Contents

Tables

Figures

Appendices

6 Waste Management Implications

6.1 Legislation, Standards and Guidelines

6.1.1 General

6.1.1.1 The relevant legislation, standards and guidelines applicable to the study for the assessment of waste management implications include:

- Criteria and guidelines for evaluating and assessing waste management implication as specified in Annexes 7 and 15 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM);
- Waste Disposal Ordinance (WDO) (Cap. 354) and subsidiary regulations;
- Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Public Health and Municipal Services Ordinance (Cap. 132) – Public Cleansing and Prevention of Nuisances Regulation;
- Dumping at Sea Ordinance (DASO) (Cap. 466);
- Environment, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 34/2002, Management of Dredged/Excavated Sediment; and
- Works Bureau Technical Circular (WBTC) No. 12/2000 Fill Management.

6.1.1.2 Relevant regulations under the WDO include:

- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C); and
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).

6.1.2 Criteria and Guidelines for Evaluating and Assessing Waste Management Implications as specified in Annexes 7 and 15 of the EIAO-TM

6.1.2.1 Annex 7 of the EIAO-TM describes the criteria for assessing waste management implication which include provision of adequate waste handling, storage, collection, transfer, treatment and disposal facilities during both construction and operational phases, provision of adequate facilities to facilitate waste reduction, exploration of beneficial use of waste generated as well as alternatives which generate minimal amount of waste.

6.1.2.2 Annex 15 of the EIAO-TM describes the approaches and methodologies for assessment of waste management implications arising from the project.

6.1.3 Waste Disposal Ordinance

6.1.3.1 The WDO prohibits any unauthorised disposal of wastes. Construction waste, defined under Cap. 354N of the WDO, refers to a substance, matter or thing which is generated from construction works. It includes all abandoned materials, whether processed or stockpiled or not, before being abandoned, but does not include sludge, screenings or matter removed or generated from desludging, desilting or dredging works.

6.1.3.2 Under the WDO, wastes can only be disposed of at designated waste disposal facilities licensed by Environmental Protection Department (EPD). Breach of this Ordinance can lead to a fine and/ or imprisonment. The WDO also stipulates the requirements for issuing licenses for the collection and transportation of wastes.

6.1.4 Waste Disposal (Chemical Waste) (General) Regulation

6.1.4.1 Issued under the WDO, the Waste Disposal (Chemical Waste) (General) Regulation controls the possession, provides regulations for chemical waste control, and administers the possession, storage, collection, transport and disposal of chemical wastes. EPD has also issued a "guideline" document, the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), which details how the Contractor should comply with the regulations on chemical wastes.

6.1.5 Waste Disposal (Charges for Disposal of Construction Waste) Regulation

6.1.5.1 Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material, and construction waste delivered to a Public Fill Reception Facility for disposal must consist entirely of inert material.

6.1.6 Land (Miscellaneous Provisions) Ordinance

6.1.6.1 The inert portion of Construction and Demolition (C&D) materials may be taken to Public Fill Reception Facilities (PFRFs) operated by the Civil Engineering and Development Department (CEDD). The Ordinance requires Dumping Licenses (to be issued by CEDD) to be obtained by individuals or companies, who deliver inert C&D materials to the public filling facilities.

6.1.6.2 Individual licenses and windscreen stickers are issued for each vehicle involved. Public filling facilities will accept only inert building debris, soil, rock and broken concrete. The material should, however, be free from marine mud, household refuse, plastic, metal, individual and chemical wastes, animal and vegetable matters and any other materials considered unsuitable by the Filling Supervisor.

6.1.7 Public Cleansing and Prevention of Nuisances Regulation

6.1.7.1 The regulation provides control on illegal dumping of wastes on unauthorised (unlicensed) sites.

6.1.8 Dumping at Sea Ordinance

6.1.8.1 According to the DASO, a permit from EPD is required if any waste producer intends to dump materials from vessels to designated marine dumping areas. The Authority will consider a number of factors including sources and nature of materials to be dumped, dumping rates, need for inspection / testing, water pollution avoidance measures, etc. before determining whether such a permit would be granted and, where deemed necessary, any conditions to be complied with. Breach of the requirements in the permit would result in a fine and/or imprisonment.

6.1.9 Environment, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 34/2002, Management of Dredged/Excavated Sediment

6.1.9.1 ETWB TC(W) No. 34/2002 sets out the procedure for seeking approval to dredge/ excavate sediment and the management framework for marine disposal of such sediment. It outlines the requirements for sediment quality assessment and provides guidelines for the classification of sediment based on their contaminant levels. It also explains the disposal arrangement for the classified sediment.

6.1.10 Works Bureau Technical Circular No. 12/2000 Fill Management

6.1.10.1 WBTC No. 12/2000 explains how fill resources, C&D material, and dredged/excavated sediment disposal are managed.

6.1.11 Other Relevant Guidelines

6.1.11.1 The following documents and guidelines in **Table 6.1** are also related to waste management and disposal:

Table 6.1 Other relevant documents and information

Bureau / Department	Documents / Guidelines / Technical Circulars
Development Bureau	• WBTC No. 2/93, Public Dumps • WBTC No 2/93B, Public Filling Facilities • WBTC No. 16/96, Wet Soil in Public Dumps • WBTC Nos. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects • WBTC No. 19/2001, Metallic Site Hoardings and Signboards • WBTC No. 12/2002, Specifications Facilitating the Use of Recycled Aggregates • DEVB TC(W) No. 06/2010, Trip-ticket System for Disposal of Construction and Demolition Materials • DEVB TC(W) No. 08/2010, Enhanced Specification for Site Cleanliness and Tidiness • DEVB TC(W) No. 09/2011, Enhanced Control Measures for Management of Public Fill • ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites
CEDD	• Project Administration Handbook for Civil Engineering Works in 2020, Management of C&D Materials • CEDD TC No. 11/2019, Management of Construction and Demolition Materials
EPD	• A Guide to the Chemical Waste Control Scheme • A Guide to the Registration of Chemical Waste Producers • Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes • Monitoring of Solid Waste in Hong Kong 2021

6.2 General Principles

6.2.1 Waste Management Hierarchy

6.2.1.1 The waste management hierarchy has been applied in the assessment and development of mitigation measures for waste. The waste management hierarchy is a concept which shows the desirability of various waste management methods and comprises the following in order of preference:

- Avoidance;
- Minimization;
- Recycling/reuse;
- Treatment; and
- Disposal.

6.2.2 Avoiding, Reducing, Reusing and Recycling Opportunities

6.2.2.1 All opportunities for avoiding, reducing, reusing and recycling of waste have been explored based on the following factors:

- Avoiding or minimizing sediment and waste generation throughout design, construction and operational phases;
- Adopting better management practices to promote segregation materials;
- Reusing and recycling on site or under other projects as far as practicable; and
- Diverting any C&D materials to public fill reception facilities.

6.2.3 Analysis of Activities and Waste Generation

6.2.3.1 The quantity, quality and timing of the waste arising as a result of the construction activities of the Project and its associated works have been estimated, based on the sequence and duration of these activities.

6.2.3.2 The design, general layout, construction methods and programme to minimize the generation of inert C&D materials for the construction works have been considered.

6.2.3.3 The potential waste management implications associated with the handling, transportation and disposal of non-inert C&D materials arising from the construction works have been assessed with reference to the following approach:

- Estimation of the types, timing and quantities of the non-inert C&D materials to be generated; and
- Assessment of the potential waste management implications on the collection, transfer and disposal of non-inert C&D materials.

6.2.4 Proposal for Waste Management

6.2.4.1 Prior to considering the disposal options for various types of wastes, opportunities for reducing waste generation, on-site or off-site reuse and recycling have been evaluated. Measures which can be taken in the design phase (e.g. modifying the

design approach) and in the construction phase for maximising waste reduction have been separately considered.

6.2.4.2 After considering the opportunities for reducing waste generation and maximizing reuse, the types and quantities of the remaining wastes required to be disposed of have been estimated and the disposal options for each type of wastes have been described. The disposal method recommended for each type of wastes has taken into account the result of the assessment.

6.2.4.3 The impacts caused by handling (including labelling, packaging and storage), collection, and reuse/disposal of waste have been addressed and appropriate mitigation measures have been proposed.

6.3 Construction Phase

6.3.1 Identification and Evaluation of Waste Management Implications

6.3.1.1 During the construction phase, the main activities that will potentially generate waste include excavation, tunnelling (e.g. drill-and-blast, mining), demolition and construction of structures and dredging of sediments. Typical waste types associated with these activities include:

- C&D materials;
- Marine sediments;
- Chemical waste;
- General refuse; and
- Floating refuse.

6.3.2 C&D Materials

6.3.2.1 C&D material will be mainly generated from site formation, demolition of existing structures, earthworks, tunnelling and construction works. The waste will mainly consist of inert soft C&D materials.

6.3.2.2 The inert portion of the C&D materials including broken concrete, rock, etc. would be reused on-site or offsite in concurrent projects as far as possible before delivering to public fill reception facilities and the non-inert portion including vegetation, timber, etc. would be disposed of at landfill.

6.3.2.3 C&D material will be minimised through careful planning and good site practice during construction. This includes the use of non-timber formwork and temporary works, and on-site sorting of the C&D material for and recycling as far as practicable. With the proper implementation of good site practices and mitigation measures, potential impacts associated with on-site handling and transportation to disposal sites are not expected.

6.3.2.4 Summary of estimated amount of C&D material to be generated during construction phase and their estimated yearly amount are shown in **Table 6.2** and **Table 6.3** below.

Table 6.2 Summary of estimated amount of C&D materials to be generated during construction phase

Location	Works	Estimated Amount of C&D Material to be Generated, m^3[5]				
		Inert C&D Material[1]			Non-inert C&D Material[2]	
		Soft Inert Material [3]	Rock	AHM [4]	Top Soil, vegetation, timber	Steel
Lam Tei Quarry Interchange	Slope Works	0	960,800	-	-	-
	Viaducts	2,200	41,500	-	-	-
Lam Tei Tunnel	Tunnel	67,400	1,279,600	-	-	-
So Kwun Wat Interchange	Slope Works	728,700	566,300	-	36,435	-
	Viaducts	5,000	93,200	-	-	-
So Kwun Wat Link Road	Tunnel	24,500	464,100	-	-	-
	Slope Works	173,800	173,800	-	8,690	-
	Viaducts	300	5,100	-	-	-
Tai Lam Chung Tunnel	Tunnel	45,200	858,800	-	-	-
Tsing Lung Tau Interchange	Slope Works	137,800	551,200	-	6,890	-
	Viaducts	800	13,600	-	-	-
Tsing Lung Bridge	North (Anchorage)	89,300	357,200	-	-	-
	North (Foundations)	19,000	11,400	-	-	-
	South (Anchorage)	61,000	244,000	-	-	-
	South (Foundations)	14,000	8,700	-	-	-
Tuen Mun Road	Re-alignment	-	-	17,700	-	700
North Lantau Interchange	Slope Works	226,900	2,042,100	-	11,345	-
	Viaducts	700	12,600	-	-	-
Subtotal		**1,596,600**	**7,684,000**	**17,700**	**63,360**	**700**
Total		**9,298,300**			**64,060**	

Notes:

[1] "Inert C&D Material", also known as public fill, includes debris, rubble, earth and concrete which is suitable for land reclamation and site formation.

[2] "Non-inert C&D Material" involved in the Project includes top soil, vegetation, timber and steel. In contrast to public fill, non-inert waste is not suitable for land reclamation and subject to recovery of reusable/ recyclable items, is disposed of at landfills.

[3] "Soft Inert C&D Material" mainly refers to excavated soil, etc.

[4] "AHM (Artificial hard materials)" includes, but not limited to, broken concrete, asphalt, bitumen, granular materials, debris, and rubble, etc.

[5] In-situ volume is used.

Table 6.3 Summary of yearly estimated amount of C&D materials to be generated during construction phase

C&D Material		Estimated Amount of C&D Material to be Generated, m^3[5]								
		2026	2027	2028	2029	2030	2031	2032	2033	Total
Inert C&D Material (m^3) [1]	Soft Inert Material [3]	150,300	-	813,400	624,200	2,200	6,500	-	-	**9,298,300**
	Rock	380,000	691,200	1,340,970	2,906,490	1,941,480	417,060	5,610	1,190	
	AHM [4]	-	-	-	8,850	8,850	-	-	-	
Non-inert C&D Material (m^3) [2]	Top Soil, vegetation, timber	6,890	-	56,470	-	-	-	-	-	**64,060**
	Steel	-	-	-	700	-	-	-	-	

Notes:
[1] "Inert C&D Material", also known as public fill, includes debris, rubble, earth and concrete which is suitable for land reclamation and site formation.
[2] "Non-inert C&D Material" involved in the Project includes top soil, vegetation, timber and steel. In contrast to public fill, non-inert waste is not suitable for land reclamation and subject to recovery of reusable/ recyclable items, is disposed of at landfills.
[3] "Soft Inert C&D Material" mainly refers to excavated soil, etc.
[4] "AHM (Artificial hard materials)" includes, but not limited to, broken concrete, asphalt, bitumen, granular materials, debris, and rubble, etc.
[5] In-situ volume is used.

6.3.2.5 Fill material is required for major construction activities such as site formation, earthworks and reclamation works. However, excavated materials generated from the Project could be reused to meet the required demand. Based on current construction programme and logistics, volume of excavated materials would be sufficient and no imported fill are required for the Project.

6.3.3 Marine Sediments

6.3.3.1 A Sediment Sampling and Testing Plan (SSTP) as shown in **Appendix 6.1** documented the methodologies of the marine-based site investigation (SI) has been submitted and approved by EPD in June 2022. The corresponding marine-based SI works was commenced in September 2022 based on the approved SSTP to characterise the sediment concerned.

6.3.3.2 The approved SSTP mentioned above only serves the purpose of fulfilling this EIA study under the EIAO. Based on **Section 2.9,** the dredged marine-based sediment will be reused by dumping at a mud pit within the reclamation area of Tsing Lung Tau. In case disposal of land-based sediment is required for construction works proceeded after the approval of this EIA report at North Lantau within the Project Site where sediments will be encountered, separate submission to EPD will be required when applying for dumping permit under DASO in the event that marine disposal of excavated sediment is involved. Confirmation from Marine Fill Committee (MFC) on the proposed disposal arrangement will be obtained before commencement of the construction works. Dredging/excavation work should not be proceeded until all issues on management of dredged/excavated sediments have been resolved and all relevant arrangements have been endorsed by the relevant authorities including MFC and EPD.

Marine-based Sediment

6.3.3.3 The major source of marine-based sediment comes from piling works for bridge tower construction, reclamation work and seawall construction at Tsing Lung Tau.

To minimize amount of excavated sediment, the extent of reclamation work at Tsing Lung Bridge was adjusted such that the southern bridge tower can be setback from offshore to onshore when compared with the preliminary design presented in the Project Profile, thereby eliminating the need for reclamation works at North Lantau. As a result, no excavated sediment would be encountered at North Lantau and the existing sediment would be left in place without disturbance.

6.3.3.4 Despite reclamation works for the northern anchor at Tsing Lung Tau is unavoidable due to local constraints (i.e. Tuen Mun Road, existing buildings, etc.), the extent of reclamation area is reduced by approximately 0.5ha when compared to preliminary design presented in the Project Profile and thus the amount of excavated sediment is reduced. Considering reclamation is unavoidable at Tsing Lung Tau, non-dredged reclamation methods has been explored but was considered infeasible due to engineering and geological constraints. In view of this, only the thin marine sediment layer within the reclamation area would require dredging. The construction works has been evaluated with optimized reclamation extent to minimize dredging and excavation of marine sediment as far as possible. The dredged marine sediment will be reused by dumping at a mud pit within the reclamation area of Tsing Lung Tau as stated in **Section 2.9**.

6.3.3.5 Beneficial reuse of on-site treated sediment as backfill materials will be considered as far as practicable during the construction stage before the disposal of excavated sediment. The disposal options for each of the excavated sediment were determined in accordance with ETWB TC(W) No. 34/2002 with reference to sampling categories identified during sediment assessment. Estimated amount of marine-based sediment generated during the construction works is summarized in **Table 6.4** below.

Table 6.4 Summary of estimated amount of marine-based sediment generated during the construction works

Activities	Estimated Amount of Marine-based Sediment Generated, m^3
Dredging works for reclamation at Tsing Lung Tau	30,000

6.3.3.6 4 drillholes (TLB/VC1 to TLC/VC4) were proposed based on tentative piling locations for the construction of bridge tower for Tsing Lung Bridge. However, no marine sediments were encountered at TLB/VC2 and TLB/VC4, sediment samples could only be collected at 2 drillholes TLB/VC1 and TLB/VC3 for further classification. A total of 7 sediment samples had been collected from the 2 drillholes at TLB/VC1, TLB/VC3 (see **Figure 6.1**) and tested. The chemical testing results indicate all of the samples were Category L (contaminations concentrations ≤ Lower Chemical Exceedance Level (LCEL)). Summary of the chemical screening tests results and the corresponding disposal options are given in **Table 6.5** below. The detail result summary is given in **Appendix 6.2**.

Table 6.5 Summary of chemical screening results

Activities	No. of Samples	Biological Screening	Remarks
Category L	7	N/A	Type 1 – Open Sea Disposal

Land-based Sediment

6.3.3.7 The major source of land-based sediment comes from piling works for construction of slip road at North Lantau which may result in excavation of land-based sediment. Therefore, 1 drillhole is proposed based on the tentative piling locations for the construction work (see **Figure 6.1**). However, as the area in North Lantau is currently occupied by others, the sampling work will be conducted when access is available to characterise the sediment concerned. **Table 6.6** below summarizes the estimated amount of land-based sediment generated during the construction works. Beneficial reuse of on-site treated sediment as backfill materials will be considered as far as practicable during the construction stage before the disposal of excavated sediment. The disposal options for each of the excavated sediment were determined in accordance with the ETWB TC(W) No. 34/2002 with reference to sampling categories identified during sediment assessment.

Table 6.6 Summary of estimated amount of land-based sediment generated during the construction works

Activities	Estimated Amount of Land-based Sediment Generated, m^3
Piling works for construction of slip road at North Lantau	1,000

6.3.4 Chemical Waste

6.3.4.1 Materials classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. The major chemical waste types arising from the construction sites may include the followings:

- Scrap batteries;
- Spent hydraulic oil and waste fuel;
- Spent lubrication oil and cleaning fluids from mechanical machinery; and
- Spent solvent from equipment cleaning activities.

6.3.4.2 Chemical waste may pose the following potential environmental, health and safety hazards if not stored and disposed of appropriately:

- Toxic effects to workers;
- Adverse impacts on water quality from spills and associated adverse impacts on freshwater biota; and
- Fire hazards.

6.3.4.3 It is difficult to quantify the amount of chemical waste as it will be highly dependent on the Contractor's on-site maintenance practice and the quantities of plant and vehicle utilized. Nevertheless, it is anticipated that the quantity of chemical waste, such as lubricating oil and solvent produced from plant maintenance, will be in the order of few hundreds litres per month.

6.3.4.4 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 Waste published by the EPD. Chemical waste should be collected by a licensed collector and to be disposed of to the Chemical Waste Treatment Centre (CWTC) in Tsing Yi. Opportunities for the reuse and recycling of possible chemical waste to be generated will be taken wherever possible. Mitigation measures for chemical wastes are detailed in **Section 6.3.9.13** to **Section 6.3.9.14**. Provided that the handling, storage and disposal of chemical waste are in accordance with these requirements, potential environmental impacts (including potential hazard, air and odour emissions, noise, wastewater discharge and public transport) are not expected.

6.3.5 General Refuse

6.3.5.1 The construction workforce would generate refuse comprising food wastes, wastepaper, aluminium cans and plastic bottles during construction period.

6.3.5.2 The storage of general refuse may give rise to adverse environmental impacts. These would include water quality, odour and visual impact in the form of windblown litter. The construction site may also attract pests and vermin if the storage areas are not well maintained and cleaned regularly. In addition, disposal of waste at sites other than the approved disposal facilities could also lead to similar adverse impacts to those sites.

6.3.5.3 The number of workforce to be employed for the Project is not available at this stage, but it anticipated to be about 4000 workforce at peak time for the Project. Based on the generation rate of 0.65 kg/person/day, the total refuse generated per day would be about 2600 kg/day. The estimated amount of general refuse generated during construction phase is summarized in **Table 6.7**.

Table 6.7 Summary of general refuse during construction phase

Phasing	Period	No. of workforce	Daily waste generation (kg/day) [1]	Duration (month)	Approximate total amount generated (tonne) [2]
Site formation / Earthworks	Q1/2026 – Q1/2028	1,600	1,040	54	1,460
Construction Works	Q1/2028 – Q4/2033	4,000	2,600	48	3,245

Notes:
[1] Adopt generation rate of 0.65 kg/person/day
[2] Assume 26 working days per month

6.3.5.4 Mitigation measures for general refuse are detailed in **Section 6.3.9.15** to **Section 6.3.9.16**. Provided that the mitigation measures are adopted, the potential environmental impacts caused by the storage, handling transport and disposal of general refuse would be minimized and the associated adverse environmental impact is not anticipated.

6.3.6 Floating Refuse

6.3.6.1 During construction phase, the construction workforce may generate floating refuse (e.g. waste paper and empty containers) while working within area of Tsing Lung Tau near open sea. On the other hand, floating refuse may be trapped along the Project shoreline or unintentionally brought from the project site into the shoreline during heavy rains or typhoons. With proper waste management and training to workers, floating refuse arising from the construction activities is not anticipated.

6.3.6.2 For floating refuse not generated from the Project (i.e. floating refuse from open sea near Tsing Lung Tau through tidal water, any floating refuse trapped within the Project Area will be collected by contractor and disposed of to landfill. As advised by Marine Department (MD), there was no record of floating refuse collected in the vicinity of Tsing Lung Tau. A copy of email reply from MD is provided in **Appendix 6.3**. The floating refuse to be trapped within the Project Area is estimated at 1.5m^3 as conservative during each year of construction from the newly constructed seawall based on the estimation indicated in **Section 6.4.4**.

6.3.7 Summary of Waste to be Generated, Reused, Recycled, Disposed of and Proposed Handling Method/Disposal Outlets

6.3.7.1 **Table 6.8** provides a summary of the various waste types identified above during construction phase of the Project with their proposed handling method/disposal outlets as discussed in above sections.

Table 6.8 Summary of estimated amount of waste to be generated, reused/recycled, disposed and their proposed handling method/ disposal outlet

Type of Waste	Source	Total Quantity to be Generated	Total Quantity to be Reused/ Recycled	Total Quantity to be Disposed	Proposed Handling Method/ Disposal Outlets	Frequency of trip for the identified waste types
Inert C&D Materials – Soft inert materials, mixed ground, rock, AHM	Site formation, earthworks, tunnelling and construction works	9,298,300 m^3	1,052,600 m^3	2,307,700 m^3 (by trucks) 5,938,000 m^3 (by barges)	Reuse within the site/ delivered to Tuen Mun Area 38 Fill Bank	354 truck trip/ day 3 barge trip/ day (6 barge trip/ day at peak)
Non-inert C&D Materials – Top soil, vegetation, Timber, Steel	Site clearance and demolition of existing structures	64,060 m^3	0 m^3	64,060 m^3	Disposal to WENT	10 trip/ day
Marine Sediments	Dredging works for reclamation	31,000 m^3	30,000 m^3	1,000 m^3	Reuse by dumping at a proposed	1 trip/ day

Type of Waste	Source	Total Quantity to be Generated	Total Quantity to be Reused/ Recycled	Total Quantity to be Disposed	Proposed Handling Method/ Disposal Outlets	Frequency of trip for the identified waste types
	and foundation works for slip road				mud pit in reclamation area at Tsing Lung Tau / Dispose to other disposal site subject to allocation of MFC	
Chemical Waste	Scrap batteries, spent hydraulic oil, waste fuel, lubrication oil, cleaning fluids and solvent	Few hundred litres per month			Recycle at appropriate facility where possible/ disposal at CWTC	1 trip/ day
General Refuse	Food wastes, wastepaper, aluminium cans and plastic bottles generated from construction workforce	4,705 tonnes			Disposal to WENT	1 trip/ day
Floating Refuse	Floating refuse trapped within the Project Area	1.5 m^3/year			Disposal to WENT	1 trip/ year

Notes:
[1] Frequency of truck trip is based on assumed capacity of 6.5 m^3 per truck with bulk factor of 1.4 and 26 days per month. The duration of the major excavation and construction is expected to be 54 months in total.
[2] Frequency of barge trip is based on assumed capacity of 2,000 m^3 per barge with bulk factor of 1.4 and 26 days per month. The duration of the major excavation and construction is expected to be 54 months in total.

6.3.8 General Mitigation Measures

6.3.8.1 The mitigation measures for construction phase are recommended based on the waste management hierarchy principles. Recommendations of good site practices, waste reduction measures as well as the waste storage, collection and transportation are described in the following sub-sections.

Good Site Practices

6.3.8.2 Adverse waste management implications are not expected, provided that good site practices are strictly implemented. The following good site practices are recommended throughout the construction activities:

- Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of 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 site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimize 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;
- Provision of wheel washing facilities at site exit before the trucks leave the works areas to minimize dust disturbance due to the trucks transportation to the public road network; and
- The Contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TC(W) No. 19/2005. The WMP should be submitted to the Project Manager for approval.

Waste Reduction Measures

6.3.8.3 Amount of waste generation can be significantly reduced through good management and control. Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction:

- Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Proper storage and good site practices to minimize the potential for damage and contamination of construction materials;
- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;
- Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal, etc.); and
- Provide training to workforce on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

Storage, Collection and Transportation of Waste

6.3.8.4 Stockpiling areas, barging points and conveyor belt system would be set up to handle waste generated during construction phase. Locations of the mentioned waste facilities are summarized in **Table 6.9** and presented in **Appendix 6.4**.

Table 6.9 Locations of waste facilities for waste handling

Site Location	Type of Waste Handling/ Waste Facilities
- Proposed reclaimed land at Tsing Lung Tau	Stockpiling area, barging point, conveyor belt system
- Works area at To Kau Wan in North Lantau - Works area at San Po Tsui in North Lantau	Stockpiling area, barging point
- Eastern hillside of Tai Lam Chung Road - Southwest of Tai Lam Chung Reservoir - South of Siu Lam Fresh Water Supplies Reservoir - Hillside between Tuen Mun Road (So Kwun Wat Section) and MacLehose Trail Section 10 - Lam Tei Quarry	Stockpiling area

6.3.8.5 Storage of waste on site may induce adverse environmental implications if not properly managed. The following recommendations should be implemented to minimize the impacts:

- Maintain and clean storage areas routinely;
- Non-inert C&D materials such as top soil should be handled and stored well to ensure secure containment of the materials;
- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away;
- Different locations should be designated to stockpile each material to enhance reuse; and
- Conveyor belt systems should be fully enclosed and equipped with water spray to suppress dust generation.

6.3.8.6 The collection and transportation of waste from works areas to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendations should be implemented to minimize the impacts:

- Remove waste in timely manner;
- Employ the trucks with cover or enclosed containers for waste transportation;
- Obtain relevant waste disposal permits from the appropriate authorities; and
- Disposal of waste should be done at licensed waste disposal facilities.

6.3.8.7 All dump trucks and vessels engaged for the Project should be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials or marine sediments.

6.3.8.8 For transportation routing and frequency of truck/ vessels for waste disposal, the Contractor will be requested to use the suitable route to transport waste generated from the Project (e.g. inert and non-inert C&D materials, chemical waste and general refuse etc.) to the dedicated treatment facilities/ disposal sites (e.g. Tuen Mun Area 38, WENT Landfill and CWTC) for disposal. The tentative transportation route is summarized in **Table 6.10**. It is estimated there would be maximum of 367 trucks per day and 6 barges per day for transporting waste to the dedicated landfill at peak of the construction period.

Table 6.10 Tentative transportation routings for different types of waste

Treatment Facility / Disposal Site	Type of Waste	Tentative Transportation Routing	
Barging Points (including Barging point at Tsing Lung Tau, To Kau Wan in North Lantau and Kap Shui Mun Bridge in North Lantau)	Inert C&D Materials	Overall Main Route	Via internal transportation route within the corresponding works area with barging points, then utilize barge transportation to reach Tuen Mun Area 38 Fill Bank via Ha Pang Fairway and Castle Peak Fairway
		From So Kwun Wat	Via So Kwun Wat Road to Castle Peak Road – So Kwun Wat to Castle Peak Road – Tsing Lung Tau to Main Route
		From Siu Lam	Via Kwun Fat Street to Castle Peak Road – Tai Lam to Castle Peak Road – Tsing Lung Tau to Main Route
		From Tai Lam Chung	Via Tai Lam Chung Road to Castle Peak Road – Tai Lam to Castle Peak Road – Tsing Lung Tau to Main Route
		From Tsing Lung Tau	Via Castle Peak Road – Tsing Lung Tau to Main Route
		From North Lantau	Via North Lantau Highway to Sunny Bay Road to Penny's Bay Highway access road to Tsing Chau Tsai Shipyard, Lantau Island to Main Route
Tuen Mun Area 38 Fill Bank	Inert C&D Materials	Main Route	Via Wong Chu Road, Lung Fu Road and Lung Mun Road
		From Lam Tei Quarry	Via Castle Peak Road - Lam Tei to Tuen Mun Road to Main Route
West New Territories (WENT) Landfill	Non-inert C&D Materials, vegetation, general refuse, floating refuse	Main Route	Via Wong Chu Road, Lung Fu Road, Lung Mun Road and Nim Wan Road
		From Lam Tei Quarry	Via Castle Peak Road - Lam Tei to Tuen Mun Road to Main Route
		From So Kwun Wat	Via So Kwun Wat Road to Tuen Mun Road to Main Route

Treatment Facility / Disposal Site	Type of Waste	Tentative Transportation Routing	
		From Siu Lam and Tsing Lung Tau	Via Castle Peak Road - Tai Lam to Tuen Mun Road to Main Route
		From Tai Lam Chung	Via Tai Lam Chung Road to Castle Peak Road - Tai Lam to Main Route
		From North Lantau	Via North Lantau Highway to Lantau Link to Tsing Long Highway to Tuen Mun Road to Main Route
Type 1 Open Sea Disposal to South of Cheung Chau [1]	Marine sediment	From Tsing Lung Tau (Marine-based sediment)	Via Ha Pang Fairway to Kap Shui Mun Fairway / Ma Wan Fairway to Western Fairway
Chemical Waste Treatment Centre (CWTC)	Chemical Waste	Main Route	Via Tuen Mun Road, Tsing Long Highway, Tsing Sha Highway and Tsing Yi Road
		From Lam Tei Quarry	Via Castle Peak Road - Lam Tei to Main Route
		From So Kwun Wat/ Siu Lam/ Tsing Lung Tau	Via Castle Peak Road - Tai Lam to Main Route
		From Tai Lam Chung	Via Tai Lam Chung Road to Main Route
		From North Lantau	Via North Lantau Highway to Lantau Link to Tsing Sha Highway and Tsing Yi Road

Note:

[1] For marine-based sediment, as stated in Section 6.3.3, most of the dredged sediment will be reused by dumping at a mud pit in reclamation area of Tsing Lung Tau, the disposal site is assumed in case the excavated sediment is in excess and sediment disposal is required as conservative approach. As all collected sediment samples belong to Category L Material, type 1 open sea disposal is classified for future excavated sediment, open sea disposal at south of Cheung Chau is assumed at this stage in case marine-based sediment disposal is required, final disposal space subject to allocation of Marine Fill Committee (MFC). For land-based sediment to be generated at North Lantau, since the area is currently occupied by others, sampling work classifying concerned sediment type can only be conducted when access is available. Therefore, it is unable to assume the disposal site for land-based sediment at this stage. However, contractor responsible for future marine sediment disposal is required to use the most suitable route to transport waste generated based on final sediment classification and allocation of MFC.

6.3.8.9 In addition to the above measures, other specific mitigation measures on handling the C&D materials, land-based and marine-based marine sediment, chemical waste, general refuse and floating refuse generated from construction phase are recommended in the following sub-sections.

6.3.9 Mitigation Measures for Waste Identified

Mitigation Measures for C&D Materials

6.3.9.1 A Construction and Demolition Material Management Plan (C&DMMP) has been prepared in accordance with Section 4.1.3 “Construction and Demolition Materials” of the Project Administration Handbook for Civil Engineering Works and will be submitted together with the EIA Report to Public Fill Committee (PFC) for approval.

6.3.9.2 Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at Public Fill Reception Facilities or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials:

- carry out on-site sorting;
- make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;
- implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials is properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials; and
- apply for a designated disposal ground for incorporation into the Contract documents in accordance with DEVB TC(W) No. 6/2010 where necessary, if inert C&D materials of the Project are expected to dispose to public fill reception facilities.

6.3.9.3 Details of the recommended on-site sorting and reuse of C&D materials is given below:

On-site Sorting of C&D Materials

6.3.9.4 Storage areas would be located within the site during construction phase for temporary storage of inert C&D materials.

6.3.9.5 All C&D materials arising from the construction would be sorted on-site to recover the inert C&D materials, and reusable and recyclable materials prior to disposal off-site as far as practicable. Non-inert portion of C&D materials should also be reused whenever possible and be disposed of at landfills as a last resort.

6.3.9.6 The Contractor would be responsible for devising a system to work for on-site sorting of C&D materials and promptly remove all sorted and processed material arising from the construction activities to minimise temporary stocking on-site. It is recommended that the system should include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/ or collection, temporary storage areas, and frequency of collection by recycling contractor or frequency of removal off-site.

Reuse of C&D Materials

6.3.9.7 The following potential measures should be explored to maximize the reuse/ recycle of C&D materials generated from the Project:

- Reuse suitable inert C&D materials on-site as far as practicable;
- Reuse suitable excavated rock by reworking at approved quarries (e.g. crushed as aggregates);
- Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (e.g. soil, broken concrete, metal); and
- Protect recyclable material to keep it in usable condition.

Specification of Inert C&D Materials to be Delivered Off-site

6.3.9.8 In case there are surplus inert C&D materials generated in the Project and are required to be delivered to the PFRFs, the inert C&D materials should fulfil the following requirements:

- Reclaimed asphalt pavement should not be mixed with other materials when delivered to the PFRFs;
- Moisture content of inert C&D materials should be lowered to 25% max. when delivered to the PFRFs;
- Inert C&D materials delivered to the PFRFs should be of a size less than 250mm; and
- Inert construction waste should not be in liquid form such that it can be contained and delivered by dump truck instead of tanker truck. Inert C&D materials in liquid form should be solidified before delivering to the PFRFs.

6.3.9.9 Nevertheless, the acceptance criteria of inert C&D materials to PFRFs are subject to the fill management authority of CEDD.

Use of Standard Formwork and Planning of Construction Materials Purchasing

6.3.9.10 Standard formwork should also be used as far as practicable in order to minimise the arising of non-inert C&D waste. The use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling. The purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.

Mitigation Measures for Excavated Sediments

6.3.9.11 Reference has been made to the sediment testing results. Possible mitigation measures to handle the contaminated/ uncontaminated sediment are summarized as follows.

- All construction plant and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location.
- All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.

6.3.9.12 The Contractor shall monitor all vessels transporting the excavated sediment to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the Project Manager.

- The Contractor shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance.
- All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material.
- The excavated sediment shall be placed into the disposal pit by bottom dumping.
- Contaminated marine mud shall be transported by split barge of not less than 750m^3 capacity and capable of rapid opening and discharge at the disposal site.
- Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.

Mitigation Measures for Chemical Waste

6.3.9.13 For those processes which generate chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type of less impact on environment, health and safety as far as possible. Wherever possible, opportunities for the reuse and recycling of materials will be taken.

6.3.9.14 If chemical wastes are produced at the construction site, the Contractor should register with EPD as chemical waste producers. 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 the EPD. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

Mitigation Measures for General Refuse

6.3.9.15 General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. A reputable waste collector should be employed to remove general refuse on a daily basis. Arrangements should be made with the recycling companies to collect the recycle waste as required. It is expected that such arrangements would minimize potential environmental impacts.

6.3.9.16 The Contractor should implement an education programme for workforce relating to avoiding, reducing, reusing and recycling general waste. Participation in a local collection scheme should be considered by the Contractor to facilitate waste reduction.

Mitigation Measures for Floating Refuse

6.3.9.17 With proper waste management and education, floating refuse arising from the construction activities is not anticipated. Regular inspection and monitoring of floating refuse will be conducted by contractor at biweekly interval. For any floating refuse trapped within the Project Area, waste collection by the contractor will be arranged at biweekly interval and disposed to landfill correspondingly.

6.3.9.18 In case there are any recyclable components in the floating refuse collected, they should be separated from the collected floating refuse. The contractor shall conduct on-site sorting of the recyclable component and be responsible to arrange respective recycling companies to collect these components.

6.3.10 Residual Waste Management Implications

6.3.10.1 With the implementation of recommended mitigation measures, adverse residual waste management implications and impacts on potential hazard, air and odour emissions, noise, wastewater discharge and public transport caused by handling (including stockpiling, labelling, packaging and storage), collection, transportation and reuse/ disposal of different types of waste are not anticipated for the construction phase.

6.4 Operational Phase

6.4.1 Identification and Evaluation of Waste Management Implications

6.4.1.1 During the operational phase, the tunnel ventilation buildings and administration building will generate the following wastes:

- General refuse;
- Chemical waste; and
- Floating refuse.

6.4.2 General Refuse

6.4.2.1 General refuse will arise from the employees within mainly the administration building, and partly from the tunnel ventilation buildings. General refuse including food waste, paper, wood, plastic, office waste, metal containers generated during construction phase will be disposed of at WENT Landfill after recycling corresponding waste (e.g. waste paper, aluminium cans and plastic bottles) as far as possible. The storage and handling of these wastes may give rise to environmental impacts. Based on currently available information, about 400 workforce would be anticipated during operational phase for the Project. Assuming the generation rate at 0.65 kg/person/day, it is estimated that approximately 260 kilograms of general refuse would be generated per day during operational phase.

6.4.2.2 Maintenance and operational activities of the project will generate waste including fluorescent tubes, cleansing materials (such as wiping cloth), scrap metals and discarded maintenance parts (such as screw and bolts). Used fluorescent tubes in a large quantity would be handled as chemical waste in accordance with “A Guide

to Waste Producers for Handling and Disposing Spent Mercury Containing Lamps". A reputable waste collector should be employed to remove general refuse from the associated facilities, separately from chemical wastes, on a daily basis to minimise odour, pest and litter impacts. In case cleansing materials are contaminated/absorbed with chemical or oil, they shall be handled as chemical waste as stipulated in **Section 6.4.3**.

6.4.2.3 Recyclable refuse such as paper, plastic and used fluorescent tubes in small quantity arise from maintenance and operational activities, they should be separated from general refuse and recycled at recycling bins or licensed recycling facilities as far as possible. As for recyclable refuse arise from maintenance activities such as scrap metals, and discarded maintenance parts that are able to recycle, corresponding recycling companies should be arranged to collect the refuse.

6.4.3 Chemical Waste

6.4.3.1 Lubricants, paints, used batteries, mineral oil, coolants, and solvents will be generated during the operational phase within the administration building and ventilation buildings as well as maintenance of the tunnel. Used fluorescent tubes in a large quantity would be handled as chemical waste in accordance with "A Guide to Waste Producers for Handling and Disposing Spent Mercury – Containing Lamps". Cleansing materials that are contaminated/absorbed with chemical or oil shall also be handled as chemical waste. These wastes may pose significant environmental, health and safety hazard if they are not properly managed. It is estimated that maximum of a few hundred litres of chemical waste would be generated per month.

6.4.3.2 The requirements given in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be followed in handling of these chemical wastes. A trip-ticket system should be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical wastes which will be collected by a licensed collector to CWTC for final treatment and disposal.

6.4.4 Floating Refuse

6.4.4.1 Making reference to approved Expansion of Hong Kong International Airport (HKIA) into a Three-Runway System EIA Report (AEIAR-185/2014), it is estimated that 65m^3 of floating refuse would be collected from the new artificial seawall (approximately 19.4km long) of the proposed HKIA extension area every year. Considering the total length of artificial seawall is approximately 0.46km long, it is anticipated that approximately 1.5m^3 of floating refuse might be accumulated during operational phase of this development per year. Nevertheless, the floating refuse would still be collected during the regular operation of MD's appointed contractor within the vicinity.

6.4.4.2 In addition, the artificial seawall has been properly designed to achieve a hydrodynamically cautious shoreline to minimise any trapped or accumulated

refuse. Curved corner will be adopted in the seawall design to avoid refuse accumulation surrounding the seawall. With the proper seawall design and implementation of management control practices, no adverse environmental impact associated with floating refuse are anticipated.

6.4.4.3 Floating refuse trapped with the Project Area during operational phase will be collected by MD's appointed contractor and disposed to landfill correspondingly. The collection frequency is suggested at monthly interval in accordance with MD's agreement. In case there are any recyclable components in the floating refuse collected, they should be separated from the collected floating refuse. The contractor shall conduct on-site sorting of the recyclable component and be responsible to arrange respective recycling companies to collect these components.

6.4.5 Mitigation Measures for Waste Identified

Mitigation Measures for General Refuse

6.4.5.1 A reputable waste collector should be employed to remove general refuse and operational wastes generated from administration building and ventilation buildings on a daily basis to minimise odour, pest and litter impacts. Arrangements should be made with the recycling companies to collect the recycle waste as required. It is expected that such arrangements would minimize potential environmental impacts.

Mitigation Measures for Chemical Waste

6.4.5.2 The requirements given in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be followed, where applicable, in handling of these chemical wastes. A trip-ticket system should be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical wastes which would be collected by a licensed collector to a licensed facility for final treatment and disposal.

6.4.5.3 If chemical wastes are produced at the operating sites, the Contractor should register with EPD as chemical waste producers. 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 the EPD. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

Mitigation Measures for Floating Refuse

6.4.5.4 As mentioned in **Section 6.4.4.1**, approximately 1.5m^3 of floating refuse might be accumulated along the seawall. Regular inspection and monitoring of floating refuse will be conducted by MD's appointed contractor. The operation frequency

is suggested at monthly interval in accordance with MD's agreement. For any floating refuse trapped within the Project Area, waste collection and disposal by the future contractor will be arranged as required subject to agreement with MD. Nevertheless, the artificial seawall has been properly designed with cautious to the hydrology where floating refuse would not be easily trapped or accumulated. With proper seawall design, implementation of management control practices with regular checking and cleaning of floating refuse, no adverse impacts are anticipated.

6.4.5.5 In case there are any recyclable components in the floating refuse collected, they should be separated from the collected floating refuse. The contractor shall conduct on-site sorting of the recyclable component and be responsible to arrange respective recycling companies to collect these components.

6.4.6 Tentative Transportation Routings for the Identified Waste

6.4.6.1 For transportation routing and frequency of truck/ vessels for waste disposal, the contractor appointed for future operation will be requested to use the suitable route to transport waste generated from operational phase of the Project to the dedicated treatment facilities/ disposal sites. The tentative transportation route is summarized in **Table 6.11**. It is estimated there would be not more than 2 truck trips per day for transporting waste to the dedicated landfill.

Table 6.11 Tentative transportation routings for different types of waste

Treatment Facility / Disposal Site	Type of Waste	Tentative Transportation Routing	
West New Territories (WENT) Landfill	General refuse and floating refuse	Main Route	Via Wong Chu Road, Lung Fu Road, Lung Mun Road and Nim Wan Road
		From Lam Tei Quarry	Via Tuen Mun Bypass to Lung Mun Road to Nim Wan Road
		From So Kwun Wat	Via So Kwun Wat Road to Tuen Mun Road to Main Route
		From Siu Lam	Via So Kwun Wat-Siu Lam Open Road Section to So Kwun Wat Link Road to Tuen Mun Road to Main Route
		From Tsing Lung Tau	Via Tuen Mun Road to Main Route
		From Tai Lam Chung	Via Tai Lam Chung Tunnel to So Kwun Wat Link Road to Tuen Mun Road to Main Route
		From North Lantau	Via Tsing Lung Bridge to Tuen Mun Road to Main Route
Chemical Waste Treatment Centre (CWTC)	Chemical Waste	Main Route	Via Tuen Mun Road, Tsing Long Highway, Tsing Sha Highway and Tsing Yi Road
		From Lam Tei Quarry	Via Lam Tei Tunnel to Tai Lam Chung Tunnel to Main Route
		From So Kwun Wat	Via So Kwun Wat Link Road to Tai Lam Chung Tunnel to Main Route

Treatment Facility / Disposal Site	Type of Waste	Tentative Transportation Routing	
		From Siu Lam/ Tai Lam Chung	Via Tai Lam Chung Tunnel to Main Route
		From Tsing Lung Tau	Via Castle Peak Road - Tai Lam to Main Route
		From North Lantau	Via North Lantau Highway to Lantau Link to Tsing Sha Highway and Tsing Yi Road

6.4.7 Residual Waste Management Implications

6.4.7.1 With the implementation of recommended mitigation measures, adverse residual waste management implications and impacts on potential hazard, air and odour emissions, noise, wastewater discharge and public transport caused by handling (including stockpiling, labelling, packaging and storage), collection, transportation and reuse/ disposal of different types of waste are not anticipated for the operational phase.

6.5 Conclusion

6.5.1 Construction Phase

6.5.1.1 Potential waste management implications from the generation of waste during the construction phase have been evaluated. General mitigation measures of good site practices, waste management measures and strategic mitigation measures, including the opportunity for on-site sorting, reusing C&D materials, etc., are devised to minimise the surplus materials to be disposed. Recommendations have been made for implementation by the Contractor during the construction period to minimise waste generation and off-site disposal.

6.5.2 Operational Phase

6.5.2.1 The types of waste that would be generated during the operational phase have also been assessed. Recommendations have been made to ensure proper treatment and disposal of these wastes. Appropriate waste collector would be employed to handle general refuse, chemical waste and floating refuse generated during operational phase respectively.