <ul style="list-style-type: none"> Implement good waste/ash transportation, storage and handling practices (see Section 10.3 of the EIA report) Arrange transportation routes to avoid of densely populated or sensitive regions. Establish protocols for and deploy emergency response measures, including spill response, in the event of accidents involving transportation vehicles. Enforce rigorous driver skill standards and provide training on safe driving practices for both drivers and navigators, emphasizing road and marine safety behaviours. <p><u>Chemical spillage and leakage</u></p> <ul style="list-style-type: none"> Ensure the implementation of appropriate procedures for handling and storing chemicals and chemical wastes. Establish a spill prevention and response plan, which includes the provision of 	Construction and Project Sites / Design, Construction and Operational Phases	I-PARK2 Contractor	√	√	√	



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	<p>necessary equipment and trained personnel to effectively respond to spills.</p> <p><u>Employee health and safety</u></p> <ul style="list-style-type: none"> Follow industry best practices based on international standards and guidelines. Observe relevant requirements promulgated by the Labour Department in respect of occupational safety and health and consult Labour Department if needed. <p><u>Emergency Response / Contingency Plan</u></p> <ul style="list-style-type: none"> The I-PARK2 contractor will be required to develop and implement a Project-specific emergency response / contingency plan to handle potential accidental events during construction and operation of the I-PARK2 Project with a view to minimise the health impacts associated with the potential accidental events. 						
10.6	<p>The reception halls and ash storage pits will be enclosed with negative air pressure. Ash will be handled in enclosed environment, minimizing the possibility of any emissions escaping to the outside.</p>	Project Site / Design and Operation Phases	I-PARK2 Contractor	√		√	
Landfill Gas Hazard							
11.8.2.1 & 11.8.3.1	<p><u>Safety / Precautionary Measures</u></p> <p>The following safety measures shall be implemented during the construction phase and operation phase (where applicable):</p> <ul style="list-style-type: none"> For staff who work in, or have responsibility for “at risk” area, such as all excavation workers, supervisors and engineers working within the WENTX consultation zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards. Safety Officer shall register under the Factories and Industrial Undertakings Ordinance and relevant associated regulations, trained in the use of gas detection equipment and landfill gas-related hazards (or other appropriately qualified person), and should be present on site throughout the groundworks phase. The Safety Officer (or other appropriately qualified person) should be provided with an intrinsically safe portable 	Construction and Project Sites / Construction and Operational Phases	I-PARK2 Contractor		√	√	<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97)



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	<p>instrument.</p> <ul style="list-style-type: none"> • All personnel who work on site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices should be posted warning of the potential hazards. • An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out. • No worker should be allowed to work alone at any time in or near to any excavation areas within the WENTX consultation zone. At least one other worker should be available to assist with a rescue if needed. • Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. 'No smoking' and 'No naked flame' notices should be posted prominently on the construction site, especially in excavation or trenches. • Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation. • Welding, flame-cutting or other hot works may only be carried out in trenches or confined spaces when controlled by a 'permit to work' procedure, properly authorized by the Safety Officer. • The permit to work procedure should set down clearly the requirements for continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who shall be responsible for reviewing the gas measurements as they are made, and who shall have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas. • Where there are any temporary site offices, or any other buildings located within the 						



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	<p>WENTX consultation zone which have enclosed spaces with the capacity to accumulate LFG, then they should either be located in an area which has been proven to be free of landfill gas (by survey using portable gas detectors); or be raised clear of the ground by a minimum of 500mm. This aims to create a clear void under the structure which is ventilated by natural air movement such that emission of gas from the ground are mixed and diluted by air.</p> <ul style="list-style-type: none"> • Ground level construction plant used within in WENTX consultation zone should be fitted with vertical exhausts at least 0.6m above ground level and with spark arrestors. • Any electrical equipment, such as motors and extension cords, should be intrinsically safe. • During piping assembly or conduiting construction within WENTX consultation zone, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed as installed to prevent the migration of gases through the pipeline/conduit. All piping/conduiting should be capped at the end of each working day. • The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow. • The contractor shall adopt the precautionary measures in Section 8 of the Guidance Note for the period of construction of infrastructure within the Consultation Zone. • Adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site. Fire drills should be organized at not less than six monthly intervals. WENTX consultation zone • Service runs within the WENTX consultation zone should be designated as “special routes”; utilities companies should be informed of this and precautionary measures should be implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety 						



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	<p>and Health at Work in Confined Spaces (Labour Department, Hong Kong).</p> <ul style="list-style-type: none"> The precautionary and protection measures recommendations in Section 8 of the Guidance Note relating to the drilling of boreholes under site investigation / ground investigation works shall be adopted if such works will be carried out within the WENTX consultation zone. 						
11.8.2.2	<p><u>LFG Monitoring</u></p> <ul style="list-style-type: none"> Periodically during ground-works construction within the Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment, which is appropriately calibrated and capable of measuring the following gases in the ranges indicated below: <ul style="list-style-type: none"> Methane: 0-100% LEL and 0-100% v/v Carbon dioxide: 0-100% Oxygen: 0-21% Routine monitoring should be carried out in all excavations, manholes and chambers and any other confined spaces that may have been created by, for example, the temporary storage of building materials on the site surface. The monitoring frequency and areas to be monitored should be determined prior to commencement of groundworks either by the Safety Officer or by an appropriately qualified person. All measurements in excavations should be made with the monitoring tube located not more than 10mm from the exposed ground surface. For excavations deeper than 1m, measurements should be made: <ul style="list-style-type: none"> at the ground surface before excavation commences; immediately before any worker enters the excavation; at the beginning of each working day for the entire period the excavation remains open; and 	Construction Sites / Construction Phase	I-PARK2 Contractor		√		<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97) EIAO-TM



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	<ul style="list-style-type: none"> - periodically through the working day whilst workers are in the excavation. • For excavations between 300mm and 1m deep, measurements should be made: <ul style="list-style-type: none"> - directly after the excavation has been completed; and - periodically whilst the excavation remains open. • For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person. • Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. As a minimum these shall encompass those actions specified in Table 11.6 of the EIA report. • The hazards from landfill gas during the construction phase within the WENTX consultation zone shall be minimized by precautionary measures recommended in the Landfill Gas Hazard Assessment Guidance Note. • In any emergency situation, the Safety Officer or other appropriately qualified person, shall have the necessary authority and shall ensure that the confined space is evacuated, and the necessary works implemented for reducing the concentrations of gas. The following organizations should also be contacted as appropriate: <ul style="list-style-type: none"> - Hong Kong Police Force (HKPF); - Fire Services Department (FSD); - Environmental Protection Department (EPD); and - Landfill Operator. 						
11.8.3 and 11.8.3.1	During detailed design stage, the future I-PARK2 contractor shall prepare a detailed qualitative risk assessment and detailed design of landfill gas protection measures and submit to EPD for vetting. The submission shall include maintenance and monitoring programmes to ensure the continued performance of the proposed control measures, an event and action plan as well as an emergency and contingency plan. The types of protection measures which can be adopted are described below in relation to the	Within I-PARK2 / Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> • LFG Hazard Assessment Guidance Note EPD/TR8/97) • EIAO-TM



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	<p>generic terms set out in Table 11.3 of the EIA report.</p> <p><u>Gas Barrier</u></p> <p>The most common way of preventing gas from entering an area of ground is to set a “gas barrier” into the ground which is either keyed into low permeability strata or extends at least 1m below the lowest groundwater level.</p> <p>The presence of a gas barrier to the movement of gas may lead to a gradual build-up of gas on the landfill side of the barrier if the gas migration pathway is covered by low permeability materials. To relieve the potential build-up of gas, it may be necessary to install additional measures for venting the gas such as trenches filled with no-fines, granular material, e.g., gravel, connected to venting pipes which will provide a preferential pathway for the release of gas to atmosphere.</p> <p>According to the supporting document for Variation of Environmental Permit (VEP) for WENTX issued in 2022, the proposed landfill gas cut-off trench barrier has been adjusted with the revised boundary of WENTX site. It should be built along the boundary between WENTX landfill, I-PARK2 and T-PARK. This will cut off any gas migration to the I-PARK2 from the WENTX and the barrier should be installed under the WENTX project. It is also recommended that several landfill gas monitoring wells be installed into the ground on the development side of the gas barrier by I-PARK2 contractor. These are used to measure the concentrations of methane and carbon dioxide within the ground and hence determine the effectiveness of the measures in preventing LFG migration. The I-PARK2 contractor shall ensure that appropriate action (e.g. to notify the EPD and the WENTX landfill operator for inspection of the landfill gas cut-off trench barrier, to inspect sealing of joints and identify the cause, to rectify defects and seal the cracks if any, etc.), to be taken in the event of the trigger levels being exceeded, are specified in the detailed qualitative risk assessment as mentioned above.</p> <p>If ground or below ground level construction works will be carried out, the recommended precautionary and protection measures in Section 11.8.2.1 of the EIA report should be adopted, where applicable.</p>						



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11.8.3.2.1	<p><u>Building Protection Design – Passive Control</u></p> <p>Passive control measures for building structures with ground level or below ground rooms / voids including the following could be considered in the detailed design if necessary:</p> <ul style="list-style-type: none"> Gas-resistant polymeric membranes which can be incorporated into the floor or wall construction as a continuous sealed layer. Membranes should be able to demonstrate low gas permeability and resistant to possible chemical attack and may incorporate aluminium wafers to improve performance; Other building materials, e.g. dense well-compacted concrete or steel shuttering which provide a measure of resistance to gas permeation; Creation of a clear void under the structure which is ventilated by natural air movements such that any emissions of gas from the ground are mixed and diluted by air; Synthetic composite geotextile which provides a free-venting cellular structure and provide preferential pathways for release of gas; Passive control measures may be used in low and medium risk situations where gas emissions are expected to be at relatively low rates and concentrations and venting to atmosphere is unlikely to cause a hazard or nuisance due to the low concentration or high dilution which will occur; and Semi active' control such as the use of wind driven cowls and other devices which assist in the ventilation of gas but do not rely on electrically powered fans. 	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97) EIAO-TM
11.8.3.2.2	<p><u>Building Protection Design – Gas Detection System</u></p> <p>Gas detection systems include the following:</p> <ul style="list-style-type: none"> A series of sensors located in appropriate positions within a structure where gas has the potential to accumulate, e.g., near service entries, inside ventilation basements, cupboards or ducts. The sensors detect flammable gas by catalytic oxidation or infra-red principles, and pass data back to a control panel by electrical cabling. The control panel can be set to have two triggers activating alarms and may also be linked by 	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97) EIAO-TM



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	<p>wireless telemetry or internet off-site.</p> <ul style="list-style-type: none"> A series of sampling tubes which are located in appropriate positions and run back to a single measurement station operating on infra-red measurement principles. A pump automatically draws samples of air/gas along each tube in a pre-set pattern such that measurements of flammable and/or other gases (e.g., CO₂) can be taken at regular and frequent intervals. Triggers, alarms, wireless telemetry and internet systems can be incorporated. Manual monitoring can be conducted using a range of portable instruments. Instruments used in areas where flammable gas may be present should be intrinsically safe. <p>The future I-PARK2 contractor shall maintain and calibrate the gas detection system if any on a regular basis and ensure that appropriate emergency action, to be taken in the event of the trigger levels being exceeded, are specified in the detailed qualitative risk assessment as mentioned above. These should include procedures for evacuation if necessary.</p>						
11.8.3.2.3	<p><u>Building Protection Design – Maintenance of Control Measures</u></p> <p>Fundamental to the success of gas protection measures is the means by which they are monitored, managed and maintained, and thus all designs must be accompanied by a statement or set of procedures showing how the measures proposed can be confidently expected to operate satisfactorily for the duration of the potential gas-producing lifetime of the landfill.</p>	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	• LFG Hazard Assessment Guidance Note EPD/TR8/97)
11.8.3.3	<p><u>Design Measures for Sub-Surface Building Services</u></p> <p>Generic protection measures for the sub-surface building services including the following are recommended:</p> <ul style="list-style-type: none"> A gas barrier used to prevent movement of gas through services may form part of a more extensive barrier to prevent general mitigation towards the Project development. The gas barrier may be made of clay (or clay-rich soils), bentonite or polymeric membranes (e.g. HDPE). In the case of water pipes and sewers which are 	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	• LFG Hazard Assessment Guidance Note EPD/TR8/97)



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	<p>not always fully filled, water traps e.g. U-bends, should be provided to effectively seal off the conduit and prevent gas-phase transport; and</p> <ul style="list-style-type: none"> Vent pipes or gridded manhole covers may be used to avoid build-up of gas in underground utilities manholes. Venting stacks may be built into inspection chambers or connected to collection pipes in high permeability drainage layers adjacent to gas barriers. Under all circumstances, care should be taken when accessing any manhole chambers especially those which are not fitted with vents and necessary safety procedures must be followed. 						
11.8.3.4	<p><u>Guidance for Entry into Manholes and Chambers</u></p> <p>During the operation phase, any service voids, manholes, chambers or culvert within the proposed site, which is large enough to permit access to personnel should be subject to entry safety procedures. Works in confined spaces are controlled by the Factories and Industrial Undertakings (Confined Spaces) Regulation of the Factories and Industrial Undertakings Ordinance and the Safety Guide to Working in Confined Spaces should be followed to ensure compliance with the above regulations.</p> <p>In general, when work is being undertaken in confined spaces, sufficient approved resuscitation equipment, breathing apparatus and safety torches should be made available. Persons involved in or supervising such work should be trained and practiced in the use of such equipment. A permit-to-work system for entry into confined spaces should be developed by an appropriately qualified person and the system should be consistently employed. The safety measures recommended in Chapter 7 of the Landfill Gas Hazard Assessment Guidance Note should also be strictly followed.</p> <p>All the access to confined spaces should be restricted only to authorized personnel who are aware of the landfill gas hazard. No general public should be permitted or allowed to access the service voids, manholes, chambers or wells.</p>	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97)
11.8.3.5	<p><u>Landfill Gas Monitoring</u></p> <p>Regular monitoring of landfill gas should be done at the monitoring wells as well as at the underground service voids and manholes by the I-PARK2 contractor. The maintenance</p>	Within I-PARK2/ Design and	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> LFG Hazard Assessment Guidance Note EPD/TR8/97)



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	and monitoring programmes shall be included in the detailed qualitative risk assessment as mentioned above to ensure the continued performance of the proposed control measures.	Operation Phases					
11.8.3.6	<p><u>Protection Measures for Community Facilities</u></p> <p>At I-PARK2, community facilities are currently under planning, and while the actual utilization and design of these facilities remain pending, the following safety measures will be enforced during the operational phase of the community facilities if necessary:</p> <ul style="list-style-type: none"> • All personnel who work on site and visitors will be made aware of the potential hazards relating to landfill gas. Safety notices in both Chinese and English shall be prominently displayed around the site to warn individuals of potential hazards. • Smoking and open fires will be strictly prohibited. • Regular monitoring of landfill gas and maintenance protocols will be conducted at the community facilities to ensure safety. • Specific precautions will be implemented for all rooms, including the use of air conditioning with natural and mechanical ventilation, application of gas-proofing coatings on ground floor slabs, installation of gas alarms, and restriction of access to invited or registered guests/visitors. 	Within I-PARK2/ Design and Operation Phases	I-PARK2 Contractor	√		√	<ul style="list-style-type: none"> • LFG Hazard Assessment Guidance Note EPD/TR8/97) • EIAO-TM
11.8.3.7	<p><u>Design of LFG Protection Measures</u></p> <p>As this Project is at the Preliminary Design Stage, a detailed design is not available yet and the qualitative landfill gas hazard assessment in this EIA report is just a preliminary one based on limited available information. When the detailed design of the I-PARK2 is available, the I-PARK2 contractor is required to undertake further landfill gas hazard assessment to take account of the more readily available detailed information to finalize the design of the landfill gas protection measures recommended in this report. During the detailed design stage, a review of this preliminary qualitative risk assessment should be carried out and a detailed qualitative landfill gas risk assessment as described in Section 1.15 and Chapter 6 of the Landfill Gas Hazard Assessment Guidance Note should be prepared. The detailed qualitative landfill gas risk assessment together with the</p>	Within I-PARK2/ Design Phase	I-PARK2 Contractor	√			<ul style="list-style-type: none"> • LFG Hazard Assessment Guidance Note EPD/TR8/97) • EIAO-TM



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	detailed design of landfill gas protection measures and a landfill gas monitoring programme should be submitted to EPD for vetting. The design of the landfill gas protection measures to be adopted on-site should be performed by a competent professional person who has knowledge on LFG protection measures appointed by the contractor of the I-PARK2. The detailed design of the landfill gas protection measures shall form part of the detailed qualitative risk assessment as stated above, which shall be certified by the Environmental Team Leader and verified by the Independent Environmental Checker before submission to EPD for vetting. The contractor should ensure that the required protection measures are implemented and constructed in accordance with the design and a maintenance and monitoring programme should be established to ensure the continued performance of the implemented protection measures. The above requirements should be included in the tender documents of the I-PARK2.						

*D = Design; C = Construction; O = Operation