

8 WASTE MANAGEMENT IMPLICATIONS

8.1 Introduction

8.1.1 Waste management will be the Contractor's responsibility to ensure that all wastes produced during the construction works of the Project are handled, stored and disposed of in accordance with good waste management practices and EPD's regulations and requirements.

8.1.2 Waste materials generated during the construction works, such as construction and demolition (C&D) material, dredged marine sediment, general refuse and chemical wastes, are recommended to be audited at regular intervals (at least once per week) to ensure that proper storage, transportation and disposal practices are being implemented. This monitoring of waste management practices will ensure that these solid and liquid wastes are not disposed into the nearby harbour waters. The Contractor will be responsible for the implementation of any mitigation measures to minimise waste or redress problems arising from the waste materials.

8.2 Waste Control and Mitigation Measures

8.2.1 Mitigation measures for waste management are summarised below. With the appropriate handling, storage and removal of waste arisings during the decommissioning works as defined below, the potential to cause adverse environmental impacts will be minimised.

Good Site Practices

8.2.2 Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the decommissioning works include:

- Nomination of an approved person, such as a site manager, 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 in proper waste management and chemical waste handling procedures;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).

Waste Reduction Measures

8.2.3 Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sorting C&D waste from demolition of the remaining structures to recover recyclable portions such as metals;

- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
 - Encouraging collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force;
 - Recycling any unused chemicals or those with remaining functional capacity;
 - Proper storage and site practices to minimise the potential for damage or contamination of construction materials;
 - Planning and stocking construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.
- 8.2.4 In addition to the above measures, specific mitigation measures are recommended below for the identified waste arisings to minimise environmental impacts during handling, transportation and disposal of these wastes.

Measures for Dredged Marine Sediment

- 8.2.5 The basic requirements and procedures for dredged sediment disposal are specified under the ETWB TCW No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the MFC, while the licensing of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the Director of Environmental Protection (DEP).
- 8.2.6 The dredged marine sediments would be loaded onto barges and transported to the designated disposal sites allocated by the MFC depending on their level of contamination. Sediment classified as Category L would be suitable for Type 1 - Open Sea Disposal. Contaminated sediment would require either Type 1 – Open Sea Disposal (Dedicated Sites), Type 2 - Confined Marine Disposal or Type 3 – Special Treatment / Disposal and must be dredged and transported with great care in accordance with ETWB TCW No. 34/2002. If any sediment suitable for Type 3 disposal is identified, it is the responsibility of the contractor, in consultation with DEP, to identify and agree with him/her, the most appropriate treatment and/or disposal arrangement. Subject to the final allocation of the disposal sites by MFC, the dredged contaminated sediment must be effectively isolated from the environment upon final disposal and shall be disposed of at the East Sha Chau Contaminated Mud Pits that are designated for the disposal of contaminated mud in Hong Kong.
- 8.2.7 It will be the responsibility of the contractor to satisfy the appropriate authorities that the contamination levels of the marine sediment to be dredged have been analysed and recorded. According to the ETWB TCW No. 34/2002, this will involve the submission of a formal Sediment Quality Report to the DEP, prior to the dredging contract being tendered. The contractor for the dredging works shall apply for allocation of marine disposal sites and all necessary permits from relevant authorities for the disposal of dredged sediment. During transportation and disposal of the dredged marine sediments requiring Type 1, Type 2 and Type 3 disposal, the following measures should be taken to minimise potential impacts on water quality:
- Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.
 - Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as required under the Dumping at Sea Ordinance and as specified by the DEP.

- Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.
- 8.2.8 Negligible dust impacts would be expected from dredging activities. In order to further ensure compliance with the Air Quality Objectives at the air sensitive receivers, requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during dredging operations. The dredged sediment placed on barge should be properly covered as far as practicable to minimise the potential odour emissions during the dredging operation and transportation of the dredged sediment.

Measures for Construction and Demolition Material

- 8.2.9 The C&D material should be sorted on-site into inert C&D material (that is, public fill) and C&D waste. The inert C&D material would require disposal to the designated public fill reception facility. C&D waste, such as steel and other metals should be re-used or recycled and, as a last resort, disposed of to landfill. It is recommended that a suitable area be designated to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials.
- 8.2.10 In order to monitor the disposal of public fill and C&D waste at public filling facilities and landfills, respectively, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.

Measures for General Refuse

- 8.2.11 General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem.

Measures for Chemical Wastes

- 8.2.12 After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.
- 8.2.13 **Table 8.1** provides a summary of the various waste types likely to be generated during the decommissioning works, together with the recommended handling and disposal methods.

Table 8.1 Summary of Waste Handling Procedures and Disposal Routes

Waste Type	Generated From Works Item	Total Quantity Generated	Quantity to be disposed or re-used	Handling	Disposal
C&D Material	600m runway gap opening	1,990,000 m ³	Re-use 975,000 m ³	Dust and water Dust quality mitigation measures	Sort on-site into Inert C&D material to be disposed off-site to the designated public fill reception facility, C&D material should be reused as far as practicable
	Trunk Road T2	503,000 m ³	Re-use 203,000 m ³		
	Kai Tak Nullah modification works	600,000 m ³	Re-use 300,000 m ³		
	Site formation cum Marine Works for cruise terminal	958,000 m ³	Re-use 237,000 m ³		
	Central Kowloon Route (depressed road and tunnel sections in North Apron)	304,000 m ³	Re-use 66,000 m ³		
	Shatin to Central Link (SCL) (To Kwa Wan Station and the Kai Tak Station) construction works	717,000 m ³	Re-use 282,000 m ³		
	Public landing steps cum fireboat berth	77,000 m ³	Re-use 664,200 m ³		
	New sewage pumping stations serving the planned Kai Tak Development (including PS6)	54000 m ³ in total			
	Decommissioning of the remaining parts of the former Kai Tak Airport and decontamination of the south apron area	- 9,500 m ³ for demolition of ex-GFS Building - 5,000 m ³ for demolition of ASDE radar tower - 28,750 m ³ for decommissioning and decontamination of the south apron			
	New Distributor Roads Serving the Planned KTD	2217 m ³			
Other miscellaneous works ¹	697,533 m ³				

¹ Other miscellaneous works include public landing steps, sewage pumping stations, decommissioning works, underpass, underground shopping streets, subways, box culverts, roadworks, drains and sewers etc

Waste Type	Generated From Works Item	Total Quantity Generated	Quantity to be disposed or re-used	Handling	Disposal
Dredged Marine Sediment	Dredging of seabed in the proposed manoeuvring basin of cruise terminal (Category H and Category M sediment)	430,000 m ³ <u>Stage 1:</u> 210,000 m ³ & <u>Stage 2:</u> 220,000m ³	Dispose 430,000 m ³ (Stage 1: 210,000m ³ & Stage 2: 220,000m ³)	Dust, odour, noise , water quality mitigation measures	Type 1 - Open Sea Disposal (Dedicated Sites) or Type 2 - Confined Marine Disposal at disposal site(s) to be allocated by MFC
	Dredging of seabed in the proposed manoeuvring basin of cruise terminal (Category L sediment)	950,000 m ³ <u>Stage 1:</u> 490,000m ³ (including 20,000m ³ from removal of the Kai Tak Runway submarine outfall) & <u>Stage 2:</u> 460,000m ³	Dispose 950,000 m ³ (Stage 1: 490,000m ³ & Stage 2: 460,000m ³)		Type 1 - Open Sea Disposal - gazetted marine disposal ground allocated by MFC
	Maintenance dredging of cruise terminal (sediment category to be determined by carrying out sampling and testing in accordance with ETWB TCW No. 34/2002)	350,000 m ³	Dispose 350,000 m ³		Disposal requirement to be determined based on the sampling and testing results in accordance with ETWB TCW No. 34/2002
	600m runway opening (Category H sediment)	3,200 m ³	Dispose 3,200 m ³		
	Localized maintenance dredging of KTAC (Category H sediment)	120,000 m ³	Dispose 120,000 m ³		
	Public landing step cum fireboat berth (Category L sediment)	600 m ³	Dispose 600 m ³		
	Immersed tunnel sections of road T2 (Category H sediment)	2,260,000 m ³	Dispose 2,260,000 m ³		
	CKR (Category H sediment)	360,000 m ³	Dispose 360,000 m ³		
	Relocation of the Hong Kong China Gas Submarine Main	442,000 m ³	Dispose 442,000 m ³		

Waste Type	Generated From Works Item	Total Quantity Generated	Quantity to be disposed or re-used	Handling	Disposal
Chemical Wastes	Lubrication oil, fuel etc. from operation, maintenance, and servicing of construction and decontamination treatment plant and equipment, and from decontamination works	Few cubic metres per month (preliminary estimate)	Few cubic metres per month (preliminary estimate)	Recycle on-site or by licensed companies Stored on-site within suitably designed containers	Chemical Waste Treatment Facility or other licensed facility
General Refuse	Waste paper, discarded containers etc. generated from workforce	Few cubic metres per month (preliminary estimate)	Few cubic metres per month (preliminary estimate)	Provide on-site refuse collection points	Refuse station for compaction and containerisation and then to landfill

8.2.14 The implementation schedule of the recommended mitigation measures is presented in **Appendix A4**.