

MTR Corporation Ltd

Tung Chung Line Extension

Waste Management Plan

Reference: 277416-REP-055-02

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 277416

Ove Arup & Partners Hong Kong Limited

Level 5 Festival Walk

80 Tat Chee Avenue

Kowloon Tong

Kowloon

Hong Kong

arup.com

Contents

1.	Introduction	1
1.1	Project Background	1
1.2	Scope of Work	1
1.3	Purpose of the Plan	2
1.4	Regulations and Guidelines	2
2.	Site Organization and Staff Duties	6
2.1	Organization Structure	6
2.2	Roles and Responsibilities	6
3.	Site Specific Waste Management	9
3.1	Expected Sources of Waste Generation	9
3.2	Hierarchy of Waste Management	9
3.3	Good Site Practice	10
3.4	Material Control and Maintenance	11
3.5	Waste Management Records	11
3.6	Waste Flow Table (WFT)	12
3.7	Training for Waste Management	12
3.8	Waste Monitoring and Audit	13
4.	Disposal Arrangement, Location and Procedures	15
4.1	Estimate Quantities of Construction Waste	15
4.2	Waste Acceptance Criteria for Government Disposal Facilities	16
4.3	Procedures of the Trip Ticket System	17
4.4	Measures to be implemented During Transportation of Wastes to Avoid Leakage of Wastes onto Public Areas	18
4.5	Disposal of C&D Materials to Alternate Disposal Facilities	19
4.6	Chemical Wastes/Hazardous Waste Handling and Disposal	20
4.7	General Refuse	21
4.8	Handling of Recyclables	22
4.9	Excavated Sediment	22

Click or tap here to enter text.

Appendices

Appendix 1.1	Site Layout Plan
Appendix 3.1	Mitigation Measures for Waste Management
Appendix 3.2	Sample Daily Record Summary
Appendix 3.3	Sample Waste Flow Table

1. Introduction

1.1 Project Background

- 1.1.1.1 The Railway Development Strategy 2014 (RDS-2014) announced by the Government of the Hong Kong Special Administrative Region included the conceptual scheme of Tung Chung West (TCW) Extension and a possible Tung Chung East (TCE) Station.
- 1.1.1.2 This new railway system has been included in the approved Schedule 3 Environmental Impact Assessment (EIA) for Tung Chung New Town Extension (TCNTE), which has included the new stations at TCE area and TCW area and the associated trackwork and tunnel. However, a separate Schedule 2 EIA study for this railway system is conducted to address the associated environmental impacts, taking into account of the latest design.
- 1.1.1.3 The EIA Report for Tung Chung Line Extension (the Project) (AEIAR-235/2022) was approved on 12 July 2022. The Environmental Permit (EP) (No. EP-614/2022) was then issued on 9 August 2022. According to Clause 2.20 of the EP, the Permit Holder shall deposit with the Director 3 hard copies and 1 electronic copy of a Waste Management Plan (WMP). The WMP shall include estimated volume of different types of waste, e.g. construction and demolition (C&D materials) materials, land-based marine sediment, chemical waste, general refuse, etc., and also the arrangements for avoidance, minimization, recovery, recycling, reuse, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. The WMP shall also describe the tracking system to be adopted to avoid illegal dumping or landfilling of C&D materials. The WMP shall include an implementation schedule in table form to clearly list out the amount and disposal outlet for the different types of waste arising, mitigation measures to be implemented, and the implementation party, location, timing, and environmental performance required for implementation of the mitigation measures. All mitigation measures recommended and requirements specified in the WMP and the implementation schedule shall be fully implemented.

1.2 Scope of Work

- 1.2.1.1 **Appendix 1.1** shows the location of the Project. This WMP applies to the works by phases which involve the following key construction activities:
- A new TCE Station (at-grade) and diversion of a section of existing Tung Chung Line (TCL);
 - Railway alignment (in the form of a tunnel) extending from existing overrun of Tung Chung Station (TUC) to the new TCW Station;
 - A new TCW Station (underground) and overrun tunnel;
 - Emergency Access Point (EAP)/ Emergency Egress Point (EEP) building;
 - Station associated facilities (entrances, vent shaft structures, etc.); and
 - Work sites / works areas, barging facility, etc.

1.3 Purpose of the Plan

1.3.1.1 This WMP will describe the arrangements for avoidance, minimization, handling, reuse, recovery and recycling, storage, transportation, collection, treatment and disposal of the different categories of waste that are expected to be generated during the construction activities of the Project.

1.3.1.2 The main objectives of this WMP are to:

- Provide reference to the applicable environmental legislation and guidelines pertaining to waste management;
- Clarify each party's responsibilities regarding waste management, and identify the personnel from each party that are assigned these responsibilities and their respective role on the Project; and
- Establish waste management practices and treatment procedures, for the avoidance, minimization, material reuse/recovery/recycling, collection, transportation, storage and disposal of wastes that are generated during the course of the construction of the Project that are specified by the EP and the implementation of the mitigation measures that are outlined in the EIA report.

1.4 Regulations and Guidelines

1.4.1.1 During the construction of the Project, it is anticipated that various types of waste will be generated. Each distinct waste type will require a different approach for the effective management and disposal as stipulated in the applicable legislation and guidelines.

1.4.2 Statutory Requirements

1.4.2.1 The following legislation relates to the handling, treatment and disposal of waste in Hong Kong:

- The Waste Disposal (Amendment) Ordinance (WDO) (Cap 354);
- The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C);
- The Waste Disposal (Charges for Disposal of Construction Waste) Regulation. (Cap 354N);
- The Land (Miscellaneous Provisions) Ordinance (Cap 28);
- The Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances Regulation;
- Dumping at Sea Ordinance (DASO) (Cap.466);
- Practice Note for Authorized Persons and Registered Structural Engineers on Management Frameworks for Disposal of Dredged/ Excavated Sediment (PNAP ADV-21); and
- Works Bureau Technical Circular (WBTC) No. 12/2000 Fill Management.

1.4.3 Waste Disposal Ordinance

- 1.4.3.1 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.
- 1.4.3.2 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.

1.4.4 Waste Disposal (Chemical Waste) (General) Regulation

- 1.4.4.1 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.

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

- 1.4.5.1 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.

1.4.6 Land (Miscellaneous Provisions) Ordinance

- 1.4.6.1 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.
- 1.4.6.2 Individual licenses and windscreen stickers are issued for each vehicle involved. Public filling areas 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.

1.4.7 Public Cleansing and Prevention of Nuisances Regulation

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

1.4.8 Dumping at Sea Ordinance

1.4.8.1 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.

1.4.9 Practice Note for Authorized Persons and Registered Structural Engineers on Management Framework for Disposal of Dredged/ Excavated Sediment (PNAP ADV-21)

1.4.9.1 PNAP ADV-21 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.

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

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

1.4.10.2 The Contractor is required to obtain all necessary permits and licenses under these ordinances including, but not limited to:

- Chemical waste permits/licenses under the WDO (Cap 354);
- Public Dumping License under the Land (Miscellaneous Provisions) Ordinance (Cap 28). Non-statutory Regulations; and
- A permit to dump material at sea under DASO (Cap.466).

1.4.10.3 The following guidelines in **Table 1.1** related to waste management and disposal would be adhered to during construction:

Table 1.1 Other relevant documents and information

Bureau / Department	Documents / Guidelines / Technical Circulars
Development Bureau	<ul style="list-style-type: none">• 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 Project• WBTC No. 19/2001, Metallic Site Hoardings and Signboards• WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates• ADV-19, Practice Note for Authorized Persons and Registered Structural Engineers on Construction and Demolition Waste

Bureau / Department	Documents / Guidelines / Technical Circulars
	<ul style="list-style-type: none"> • DEVB TCW No. 06/2010, Trip-ticket System for Disposal of Construction and Demolition Material • DEVB TCW No. 08/2010, Enhanced Specification for Site Cleanliness and Tidiness • DEVB TCW No. 09/2011, Enhanced Control Measures for Management of Public Fill
CEDD	<ul style="list-style-type: none"> • Project Administration Handbook for Civil Engineering Works, Management of Construction/ Demolition Materials including Rocks • CEDD TC No. 11/2019, Management of Construction and Demolition Materials
Environment Bureau	<ul style="list-style-type: none"> • ETWB TCW No. 19/2005, Environmental Management on Construction Sites • 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 2019

- Correct any identified nonconformance relating to the waste management programme; and

2.2.3 Senior Construction Engineer / Construction Engineer

- Implement this WMP and the waste management programme;
- Identify and correct nonconformance in the waste management programme;
- Implementation of Trip Ticket System and CHIT System; and
- Maintain waste management records (licences, permits, trip tickets, Disposal Delivery Form, CHIT).

2.2.4 Environmental Officer

- Prepare and update this WMP;
- Liaise and coordinate with the ET and IEC;
- Liaise with government department for permit applications;
- Conduct inspection and environmental walks;
- Provide environmental training;
- Monitor the implementation of waste management plan and other environmental procedures;
- Carry out ad-hoc environmental checking and testing;
- Maintain and process environmental records;
- Conduct environmental training and toolbox talk to staff and frontline workers; and
- Process waste disposal record and prepare Daily Record Summary.

2.2.5 Environmental Team

- Certify this WMP;
- Monitor the implementation of this WMP; and
- Perform environmental monitoring and audit works and weekly site inspection in accordance with the approved Environmental Monitoring and Audit (EM&A) Manual.

2.2.6 Engineer's Team

- Handle external complaints;
- Perform regular site inspection; and
- Perform daily inspection, audit and highlighting any deficiencies for the Contractor to take proper follow up action.

2.2.7 Independent Environmental Checker

- Verify this WMP; and
- Perform independent audit on all environmental mitigation measures.

3. Site Specific Waste Management

3.1 Expected Sources of Waste Generation

3.1.1.1 During the construction phase of the Project, the main activities include tunnelling, construction of EAP/ EEP building, barging facility as well as stations and associated facilities. These activities will potentially result in the generation of wastes. The typical waste types associated with these activities include:

- C&D materials from the construction of TCE station and TCW Station, TBM tunnelling, EAP/ EEP building etc.;
- Land-based marine sediment from piling at part of the proposed TCE Station and its associated facilities;
- Chemical waste, such as used cleansing chemicals, lubricants, fuel waste, spent solvent etc, from maintenance of construction plant and equipment for both land and marine-based works; and
- General refuse from construction workforce, such as food scraps, aluminium cans, PET bottles and waste paper.

3.1.1.1 Mitigation measures, where appropriate, have been recommended in the approved EIA of the Project to avoid or reduce potential adverse environmental impacts associated with handling, collection, transport and disposal of waste arising from the construction of the proposed Project. The details are summarised in **Appendix 3.1**.

3.2 Hierarchy of Waste Management

3.2.1.1 The key to successful waste management is undertaking proactive measures to reduce the amount of waste generated. Waste management options/programme will be exercised in accordance with the hierarchy outlined in **Table 3.1** below.

Table 3.1: Hierarchy/Programme of Waste Management

Waste Management Option/Programme	Required Actions
Avoidance / Reduction / Minimization	Avoid the generation of excessive waste by planning and scheduling material deliveries. Minimize the amount of waste generated through careful planning and design, before commencing the construction.
Re-use	Where appropriate and practicable, construction materials such as timber formwork, metal, etc, and any spoil generated during excavation work should be reused onsite as far as practicable.

Waste Management Option/Programme	Required Actions
Recovery and Recycling	<p>Recyclable construction materials such as plastics and metal will be recovered, sorted and stored onsite in containers. The containers will be transported off site for recycling at an approved facility.</p> <p>Regularly serviced, covered recycling containers will be provided for the use of the onsite workforce.</p>
Treatment and Disposal	<p>All waste removed from the site requiring treatment and/or disposal will be transported to an approved facility.</p>

3.2.1.2 To achieve waste reduction, environmentally responsible purchasing would involve the introduction of practices that discourage unnecessary purchases and encourage the purchase of products or materials that can be found locally, that have reduced packaging or recyclable packaging, increased durability and materials with recycled content, such as, recycled paper, steel, concrete and other raw construction materials.

3.2.1.3 Waste minimization is best achieved through the use of careful planning, design and close supervision. It is expected that, following good waste management practices on site will result in a reduction of the amount waste being generated. To minimize the wastage of raw materials that are delivered to the site, good management, estimation and planning techniques will be required.

3.3 Good Site Practice

3.3.1.1 Recommendations for good site practices to facilitate the waste management hierarchy as described in the section above during the construction phase and all other office related works include, but not limited to:

- 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; and
- 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.

3.3.2 Waste Reduction Measures

3.3.2.1 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 workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

3.4 Material Control and Maintenance

3.4.1.1 Mis-ordering construction materials, together with poor storage and maintenance of raw materials could result in their deterioration and damages. To avoid accumulation, the right amount of raw materials will be ordered at the right time with proper control and documentation on material flow. Any surplus materials will be returned to stock in centralised area with suitable protective measures.

3.5 Waste Management Records

3.5.1.1 The Contractor is responsible for keeping waste management records on site. These records include, but not limited to, the following:

- Relevant licences and permits, including dumping licences and registration as chemical waste producer;
- Records of quantities of waste generated, recycled and disposed of (including the selected disposal sites);
- Records for trip tickets and documentation for collection and tipping of waste and waste removal;
- Disposal recording system of vehicular trip of transporting C&D materials and its mechanism for collection of returned form together with recipe from public filling areas or landfill site;
- Method for estimation of load for inert C&D materials, metals, papers / cardboard or other C&D wastes;
- The receipt for recycling of inert C&D material, paper / cardboard and metal; and
- Keeping the attendance record of each waste management training session.

- 3.5.1.2 The Construction and Demolition Material Disposal Delivery Form (DDF) will be used for each and every vehicular trip transporting C&D materials off site. Prior to the vehicle leaving the site, MTRCL's Representative will insert the date, time of departure, vehicle licence plate number, designated public filling facility / landfill, and other information as required, and stamp the form. MTRCL's Representative will then retain the first strip of the form and pass the rest to Contractor's Representative. The form will be carried on board the vehicle at all times throughout the vehicular trip.
- 3.5.1.3 A comprehensive register of the DDF issued will be maintained and available for inspection by MTRCL's Representative upon request. The following records will be kept for monitoring of the DDF issued. Daily Record Summary (DRS) in **Appendix 3.2** and the Waste Flow Table (WFT) in **Appendix 3.3** should be completed and submitted to MTRCL's Representative for record.

3.6 Waste Flow Table (WFT)

- 3.6.1.1 Record of the quantities of C&D materials generated each month will be maintained using the monthly summary WFT. The Contractor will complete and submit the monthly summary of WFT to MTRCL. The WFT shall also be made available to ET and IEC.
- 3.6.1.2 Specific trip ticket and records for internal transfer of C&D materials and imported fill materials will also be kept for monitoring whatever necessary.
- 3.6.1.3 For recyclable materials, Contractor's Representative will record the quantities of all the recyclable materials before removal off the construction site by the recycling contractors, and include the details in the WFT for submission to MTRCL's Representative.
- 3.6.1.4 In order to ensure proper disposal of C&D materials, enhancement measures to further improve the Trip Ticket System recording system, a video recording system shall be installed and disposal shall be checked against survey record. Such video recording system used to monitor the vehicular exit / entrance of the site.

3.7 Training for Waste Management

- 3.7.1.1 The Contractor will provide training on waste management in the site-specific environmental training and its refresher training for all Contractor staff and the sub-contractors. The training will cover the waste management procedures and targets as described in this WMP.
- 3.7.1.2 Toolbox talks for the topic on on-site sorting of C&D materials will be organized by the Contractor to promote awareness on handling, sorting, reuse and recycling of C&D to all levels of staff along with subcontractors.

3.8 Waste Monitoring and Audit

- 3.8.1.1 The Contractor will be responsible for all waste management activities during the construction phase of the Project. The Contractor must ensure that all wastes produced during the construction phase are handled, stored and disposed of in accordance with EPD's regulations and requirements and in line with good waste management practices.
- 3.8.1.2 The Contractor should perform regular site inspection (at least once per week) to determine if wastes are being managed in accordance with approved procedures. Waste materials generated during the construction works, such as inert C&D material, general refuse and chemical wastes, are recommended to be monitored on a weekly basis to ensure that proper storage, transportation, reuse, recycling 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 waters. The Contractor should be responsible for the implementation of all mitigation measures to minimise waste or address problems arising from the waste materials.
- 3.8.1.3 In addition, the ET will carry out weekly site inspections in accordance with the Updated EM&A Manual of the Project with reference to the checklist detailed in **Table 3.2** below. The ET will identify any non-compliance with the Updated EM&A Manual and the WMP, and will report them accordingly. The results of the waste management audits would be reported in the monthly EM&A reports.

Table 3.2 Summary of Estimated Waste Arising and Recommended Waste Management Arrangements

Activities	Timing	Checking Frequency	If non-compliance noted, Action Required
Necessary waste disposal permits or licences have been obtained.	Before the commencement of works	Once	The ET will inform the Contractor(s), IEC and MTRCL. The Contractor(s) will apply for the necessary permits/ licences prior to disposal of the waste. The ET will verify that corrective action has been taken.
Waste are collected by licensed waste hauliers and disposed of at licensed sites.	Throughout the works	Each Week	The ET will inform the Contractor(s), IEC and MTRCL. MTRCL will instruct the Contractor(s) to comply. The Contractor(s) will temporarily suspend waste collection of that particular waste until a licensed waste haulier is used. Corrective action will be undertaken within 48 hours.
Records of quantities of wastes generated, recycled and disposed of and the disposal sites are properly kept.	Throughout the works	Each Month	The ET will inform the Contractor(s), IEC and MTRCL. The Contractor(s) will estimate the missing data based on previous records and the activities carried out. The ET will review the results and forward to MTRCL for approval.

Activities	Timing	Checking Frequency	If non-compliance noted, Action Required
Sufficient waste disposal points are provided. Wastes are collected and removed from site in a timely manner. General refuse is collected on a regular basis.	Throughout the works	Each Week	The ET will inform the Contractor(s), IEC and MTRCL. MTRCL will instruct the Contractor(s) to remove waste accordingly.
Waste storage areas are properly cleaned and do not cause windblown litter and dust nuisance. Appropriate measures to reduce windblown litter and dust nuisance of waste will be adopted, e.g. by either covering trucks or by transporting wastes in enclosed containers.	Throughout the works	Each Week	The ET will inform the Contractor(s), IEC and MTRCL. MTRCL will instruct the Contractor(s) to clean the storage area and/or cover the waste.
Different types of waste are segregated in different containers or skip to enhance reuse and recycling of material and proper disposal of waste.	Throughout the works	Each Week	The ET will inform the Contractor(s), IEC and MTRCL. MTRCL will instruct the Contractor(s) to provide separate skips/containers. The Contractor(s) will verify that the workers place the waste in the appropriate containers.
Chemical wastes are stored, handled and disposed of in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes, published by the EPD. Chemical wastes are separated for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi.	Throughout the works	Each Week	The ET will inform the Contractor(s), IEC and MTRCL. MTRCL will instruct the Contractor(s) to rectify the issues immediately. Warning will be given to the Contractor(s) if corrective actions are not taken within 24 hours.

4. Disposal Arrangement, Location and Procedures

4.1 Estimate Quantities of Construction Waste

4.1.1.1 The following types of waste would be generated from the construction works and they are summarised in **Table 4.1**:

- Inert and non-inert C&D materials;
- Excavated sediments;
- Chemical waste; and
- General refuse.

Table 4.1 Summary of Estimated Waste Arising and Recommended Waste Management Arrangements

Type of Waste	Approximate Quantity ^[6]	Disposal Locations
Inert C&D materials ^[1]	Soft inert ^[3] : 328,400 m ³ Mixed ground ^[4] : 27,800 m ³ Rock: 88,400 m ³ AHM ^[5] : 12,700 m ³	<ul style="list-style-type: none"> • Re-use of good quality rock at existing quarries and explore the possibility of matching with local projects • Consider to fully reuse good quality rock locally • Reusable materials would be separated and deliver to EPD’s licensed C&D material recyclers for reused as far as practicable^[8] • Tuen Mun Area 38 Fill Bank as the last resort
Non-inert C&D material ^[2]	Top soil and vegetation: 7,500m ³ Timber: 11,500m ³	<ul style="list-style-type: none"> • Designated landfill as approved in the C&DMMP
Excavated sediments	140 m ³	<ul style="list-style-type: none"> • Open sea disposal of Category L sediment
Chemical waste ^[7]	A few hundred kilograms / litres per month	<ul style="list-style-type: none"> • CWTC or other licensed chemical waste treatment facilities
General refuse	540 tons	<ul style="list-style-type: none"> • Recyclable materials: on-site sorting and off-site recycling • Non-recyclable refuse: designated landfill as approved in the C&DMMP

Note:

[1] “Inert C&D Material”, also known as public fill, includes debris, rubble, earth, concrete and TBM excavated spoil after treatment to remove the bentonite slurry which is suitable for land reclamation and site formation.

[2] “Non-inert C&D Material” involved in the Project includes top soil, vegetation, timber. 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] “Mixed Ground” refers to simultaneous occurrence of two or more geological formations with different properties in rock/ soil mechanics, or the same geological formation with different weathering grades.

[5] “AHM” includes, but not limited to, broken concrete, asphalt, bitumen, granular materials, debris, and rubble, etc.

[6] The volume is in-situ volume.

[7] Chemical waste measured by volume (litres) includes spent hydraulic oil & waste fuel, spent lubrication oil & cleaning fluids, and spent solvent. Scrap batteries are measured by weight (kilograms).

[8] Good quality of soft and rock material generated from the Project would be re-used in other projects (e.g. WENT) by the EPD’s licensed C&D material recyclers as shown in the EPD’s website (https://www.wastereduction.gov.hk/en/workplace/index_lookforlistedrecyclers2.htm).

4.1.1.2 The quantities of disposed C&D materials will be recorded under the trip ticket system by using the “C&D Material Disposal Delivery Form”. In addition, the filled “CHIT” / Vessel “CHIT” will also be presented to the landfill / public fill site as part of the system for the disposal charging scheme which had already been officially effective in January 2006. Waste transaction records could be obtained either in the waste disposal facilities right after the transaction or retrieved from the EPD bill statement each month.

4.1.1.3 Control measures would be devised to ensure that the recyclable materials are delivered to a proper recycling outlet for processing, and to avoid such materials being considered as C&D materials for the purposes of the construction of the Project.

4.1.1.4 All recyclable material that is generated during the course of the construction of the Project will be collected by registered contractors and transported to an approved facility

4.1.1.5 Details of these contractors were listed in the website of EPD as waste collectors and recyclers, the information can be search via the hyperlinks at:

- https://www.epd.gov.hk/epd/english/environmentinhk/waste/guide_ref/guide_ref_dwc.html

4.1.1.6 It is aimed to maximize the reuse of C&D waste in suitable facilities or concurrent projects in Hong Kong. Any opportunities to minimize the transportation distance so as to minimize the related environmental impact are explored.

4.2 Waste Acceptance Criteria for Government Disposal Facilities

4.2.1.1 The acceptance criteria laid down by the operators of the corresponding fill bank(s) and landfill(s), are outlined below:

4.2.2 Acceptance Criteria for Tuen Mun Area 38 Fill Bank

- The truck driver should bear a duly completed, signed and stamped DDF and a duly signed CHIT;
- The dump truck should also have a valid Dumping License issued by CEDD, dump trucks without Dumping Licenses will be rejected;
- The inert C&D materials to be delivered to the fill bank(s) should be in accordance with the conditions stipulated in the Dumping License;
- Any over-sized inert C&D materials should be broken down to less than 250mm in size so as to facilitate its reuse by other reclamation or earth-filling projects;

- The C&D materials to be disposed should consist entirely of inert construction waste (i.e. 100% inert construction waste); and
- The bituminous material is required to be separated from other inert construction and demolition (C&D) materials for disposal prior to delivery to the Public Fill Reception Facility (PFRF).

4.2.3 Acceptance Criteria for Designated Landfill

- The truck driver should bear a duly completed, signed and stamped DDF and a duly signed CHIT;
- The dump truck should also have a valid Dumping License issued by CEDD, dump trucks without Dumping Licenses will be rejected;
- The non-inert C&D waste to be delivered to the landfills should be in accordance with the conditions stipulated in the Dumping License;
- Construction waste containing not more than 50% by weight of inert C&D waste (Gazette Notice G.N. 4278 published on 9 July 2010);
- For a load of C&D waste not consisting entirely of bamboo, plywood or timber delivered by a vehicle, the weight of the waste loaded on the goods vehicle or any other types of vehicle divided by the permitted gross vehicle weight of the vehicle must not greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle or the depth of the waste loaded on the goods vehicle or any other types of vehicle must be greater than 1 meter for goods vehicle with demountable skip and 1.5 meters for any other types of vehicle (Gazette Notice G.N. 4278 published on 9 July 2010);
- Mixed C&D materials should be sorted at source to reduce the inert content as far as practicable to meet the above criteria before they are delivered to landfills;
- C&D waste delivered for landfill disposal should contain no free water and the liquid content will not exceed 70% by weight; and
- At least one week's notice, including contractors name and contact details, etc. will be submitted to the EPD before starting to deliver the C&D waste to the landfills. EPD will be informed of any subsequent change to the disposal programme.

4.3 Procedures of the Trip Ticket System

4.3.1.1 A reputable waste collector will be identified first and employed to remove and transport the stored waste from the site area. Before the commencement of the construction phase, the Contractor will open a billing account for the Project with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges to facilitate C&D waste transaction recording and billing to prevent any illegal waste dumping. Disposal destinations will first be approved by MTRCL before proceeding. The general steps of the C&D waste transportation are provided below:

- For each load of C&D materials leaving the construction site, the Contractor's transportation personnel must bear a duly completed and signed CHIT form;
- The CHIT should be used for off-site delivery of C&D material to prescribed facility as defined under Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N), such as the SENT/ NENT landfill;
- The Contractor will also sign Part 1 of the Daily Record Summary (DRS) before departure of the trucks / barges;
- C&D waste will be transferred from the construction barge to landside by derrick lighter, transporting vessels or waste collection barges. Then, dump truck or grab trucks will be used to transfer the C&D waste to landfill or other waste disposal facilities;
- The truck driver or barge operator will proceed to the disposal facilities as specified in the CHIT or DDF. The CHIT / DDF will be presented by the truck driver / barge operator at the facility entrance gate before proceeded with the disposal operation;
- Disposal of the C&D materials will be permitted if the materials accords the criteria in Cap. 354N. The disposal facility operator will provide the truck driver / barge operator a transaction record slip and a stamped CHIT / DDF for record;
- For disposal at a prescribed facility, the Contractor will check the information recorded in the DRS and check the site record against data from EPD's website [<http://www.epd.gov.hk/epd/misc/cdm/scheme.htm#j>]; and
- The Contractor will submit the completed Part 1 and Part 2 of the DRS form to MTRCL within 1 working day for prescribed facility and within 3 working days for other disposal ground after the records have been finalized.

4.3.1.2 The Contractor will maintain a daily record of C&D materials disposal from the site including CHIT / DDF numbers, vehicle registration marks, driver's particulars, approximate volume, C&D materials type, designated disposal ground, departure time from the site, actual disposal ground and arrival time at disposal ground.

4.3.1.3 In the case that an irregularity is observed from the disposal records provided by the Contractor, supporting evidence such as the duly stamped CHIT / DDF will be submitted to MTRCL to confirm the procedure of the delivery trips in question.

4.3.1.4 All the waste transportations truck will be checked by the Contractor for valid dumping licences and were fitted with a mechanical cover before leaving the site area.

4.4 Measures to be implemented During Transportation of Wastes to Avoid Leakage of Wastes onto Public Areas

4.4.1.1 The following measures will be implemented during transportation of wastes to avoid leakage on public areas:

- All of the dump trucks used would be equipped with mechanical covers in which maintained in a good condition;
- In order to minimize the leaking of material from the dump trucks, no material should be stored higher than the trail board;
- Deposited silt and wastes on all dump trucks' wheels and bodies should be properly washed off by wheel washing facilities before leaving the constructions sites;
- The Contractor will provide wheel washing facilities on site at the site entrance; and
- All dump trucks engaged on site for delivery of inert C&D material from the site to PFRFs should be equipped with Global Positioning System (GPS) or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor to prohibit illegal dumping and landfilling of materials, particularly on ecological sensitive areas in Tung Chung Valley and South Lantau. The data collected by GPS or equivalent system should be recorded properly for checking and analysis by ET and IEC whenever requested. Possible way for efficient tracking and monitoring includes real-time GPS tracking system with data accessible through internet/intranet.

4.5 Disposal of C&D Materials to Alternate Disposal Facilities

- 4.5.1.1 Where the Contractor has identified a project that can be an alternative disposal ground, the Contractor shall strictly comply with the procedures as stipulated in the Development Bureau Technical Circular (Works) No. 6/2010 “Trip Ticket System for Disposal of Construction and Demolition Materials” (DEVB TC(W) No.6/2010). According to the DEVB TC(W) No.6/2010, the Contractor will provide a detailed description of the alternative disposal ground, including location, lot number (where appropriate), location plan(s) and photographs of the proposed disposal ground for MTRCL to request for written approval.
- 4.5.1.2 Where the alternative disposal ground is a private construction site, the Contractor will submit a letter from the Authorized Person of the development (as defined under the Building Ordinance) to confirm that:
- The C&D materials for use in the development is acceptable;
 - The use of land so formed by the C&D materials is in conformity with the statutory town plan / lease conditions;
 - MTRCL's Representative are allowed to enter the alternative ground to conduct inspection where necessary; and
 - The estimated quantity and type of C&D materials to be used in the construction works and the approximate delivery programme, together with the name, post and specimen signature of the competent person to sign the DDF / internal trip ticket stipulated in G.S. Clause 25.25(6)(a)(ii).

- 4.5.1.3 Where the alternative disposal ground is a private recycling facility but not a construction site, the Contractor will submit a letter from the relevant authorities, such as the Lands Department and the Planning Department, to confirm that the suitability of the alternative disposal ground in receiving the proposed amount of C&D materials for use, and a written consent from the landowner.
- 4.5.1.4 Where the alternative disposal ground is a government project, the Contractor will submit written consent from the project office of the alternative disposal ground to use the C&D materials generated from the construction site, and to confirm the estimated quantity and type of C&D materials required and the approximate delivery programme.
- 4.5.1.5 A system for transmitting disposal records from the alternative disposal ground will be submitted to MTRCL's Representative for approval before disposal to the alternative ground starts.

4.6 Chemical Wastes/Hazardous Waste Handling and Disposal

- 4.6.1.1 Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, will be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes as follows:

4.6.2 Packaging

- 4.6.2.1 Chemical waste will be packed and held in containers of suitable design and construction so as to prevent leakage, spillage or escape of the contents under normal conditions of handling, storage and transport.
- 4.6.2.2 Containers used for the storage of chemical wastes will:
- Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;
 - Have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and
 - Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

4.6.3 Labelling

- 4.6.3.1 Every container of chemical waste will bear an appropriate label which will contain the particulars details. The waste producer will ensure that the information contained on the label is accurate and sufficient so as to enable proper and safe handling, storage and transport of the chemical waste.

4.6.4 Storage

- 4.6.4.1 The storage area will be specially constructed and bunded, and located close to the source of waste generation.

4.6.4.2 The storage area for chemical wastes will:

- Be clearly labelled and used solely for the storage of chemical waste;
- Be enclosed on at least 3 sides;
- Have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest;
- Have adequate ventilation;
- Be covered to prevent rainfall entering (water collected with the bund must be tested and disposed of as chemical waste); and
- Be arranged so that incompatible materials are adequately separated.

4.6.5 Transportation and Disposal

4.6.5.1 After the chemical wastes have been packed, labelled, and stored, the chemical wastes will be transported by licensed waste collectors and disposed of at Chemical Waste Treatment Facility in Tsing Yi.

4.7 General Refuse

4.7.1.1 Measures to be implemented to encourage waste avoidance / minimization include:

- Reduce the number of photocopies to a minimum and by copying on both sides of paper for internal documents and external documents where appropriate;
- Prevent over-ordering of office equipment and consumables;
- Procure green office equipment and consumables in terms of energy efficiency, recycled content and durability, etc.;
- Deploy sufficient recycling bins in site offices, working vessels and barges to facilitate collection of recyclables including wasted aluminium cans, plastics bottles and papers;
- Deploy sufficient collection bins with cover at convenient locations at site to facilitate collection of non-recyclables for disposal at landfills; and
- General refuse generated from working vessels and barges can dispose the waste to the Outlying Island Transfer Facilities by barge/marine vessel on a regular basis.
- Other general refuse that cannot be reused on-site will be transported to the shore and disposed of at NENT landfill or other alternative landfill sites as agreed with MTRCL.
- Floating refuse, together with any contained general refuse, will be collected by reputable licensed waste collector for disposal at agreed landfill by dump trucks.

4.8 Handling of Recyclables

4.8.1.1 Before starting the transportation of recyclable materials off site to recycling facilities, the Contractor will meet with recycling contractors to establish a suitable system for collecting recyclable materials with care. The collection frequency will depend on the actual generation rate of recyclable materials.

4.9 Excavated Sediment

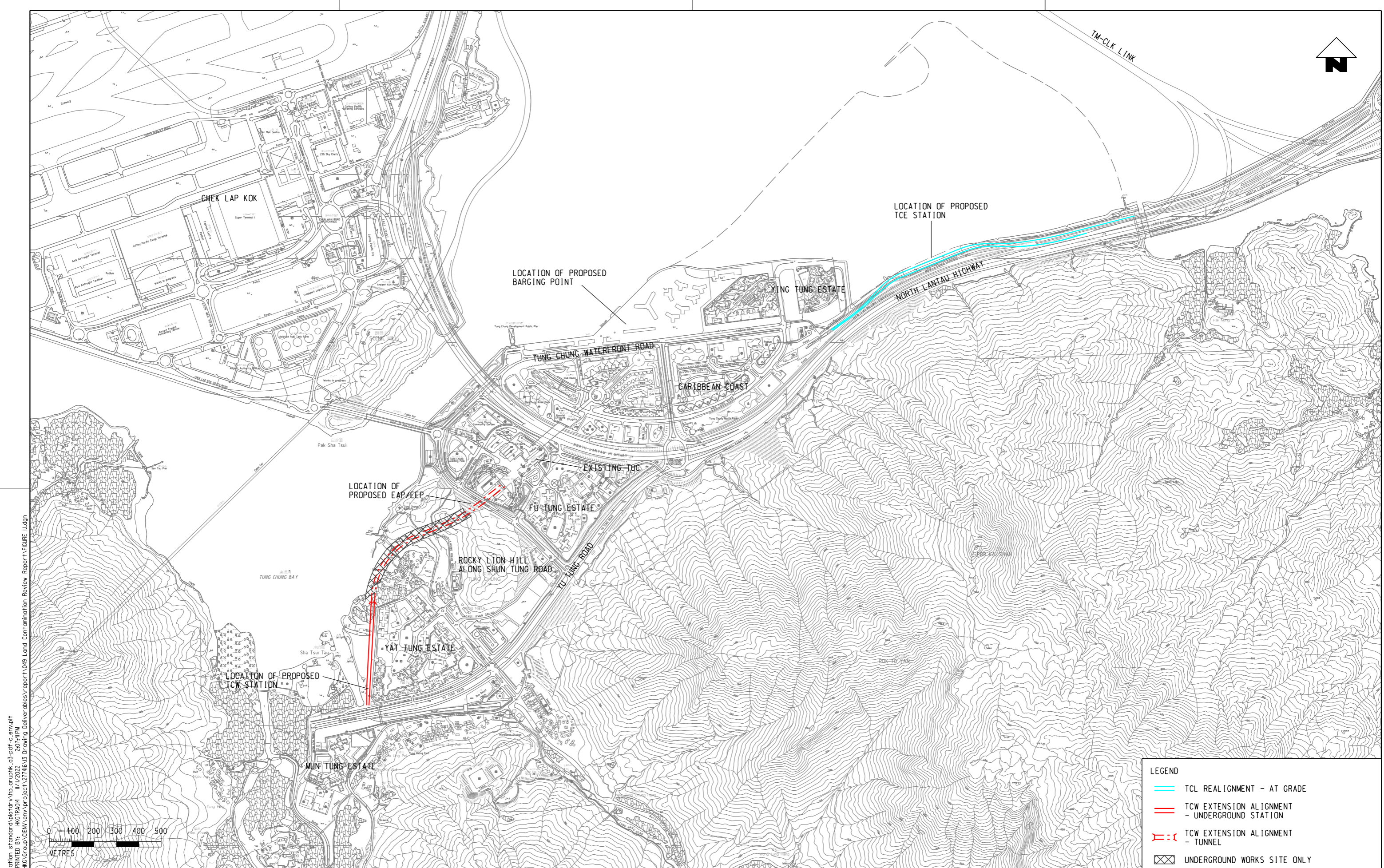
4.9.1.1 Excavated sediment will be treated using cement solidification/stabilization (Cement S/S) techniques and will be reused onsite for either backfilling or landscaping (e.g. berm material) as far as practicable. Should marine disposal of sediment be unavoidable upon exhaustion of reuse options, separate submissions should be submitted to EPD's Marine Dumping Control Section/ Territorial Control Office (TCO) when applying for the dumping permit under Dumping at Sea Ordinance (DASO). The rationale for sediment removal/ disposal will also need to be submitted to the MFC/ CEDD for agreement in accordance with PNAP ADV-21.

4.9.1.2 For handling of excavated sediment, the following measures will be implemented:

- Temporary stockpiling site of untreated sediment will be lined with impermeable sheeting, bunded and with proper leachate control measures implemented;
- Watering for the temporary stockpiles of untreated sediment will be avoided to minimise potential contaminated runoff ;
- Temporary stockpiles will be covered properly by impermeable sheeting
- Vehicles containing any untreated marine mud will be suitable covered to limit potential dust emission or potential contaminated wastewater run-off;
- The mixing of sediment with cement will be enclosed to minimize dust emission;
- Handling a mixing of cement will follow Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions.

Appendix 1.1

Site Layout Plan



LEGEND

- TCL REALIGNMENT - AT GRADE
- TCW EXTENSION ALIGNMENT - UNDERGROUND STATION
- - - TCW EXTENSION ALIGNMENT - TUNNEL
- UNDERGROUND WORKS SITE ONLY

PLOT DRW: g:\common\micr\ostation_s\andar\d\plotdrw\hp_aruphk_c3\pdf_c.env.pdf
 MODELNAME: ARUP\Group\CEN\env\project\2746\13_drawing_deliveryables\report\049_Land Contamination Review Report\Figure_Ldgn
 FILENAME:

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
B	SECOND ISSUE				GL	111122	FC		
A	FIRST ISSUE				AY	260922	FC		

DRAWN	GL
DESIGNED	GL
CHECKED	EL
APPROVED	FC
DATE	11/11/2022

MTR
 C1202 - EIA for Tung Chung Line Extension
 ORIGINATOR
ARUP Ove Arup & Partners
 Hong Kong Limited
 CADD REF.

TITLE		SITE LAYOUT PLAN	
SCALE	DRAWING NO.	REV.	
AS SHOWN	APPENDIX 1.1	B	

Appendix 3.1

Mitigation Measures for Waste Management

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
S6.2.3.2	S7.2.1	<p>Good Site Practices</p> <ul style="list-style-type: none"> • 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; and • Provision of wheel washing facilities at site exit before the trucks leave the works areas. 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • ETWB TC(W) 19/2005
S6.2.2.3	S7.2.1	<p>Waste Reduction Measures</p> <ul style="list-style-type: none"> • 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; 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • Land (Miscellaneous Provisions) Ordinance • ETWB TC(W) 19/2005

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		<ul style="list-style-type: none"> • 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 workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 				
S6.2.3.4- S6.2.3.5	S7.2.1	<p>Storage, Collection and Transportation of Waste</p> <ul style="list-style-type: none"> • 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; • 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; • Disposal of waste should be done at licensed waste disposal facilities; • All dump trucks engaged on site for delivery of inert C&D material from the site to PFRFs should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor. The data collected by GPS or equivalent system should be recorded properly for checking and analysis by ET and IEC; • A Construction and Demolition Material Management 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • Land (Miscellaneous Provisions) Ordinance • ETWB TCW No. 19/2005

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		<p>Plan (C&DMMP) should be 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;</p> <ul style="list-style-type: none"> • Carry out on-site sorting for C&D materials; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and • Implement a trip-ticket system for each works contract in accordance with DEVB TCW No. 06/2010. 				
S6.2.3.10-S6.2.3.12	S7.2.1	<p>On-site Sorting of C&D Materials</p> <ul style="list-style-type: none"> • Storage areas would be provided within the site for temporary storage of inert C&D materials during construction phase. • 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 disposal of at landfills as a last resort. • 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 minimize temporary stockpiling on-site. It is recommended that the system should include the 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous Provisions) Ordinance

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		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 contractors or frequency of removal off-site.				
S6.2.3.13- S6.2.3.14	S7.2.1	Reuse of C&D Materials <ul style="list-style-type: none"> • 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. 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous Provisions) Ordinance
S6.2.3.15- S6.2.3.16	S7.2.1	Specification of Inert C&D Materials to be Delivered Off-site <ul style="list-style-type: none"> • 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. 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous Provisions) Ordinance
S6.2.3.17	S7.2.1	Use of Standard Formwork and Planning of Construction Materials Purchasing	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • N.A.

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		<ul style="list-style-type: none"> • Standard formwork should also be used as far as practicable in order to minimize the arising of non-inert C&D materials; • The use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling; and • The purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage. 				
S6.2.3.18– S6.2.3.20	S7.2.1	<p>Land-based Marine Sediment</p> <ul style="list-style-type: none"> • Excavated land-based marine sediment should be reused as far as possible within the Project Site before considering disposal. Marine disposal option for the land-based marine sediment should only be considered as the last resort upon exhaustion of reuse options. • All construction plant and equipment shall be designed and maintained to minimise the risk of sediments being released into the water column or deposited in the locations other than designated location; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to minimise 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; • The Contractor shall monitor all vessels transporting the excavated sediment. The Contractor shall keep 	Throughout the construction period	All construction sites where applicable	Contractor	<ul style="list-style-type: none"> • ETWB-TCW 34/2002 • DASO

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		<p>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 Engineers;</p> <ul style="list-style-type: none"> • The Contractor shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance (DASO); • 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; and • 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. 				
S6.2.3.21	S7.2.1	<p>If mixing of land-based marine sediment with cement is to be used for backfilling on-site, the following mitigation measures should be followed.</p> <ul style="list-style-type: none"> • The loading, unloading, handling, transfer or storage of bulk cement should be carried out in an enclosed system as far as practicable; • Mixing process and other associated material handling activities should be properly scheduled to minimise potential noise impact and dust emission; and • The mixing facilities should be sited as far apart as practicable from the nearby NSRs and to be sited under covers to minimise dust nuisance to the nearby 	Throughout the construction period	All construction sites where applicable	Contractor	<ul style="list-style-type: none"> • ETWB-TCW 34/2002 • DASO

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		receivers.				
S6.2.3.22- S6.2.3.23	S7.2.1	<p>Chemical Waste</p> <ul style="list-style-type: none"> • Reduce the generation quantities or select a chemical type of less impact on environment, health and safety as far as possible; and • If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes 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 Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S6.2.3.24- S6.2.3.25	S7.2.1	<p>General Refuse</p> <ul style="list-style-type: none"> • 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 regular basis; • Arrangements should be made with the recycling companies to collect the recycle waste as required; 	Throughout the construction period	All construction sites	Contractor	<ul style="list-style-type: none"> • WDO

**Mitigation Measures for Waste Management
Tung Chung Line Extension**

EIA Reference	EM&A Reference	Recommended Mitigation Measures	Timing	Location of recommended measures	Implementation Agent	Relevant Legislation & Guidelines/ Environmental Performance Required
		<ul style="list-style-type: none"> • The Contractor should implement an education programme for workers relating to avoiding, reducing, reusing and recycling general waste; and • Participation in a local collection scheme should be considered by the Contractor to facilitate waste reduction. 				

Appendix 3.2

Sample Daily Record Summary

Appendix 3.3

Sample Waste Flow Table

