Waste Management Plan for Tung Chung New Town Extension (East)

(EP No. EP-519/2016)

March 2023

土木工程拓展署
Civil Engineering and Development Department

Tung Chung New Town Extension

Environmental Certification Sheet for Environmental Permit No. EP-519/2016

Reference Document/Plan

Document/Plan to be Certified:	Waste Management Plan
Date of Report:	March 2023

Reference EP Condition

Environmental Permit Condition:	Condition 2.24
The Permit Holder shall, no later than 3 months before the commencement of construction of the Project, deposit 3 hard copies and 1 electronic copy of a Waste Management Plan (The Plan) for the construction of the Project with the Director.	

ET Certification

I hereby certify that the above referenced document/plan complies with the above referenced condition of EP-519/2016

Kelvin So
Environmental Team Leader
ERM-Hong Kong, Limited

Date: 29 March 2023

Your Ref.

By Post

Our Ref. 198377-0671

Date 29 March 2023

Sustainable Lantau Office
Civil Engineering and Development Department
13/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

For the attention of Mr. Eddie LAM/ Mr. K.T. WO

Dear Sir / Madam,

Agreement No. CE 59/2017 (EP)
Independent Environmental Checker for Tung Chung New Town Extension – Investigation
Waste Management Plan (EP condition 2.24)

We refer to the Waste Management Plan for Tung Chung New Town Extension (East) (TCE) dated March 2023 and certified by the Environmental Team Leader of TCE on 29 March 2023. Please note we have no adverse comments on the captioned submission. The captioned submission is hereby verified in accordance with the requirement stipulated in Condition 2.24 of EP-519/2016.

Should you have any query, please feel free to contact the undersigned at 2608 7314 (chuawo@binnies.com) or our Edward Lau at 3894 9695 (lauky@binnies.com).

Yours faithfully,
for and on behalf of
BINNIES HONG KONG LIMITED

MANUEL CHUA
INDEPENDENT ENVIRONMENTAL CHECKER

cc: ET Leader / TCE – ERM (Attn: Mr. Kelvin So) [by Email: Kelvin.So@erm.com]
PM / TCE – AECOM (Attn: Mr. Chris Cheung) [by Email: crec1@tce-aecom.com]

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History of Revision and Amendments

Revision Number	Date of Report	Amendments
1	May 2018	First Submission
2	March 2023	Second Submission

Table of Contents

Contents

1. Introduction

1.1. Background

The Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-196/2016) prepared for the "Tung Chung New Town Extension" (hereinafter referred to as "the Project") has been approved by the Director of Environmental Protection, and an Environmental Permit (EP) (Permit No.: EP-519/2016) has been issued for the project under the Environmental Impact Assessment Ordinance. This submission of Waste Management Plan has been prepared in accordance with Condition 2.24 of the EP and includes at least the following information:

(i) arrangements for avoidance, minimization, recovery, recycling, reuse, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities;

(ii) the recommended mitigation measures on waste management contained in the approved EIA report (Register No. AEIAR-196/2016);

(iii) maximization of the use of C&D materials for the land formation work during the construction phase of the Project;

(iv) critical review of the scheduling of the surcharge operations to avoid, or otherwise, minimize generation of residual C&D materials requiring disposal during and at the end of the land formation work;

(v) designated disposal location(s) for all surplus excavated spoil and other wastes;

(vi) all dump trucks engaged on site to be equipped with 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;

(vii) proposals for record and analysis of data collected by GPS or equivalent automatic system relating to travel routings and parking locations of dump trucks engaged on site;

(viii) reporting of illegal dumping and landfilling of C&D materials outside the designated disposal locations by the Surveillance Team appointed under Condition 2.6; and

(ix) follow-up actions to be taken by the Contractor and dump truck drivers for committing suspected offences relating to illegal dumping and landfilling of C&D materials..

The development of Tung Chung New Town Extension (TCNTE), comprising Tung Chung East (TCE) and Tung Chung West (TCW), is a mega-scale and complex project aiming to provide land to meet the future housing economic and social development needs of Hong Kong. Due to the fact that the proposed works are geographically separated, the implementation of mega-scale Project is divided into two packages, namely TCE and TCW respectively. In accordance with the tight delivery programme, the Project will be implemented in phases under separate contracts for the developments of TCE and TCW. This submission only covers the Waste Management Plan for TCE. The WMP for TCW can be found at the dedicated project website: https://www.env.tcnte-west.hk/en/ep-submissions.html.

1.2. Scope of Works

1.2.1. Tung Chung New Town Extension – Reclamation and Advance Works (Contract No. NL/2017/03) (Contract 1)

Build King – SCT Joint Venture (BKSCTJV) is the contractor appointed to undertake the reclamation works in Tung Chung East and the advance works for the Project. The works mainly comprise:-

a) Reclamation of the seabed by a non-dredged method at Tung Chung East (TCE) to form a total of about 130 hectares of land;

b) Construction of about 4.9 kilometers of seawalls with eco-shoreline, three drainage box culvert outfalls, three circulation drains and a seawater intake;

c) Construction of about a 470-metre long multi-cell drainage box culvert at TCE;

d) Provision of infrastructure for Tung Chung Area 58, including construction of a single two-lane road with a footpath of about 270 meters in length and the associated utility works; and

e) Associated environmental mitigation measures.

1.2.2. Tung Chung New Town Extension – Salt Water Supply System (Contract No. NL/2020/02) (Contract 2)

China Geo-engineering Corporation (CGC) is the contractor appointed to undertake the construction of salt water supply system for the Project. The works mainly comprise:-

a) Construction of Tung Chung Salt Water Pumping Station at Tung Chung East reclamation area with a pumping capacity of 54,000 m3 per day;

b) Construction of Tung Chung Salt Water Service Reservoir near Chek Lap Lok New Village with a storage capacity of about 11,500 m3;

c) Laying of about 2,600m long salt watermains;

d) Laying of about 1,500m long fresh watermains;

e) Compensatory woodland planting near Tung Chung Salt Water Service Reservoir; and

f) Associated civil, geotechnical, structural, building services systems, electrical and mechanical engineering and landscape works.

1.2.3. Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract No. NL/2020/03) (Contract 3)

Build King Civil Engineering Limited (BKCEL) is the contractor appointed to undertake the construction of main infrastructure works for the Project. The works mainly comprise:-

a) Construction of engineering infrastructure including drainage works, sewerage works (including two sewage pumping stations), waterworks, roadworks (including carriageways, footpaths, cycle tracks and junction improvements), common utility tunnels and landscaping works; and

b) Construction of associated environmental mitigation works including noise barriers and low-noise road surfacing.

1.2.4. Tung Chung New Town Extension – Tai Ho Interchange (Contract No. NL/2020/07) (Contract 7)

Build King Civil Engineering Limited (BKCEL) is the contractor appointed to undertake the construction of Tai Ho Interchange connecting North Lantau Highway, Road P1 and Cheung Tung Road,

construction of a section of dual two-lane Road P1 between Tung Chung East and Tai Ho Interchange, laying of fresh water, salt water and sewage rising mains, associated civil, geotechnical and landscaping works for the Project. The works mainly comprise:-

a) Construction of around 4km of roads, drainage, sewerage, watermains and utilities respectively;

b) Construction of Pak Mong Subway Extension and Modification to Existing Pak Mong Subway;

c) Construction of Bridge C connecting Roundabout P1 to Tai Ho Interchange;

d) Modification works to Tai Ho Box Structure;

e) Construction of North Lantau Highway overbridge Bridge A1 and A2;

f) Construction of sliproads SR-A1, SR-A2, SR-A4 and SR-A5 to North Lantau Highway;

g) Construction of sliproads SR-A3 to Cheung Tung Road; and

h) Construction of Retaining Structures and Earthworks.

This submission is prepared based on the latest information of Contract 1, Contract 2, Contract 3 and Contract 7. The submission will be updated in accordance with change of the detail provided for the contracts of TCE. .

The details of Waste Management Plan for Contract 1, Contract 2, Contract 3 and Contract 7 are provided in in Annex 1, 2, 3 and 4 respectively .

Annex 1

Tung Chung New Town Extension – Reclamation and Advance Works
(Contract No. NL/2017/03) (Contract 1)

BUILD KING - SCT JOINT VENTURE

Civil Engineering and Development Department
Contract No. NL/2017/03

Tung Chung New Town Extension – Reclamation and Advance Works

Waste Management Plan

Complied By :	Authorized for issue :
Signature :	Signature :
Name: Issac Wong Post : Environmental Officer Date : 3 March 2023	Name: David Wong Post : Site Agent Date : 3 March 2023

CONTENTS

Appendices

Abbreviation list

Abbreviation	Explanation
AECOM	AECOM Asia Co. Ltd
AHM	Artificial Hard Material
TCNTE	Tung Chung New Town Extension
TCE	Tung Chung East
TCW	Tung Chung West
C&DM	Construction and Demolition Materials (C&DM)

INTRODUCTION

1.1 Background

This plan will outline the Contractor WMP proposed by the Contractor for CEDD Contract (Contract No. NL/2017/03) - Tung Chung New Town Extension and Advance Works. The main contractor Build King – Samsung C&T Joint Venture (hereinafter mentioned as BKSCTJV) will ensure that all his employees will implement the accepted version of this WMP as an integral part of their daily activities on site.

1.2 Scope of Works

The works mainly comprise

(a) Reclamation of the seabed by a non-dredged method at Tung Chung East (TCE) to form a total of about 130 hectares of land;
(b) Construction of about 4.9 kilometers of seawalls with eco-shoreline, three drainage box culvert outfalls, three circulation drains and a seawater intake;
(c) Construction of about a 470-metre long multi-cell drainage box culvert at TCE;
(d) Provision of infrastructure for Tung Chung Area 58, including construction of a single two-lane road with a footpath of about 270 meters in length and the associated utility works; and
(e) Associated environmental mitigation measures.

1.3 Purposes of the Waste Management Plan

This WMP provides necessary technical information, guidance and instructions to designated personnel who are responsible for the management of Construction and Demolition Materials (C&DM).

The aims of this WMP are:

- To identify and classify the types of C&DM generated in the execution of the works;
- To identify the potential for reuse, recycling minimization and disposal of C&DM from the proposed construction activities; and
- To outline the implementation, monitoring and audit programmed to ensure that the wastes arising from the construction activities are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner which complies with the contract requirements and the relevant *Ordinance* and *Regulations* in the Government of Hong Kong SAR.

"C&DM" refers to surplus materials arising from any land excavation or formation, civil/building construction, road works, building renovation or demolition activities. It includes various types of the reusable materials, building debris, rubble, earth, concrete, timber and mixed site clearance materials. When sorted properly materials suitable for land reclamation and site formation (known as public fill) should be reused at public filling area whereas the remaining C&DM are to be disposed of at landfills.

This WMP will also describe the waste management arrangements for other wastes (such as chemical waste, general refuse) that will be generated during the construction activities.

1.4 Waste Management Requirements and Guidelines

During the contract period, BKSCTJV will comply with the following legislations, code of practices, guidelines, practical notes and technical circulars.

■ **Statutory requirements**

- Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations;
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation (Cap. 132);
- Land (Miscellaneous Provisions) Ordinance) (Cap. 28);
- Dumping at Sea Ordinance (Cap. 466); and
- Dangerous Goods Ordinance (Cap.295)

■ **Codes of Practice, Circulars and Guidelines**

BKSCTJV will meet all relevant requirements by consulting the following codes of practice, technical circulars and guidelines:

a. Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005 - Environmental Management on Construction Sites;
b. Environment, Transport and Works Bureau Technical Circular No. 33/2002 - Management of Construction and Demolition Material Including Rock;
c. Development Bureau Technical Circular (Works) No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Material;
d. Environment, Transport and Works Bureau Technical Circular (Works) No. 24/2004 - Specifications Facilitating the Use of Concrete Paving Units Made of Recycled Aggregates;
e. Works Bureau Technical Circular No. 12/2002 - Specifications Facilitating the Use of Recycled Aggregates;
f. Development Bureau Technical Circular (Works) No. 8/2010 - Enhanced Specification for Site Cleanliness and Tidiness;
g. Works Bureau Technical Circular No. 19/2001 - Metallic Site Hoardings and Signboards;
h. Works Bureau Technical Circular No. 12/2000 - Fill Management;
i. Works Bureau Technical Circular No. 04/1998A - Use of Public Fill in Reclamation and Earth Filling Projects;
j. Works Bureau Technical Circular No. 04/1998 - Use of Public Fill in Reclamation and Earth Filling Projects;
k. Works Bureau Technical Circular No. 16/1996 - Wet Soil in Public Dumps;
l. Works Bureau Technical Circular No. 02/1993B - Public Filling Facilities;
m. Works Bureau Technical Circular No. 02/1993 - Public Dumps;
n. Works Bureau Technical Circular No. 32/1992 - The Use of Tropical Hardwood on Construction Sites;
o. A Guide to the Registration of Chemical Waste Producers;
p. A Guide to the Chemical Waste Control Scheme;
q. Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes;
r. Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste – (Cap 354, Section 35) and,
s. Environmental Guidelines for Planning in Hong Kong (1990), Hong Kong Planning and Standards Guidelines, Hong Kong Government.

BKSCTJV will observe all applicable statutory requirements, legislation and associated regulations, and/or code of practices with regard to the waste to be generated in the construction activities. BKSCTJV will also apply for all necessary permits and licenses under these ordinances / regulations

1.5 License Requirements

Where appropriate, BKSCTJV will apply for all permits and licenses required under the following legislation for the handling and disposal of waste arising from the Project:

a. Chemical Waste Producer Registration under the Waste Disposal (Chemical Waste) (General) Regulation; and,
b. License to Collect and Transport Chemical Waste under Waste Disposal Ordinance
c. Public Dumping License under the Land (Miscellaneous Provisions) Ordinance.

A licensed chemical waste collector will be appointed for the disposal of chemical waste. Upon classification of any types of chemical waste as dangerous goods under the Dangerous Goods Ordinance, the handling of these wastes will comply with all the requirements of the ordinance and its regulations.

2.0 ORGANISATION AND STRUCTURE

This Section provides an outline of the roles and responsibilities of the major site staff involved with the management of C&DM arising from the Project.

2.1 Organization and Responsibility

The Project Manager / Deputy Project Manager will have the overall responsibility to ensure that the requirements of the WMP are properly implemented. The Site Agent will act as the Waste Manager for the Contract. The Construction Team Leader of contractor and Team Leader of the Environmental Team are for overall control of waste management practices to ensure compliance with the contract requirements. The Environmental Officer and Environmental Supervisor will communicate and coordinate with ET on waste management for environmental monitoring and audit. The responsibilities of key site staff for the WMP are listed as follows: (see ***Appendix A*** of Project Environmental Organization Chart).

Project Manager PM / Deputy Project Manager DPM (Chairman)

The PM / DPM will maintain overall control of all aspects of the construction activities and will oversee the implementation of the WMP. He is also responsible for ensuring that there are adequate resources available for the implementation of the WMP. He will also chair the ad hoc meeting(s) with the Supervising Officer's Representatives to discuss the WMP.

Site Agent, SA (Deputy Chairman)

The Site Agent will be responsible for management and control of the construction activities in relation to waste management and mitigation measures. He will be responsible for assigning other team members to assist him for supervision and enforcement of the on-site waste management practices. The Site Agent will be responsible for:

- Identification and classification of all possible wastes arising from the construction activities
- Analysis of effectiveness, efficiency and reliability of waste reduction programme
- Obtaining all necessary licenses and permits for the handling and disposal of wastes
- Planning for on-site segregation, sorting and storage of wastes
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract
- Carry out quarterly internal auditing for the implementation of WMP

- Provide resources to the implementation and control of the WMP

Construction Team Leader

Construction Team Leader liaison with all operation divisions (i.e. Civil Division, Structural-GI-Drainage-&-Plant Division and DCM Division.) for the coordination of the construction works. His duty on waste management as below:

- Assist Site Agent to implement the waste management plan
- Control of the construction activities in relation to waste management and mitigation measure
- Overall control of waste management practice to ensure compliance with the contract requirement
- Coordinate with EO, ES, General Foreman on waste management for environmental monitoring and audit
- Carry out remedial actions or mitigation measures to rectify the non-compliance
- Ensure the on-site environmental protection facilities are properly maintained

Environmental Officer, EO

- Identify legal requirements
- Ensure site comply with legal requirements
- Prepare, implement and update the WMP
- Update the Waste Flow Table and Use of Timber Record
- Verify waste management activities and related results to comply with planned arrangements
- Arrange and provide the environmental training including the site specific induction training and toolbox talks
- Organize environmental promotional activities
- Liaise on all matters relating to complaint, enquiry and non-compliance
- Carry out environmental system audits

Environmental Supervisor, ES; Safety Officer, SO and Safety Supervisor, SS (Team Member)

- Identify statutory requirements, contract requirements and corporation requirements
- Identify material that can be recycled, re-use and returned
- Arrange re-use, recycle and return work
- Monitor sub-contractors and workers to implement according to WMP
- Conduct waste management briefing to all site staff and workers
- Carry out quarterly internal auditing for the implementation of WMP

General Foreman, GF (Team Member)

- Prepare location plans for storage of building materials to avoid or minimize construction materials damage on site
- Ensure WMP is implemented and maintained
- Instruct relevant parties to solve management problems
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out monthly review for the implementation of WMP

Foremen, FN (Team Member)

- Assist General Foreman to prepare location plans for storage of building materials to avoid or minimize relevant materials damage on site
- Arrange sorting facilities for waste materials re-use and recycling
- Arrange waste materials storage areas and disposal of waste materials according to trip-ticket System
- Ensure that daily site cleanliness and tidiness are implemented
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out weekly review for site cleanliness and tidiness

Subcontractor Representatives, SR (Team Member)

- Ensure that construction waste are properly sorted out and disposed
- Ensure that construction waste are properly reused and recycled
- Coordinate with foremen to rectify and take follow-up actions for identified waste management issues
- Provide adequate resources for the implementation of WMP
- Direct and supervise workers to implement according to WMP

Workers, WR

- Follow the instructions given by General Foreman, Foremen or Subcontractor Representatives to carry out waste management issue on site
- Reduce construction waste generation on site if possible
- Ensure that construction waste are properly sorted, re-used, recycled or returned on site
- Maintain good housekeeping of the workplaces after daily work activities

3.0 IDENTIFICATION AND CLASSIFICATION OF WASTE GENERATED FROM THE CONSTRUCTION ACTIVITIES

3.1 Waste Arising from the Construction Activities

Major activities that will generate waste from this Project include site clearance, excavation, formwork construction for concreting, etc.; which can be divided into distinct categories based on their composition as follows:

- Excavated materials from foundation work and underground services works;
- C&DM from demolition, structural, architectural and external works;
- Chemical waste from maintenance of plant and equipment; and
- General refuse from construction works.
- Chemical waste from construction works

A summary of the estimated quantities of C&DM to be generated from the construction and demolition work under the Project and the tentative C&DM disposal programme is attached in ***Appendix B***.

3.1.1 Excavated Material

The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works. Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would

be engaged for backfilling. As for armour rock removal of the existing seawall, it will also be maximized to reuse for the construction of new seawall.

3.1.2 Construction & Demolition Materials (C&DM)

C&DMs include inert public fill materials such as bricks, rubble, concrete and non-inert C&DM such as wood, steel, vegetation, floating refuse, office and work force waste etc.

The majority of C&DM will arise during site clearance, demolition and excavation works.

3.1.3 General Refuse

The workforce will likely generate general refuse comprising food scraps, waste paper, empty containers, etc.

3.1.4 Chemical Waste

The maintenance and servicing of construction plant and equipment generates chemical waste, for instance, cleaning fluids, solvents, and lubrication oil and used batteries. The maintenance of vehicles also uses common chemicals, oil, lubricants and paints for this purpose. A licensed chemical waste collector would be employed for collection of chemical waste.

3.2 Designated Waste Disposal Facilities / Outlets and Locations

The designated waste disposal facilities, the locations, the possible disposal routes and the relevant criteria as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) are also summarized in Table 3.2. The handling / management of each waste type are detailed in Section 4.

Table 3.2 Designated Waste Disposal Facilities / Outlets and Locations

Type of Waste	**Designated Waste Disposal Facility / Outlet**	**Designated Location**	**Possible Disposal Routing**	**Criteria to be adopted**
Inert C&DM	Fill Bank	Tuen Mun Area 38 Fill Bank (TM38FB)	North Lantau Expressway, TM-CKL, Lung Mun Road,	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles

C&DM (Non-inert portion [excluding contaminated materials] and not recyclable)	Only North East New Territories (NENT) Landfill	Only North East New Territories (NENT) Landfill	North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Castle Peak Road, Shing Mun Tunnel, Tai Po Road, Tolo Highway, Fanling Highway, Sha Tau Kok Road, Wo Keng Shan Road	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles (GN6395)
Chemical Waste	Dunwell Industrial (Holdings) Ltd.	8 Wand Lee Street, Yuen Long Industrial Estate, Yuen Long, NT, Hong Kong.	North Lantau Expressway, Tsing Ma Bridge, Ting Kau Bridge, Tai Lam Tunnel, Route 3, Castle Peak Road, Wang Lee Street	Admission tickets shall be granted and adopted for disposal
Recyclables (e.g. papers, metals)	Secure Information Disposal Services Limited Win Link Trading Ltd	No.82 Fuk Hi Street, Yuen Long Industrial Estate, NT, Hong Kong Gate 2, Wing Shun Street, Gin Drinkers Bay, Tsuen Wan, NT, Hong Kong	North Lantau Expressway, Tsing Ma Bridge, Ting Kau Bridge, Tai Lam Tunnel, Route 3, Castle Peak Road, Wang Lee Street North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Tsing Tsuen Road	Photo record shall be taken and receipt or certificate of each event shall be obtained from the recycling company

A summary regarding waste classification and designated waste disposal facilities / outlets is provided in Table 3.2. The handling / management of each waste type are detailed in Section 4.

BKSCTJV will also comply with the following requirement when delivery of construction waste to the landfills:

(1) Any over-sized inert C&DMs will be broken down to less than 250mm in size so as to facilities its re-use by reclamation or earth-filling.
(2) BKSCTJV will implement proper measures to ensure that the dump trucks delivering C&DMs are not overloaded. The measures include the checking of load cell before leaving of construction site.
(3) Mixed C&DM should be sorted at source to reduce the inert content to less than 30% by weight as far as practicable before they are delivery to landfills.
(4) The C&DM delivered for landfill disposal shall contain no free water and the liquid content shall not exceed 70% by weight.

4.0 PROPOSAL FOR WASTE MANAGEMENT

4.1 Waste Management Hierarchy

BKSCTJV will implement appropriate waste management practices according to the nature and category of wastes arising. Waste management options will be selected according to the widely accepted hierarchy shown by Table 4.1 below.

Table 4.1 Waste Management Hierarchy

Avoidance and minimization	Avoid and minimize waste through changing or improving practices and designs.	↑ Highest priority
Reuse of materials (with limited reprocessing)	Reuse construction waste with only limited reprocessing such as uncontaminated soil, wooden planks, metals and other materials in other construction works or process.	
Recovery and Recycling (may require reprocessing)	Undertaking on site or off site recycling.	Lowest priority
Treatment	Offsite destruction and detoxification etc, of wastes into less harmful substances.	↓
Disposal	Release of wastes to designated areas properly so as to render them harmless.	

The hierarchy will be used to evaluate waste management options for the minimization of waste generation. By the implementation of this hierarchy, the overall construction cost will be reduced by avoiding the over-ordering of construction materials and the handling and disposing of unnecessary waste.

4.2 Design and Planning of Construction Works

Prior to commencement of works, BKSCTJV will carefully consider the construction methodology, demolition procedures and programme to assess the waste generation during works and study the available opportunity to reduce waste arising. Good work planning will, not only result in a better estimation of materials required for the works, but also contribute to the performance of the works in the first instance so as to avoid abortive activity.

Prior to the commencement of works, the location and necessary facilities for construction material storage, sorting and temporary waste collection will be planned and implemented. The opportunity for the reuse and recycling of the waste material on site and off site will be carefully studied.

4.3 Waste Minimization Measures and Good Site Practice

Good management and site practice can prevent the over generation of waste. Waste reduction is best achieved at the planning and design stage as well as by ensuring the implementation of good site practice. The good site management to be adopted will include: -

a. 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;

b. Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;

c. Using the correct amount of raw materials at the correct time and the recording of materials flow to minimize over ordering. The construction materials will be stocked carefully to prevent damage or contamination. During the works, only exact quantity of materials will be collected and if necessary, any surplus will be returned to stock after consideration of its use;

d. Maximizing the utilization of materials and the avoidance of unnecessary cutting such that off-cuts will be used when short lengths or a small quantity of materials are required;

e. A preference for reusable non-timber formwork such as steel formwork or plastic facing;

f. Sorting of all excavated / demolition materials to recover the inert portion (e.g. soil and broken rock) for reuse on site whenever possible or disposal to designed outlets (e.g. public filling areas). Recover all metal, cardboard and paper on site and properly stored in dry and clean conditions temporarily for later collection by recycling contractors;

g. Segregation and storage of constituents of C&DM in appropriate containers, skips or stockpiles to enhance the opportunity for reuse and recycling of materials or their proper disposal. Sufficient protective measures provided in the storage area for sorting to avoid damage or contamination;

h. Collection of aluminum cans, paper waste and plastic bottles by site staff, and provision of separately labeled bins to segregate these wastes from other general refuse arising from the work force;

i. Provision of a designated waste working team to collect the refuse on site regularly;

j. Removal of all other un-reusable C&DM off site as soon as practicable in order to optimize the use of the on-site storage space;

k. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The security guard will ensure only dump trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&DM transported off site. The trip-tickets, with valid stamp from an agreed dumping / filling location, will be collected upon return and appropriately filed in the site records;

l. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimize fugitive dust emission;

m. Unused chemicals or those with remaining functional capacity will be retained for reuse. The chemicals will be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facilities (CWTF);

n. The setting up of special control measures to regulate storage, labeling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTF;

o. Imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;

p. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;

q. The amount of waste reused, recycled or disposed will be recorded regularly.

Mitigation measures according to the EIA will be implemented on site. The details are summarized in **Appendix E**. The implementation schedule of major waste management measures is shown in **Appendix F.**

4.4 Handling of C&DM

Storage, collection and transportation of the C&DM will be carefully planned and implemented to minimize any adverse impact upon the environment. The generated C&DM will be sorted on site and C&DM for recycling as appropriate in accordance with ETWB TCW No. 19/2005, or subsequent disposal at approved strategic landfills. Wherever practicable, SA will arrange the segregation of these wastes on site in order to maximize the recovery of reusable and recyclable materials. Separate areas will be designated for segregation and storage where site-specific conditions allow.

The segregated types of C&DM will be stored in separate covered storage areas to avoid possible cross contamination and loss due to windblown and fugitive dust. If the C&DM are to be temporarily stored in piles on site, they will either be covered with a tarpaulin or watered regularly to prevent the emission of fugitive dust. SA will ensure that C&DM are removed from their origin and processed at designated points in a timely manner.

The period of surcharging within any portion of site shall be deemed to commence from the time that the surcharge material has been brought to the designated height of the surcharge over the full extent of that portion. The Contractor shall critically review of the scheduling of the surcharge operations to avoid, or otherwise, minimize generation of residual C&D materials requiring disposal during and at the end of the land formation.

Recyclable materials such as steel mesh, reinforcement bars, window frames, railing, banisters, and wooden planks will be separated from other C&DM. These materials will be either reused on site or collected by an external licensed waste recycling agent. If an external recycling agent is required, details of the nominated company will be submitted to the Project Manager.

4.4.1 Waste Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert materials and a unique access checkpoint with security control. The SA will manage the waste sorting facilities and promptly remove all the sorted and processed materials arising from or in connection with the works from the site to minimize the extent of temporary stockpiling on the site. The categories of C&DM to be sorted within the waste sorting facilities include:

- Inert materials consisting of earth, building debris, rock fragments, concrete bricks, tiles, masonry and mortar etc;
- Metals;
- Paper/Cardboards; and,
- Timber.

- Waste from Landscaping Works

Following the sorting of these wastes, they will be sent separately for reuse and recycling, processing or disposed of as described in the following sections.

Other than large waste sorting facilities, BKSCTJV will provide refuse and recycling bins respectively to collect different types of refuse generated by the site office and the workforce. These will include bins to collect general refuse such as food waste and recycling bins to collect waste paper separately, plastic bottles and aluminum cans. These bins will be provided in common areas where the wastes are commonly generated such as site offices, workshops, canteen and other site accommodation areas for the workers.

(I) Inert C&DMs

Following waste sorting, the remaining inert C&DM will be managed as follows:

Excavated Material

In order to minimize the amount of excess excavated material, the priority for the management options of excess excavated material will be as followings: -

a. *Suitable excavated material will be stored for backfilling purposes;*
b. *Excessive excavated material will be transported to other sites for reuse as approved by the Project Manager; whilst ET, IEC and EPD will be informed*

The method statement for stockpiling and transportation of excavated materials and other construction waste is shown in Appendix G.

Concrete Waste

The surplus concrete after each concrete pour will be used for some minor pre-cast elements where practicable. Dry concrete waste, including broken concrete from demolition works, will be sorted out from the other wastes for reuse in site temporary road construction.

(II) Non-Inert C&DMs

Timber Waste

As far as possible, BKSCTJV will avoid, reduce and minimize the use of timber in temporary works construction. Where the timber is used for this purpose or for one process / activity with an estimated quantity exceeding 5m^3, BKSCTJV will submit a method statement to the Project Manager for agreement prior to the commencement of the works.

A description, justification and the estimated quantity for every work process / activity requiring the use of timber for temporary works construction.

Metal Wastes

BKSCTJV will avoid and reduce metal waste during the design, planning and construction process. Cut metal or steel bar will be considered for re-use in temporary or minor works on site. When metal waste has arisen on site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling contractors.

General Refuse and C&DM

Un-recyclable, non-inert C&DM, i.e. C&DM, floating refuse and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

The C&DM will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

The general refuse and the un-recyclable C&DM will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

4.4.2 Chemical Waste

For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

<u>Storage of Chemical Waste</u>

Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:

a. be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
b. have a capacity of less than 450L unless the specifications have been approved by the EPD; and,
c. display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

The storage area for chemical waste will:

a. be clearly labeled and used solely for the storage of chemical waste;
b. be enclosed on at least three sides;
c. have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
d. have adequate ventilation;
e. be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
f. be arranged so that incompatible materials are adequately separated.

Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Please refer to Section 5.2 for the recording system of C&DM and waste. A sample of the Monthly Waste Flow Table and Record of Timber Usage is given at **Appendix C.**

4.4.3 Hazardous Material

All hazardous materials generated from the demolition works shall be sorted and handled properly. For the grits and any other depositions collected from the existing facilities, Admission Ticket shall be applied to deliver such special waste to designated landfill site.

BKSCTJV will conduct a risk analysis and produce a method statement specifying the safe method of use and all associated precautions to be implemented.

BKSCTJV will ensure that material safety data sheets are available and hazard identification labels will be properly affixed to all storage containers.

Should workers be involved in the use, handling of, or exposure to hazardous substances, then the relevant information, training and proper personal protective equipment shall be provided accordingly.

The quantities of hazardous substances on the Site shall be kept to a minimum as far as is possible and practicable.

Strictly follow the guidelines provided by the material suppliers or the relevant Material Safety Data Sheet for use and storage of the hazardous material.

4.5 Promotion and Training on Waste Management

4.5.1 Environmental Training

The EO and ES are responsible for carrying out the environmental training on waste management. They will analyze the problem and the detailed need of waste management training for the employees, consult with their departmental managers, and seek advice from the senior management.

The environmental training plan shall be reviewed quarterly by the EO in consultation with the Site Agent to identify and review training needs of the construction activities and to introduce new training program.

Site Specific Induction Training

The site Specific Environmental Induction Training provided by the EO covering but not limited to environmental and waste management including the implementation of waste management plan, handling of special waste and trip ticket system will be conducted for all site staff and workers employed for the Works or in connection with the Contract. Refresher training for the aforesaid area will be provided by the EO in every six months.

The training content should also cover the subjects such as organization structure, duties and responsibilities, measures, targets, in-house rules and regulations.

Tool box talk

Workers will receive environmental toolbox talks conducted by the respective front line Supervisors, EO/ES. The toolbox talks will focus on different trade and activities and enhance environmental awareness amongst operatives.

4.5.2 Environmental Promotion

Environmental information

- Display and update appropriate Environmental Signs/Posters at the site entrances and relative works area.
- Environmental news, agenda and minutes of Site Safety Environmental Committee Meeting, emergency, environmental promotion activities will display on site safety bulletin board
- Daily Morning Briefing is an individual workforce gathering in the morning assembly prior to work start to be conducted by the supervisor or gangers. Daily morning briefing will deliver environmental messages, environmental hazards identified and environmental pollution precaution measures to workforce.

Environmental Award

The “Safety and Environmental Star – Worker Award” would be held to promote safety and environmental awareness of individual worker. The performance of the worker on waste management would also be reviewed. The assessment criteria will be based on observation by EO/ES, area foremen report and recommendation from their direct employer and written assessment of safety and environmental knowledge.

5.0 TRIP TICKET SYSTEM AND RECORDING

5.1 Trip Ticket System (TTS)

For the transportation of public fill and C&DM, BKSCTJV will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.

The manpower resources for TTS

(1) A senior staff member (with at least two-year experience in site management) fully responsible for implementing and overseeing the operation of the TTS; and

(2) Experienced person(s) to man each exit from the Site for the purpose of checking every truck carrying C&DM leaving the Site so as to ensure that the truck driver bears a duly completed signed and stamped Disposal Delivery Form (DDF).

General Procedure of the TTS

The procedures for implementation of the TTS are as follows:-

(1) BKSCTJV will establish site procedures to ensure that each truckload of C&DM leaving the Site will bear a duly completed CHIT / Disposal Delivery Form (DDF). BKSCTJV will also establish a mechanism to ensure timely retrieval of the CHIT / DDF and/or receipt from the disposal grounds. The person(s) who man the exit(s) shall record the CHIT/ DDF no., the vehicle registration mark and the departure time of every truck carrying C&DMs leaving the Site.

(2) The CHIT shall be used for disposal of C&DM at a prescribed facility as defined under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) (hereinafter referred to as "prescribed facility") and the Particular Specification, Sample of the CHIT is given in ***Appendix D***.

(3) Where the inert C&DM is delivered to other sites for reuse as approved by the Project Manager, a special designed ticket (i.e. similar to the Chit) will be deployed and the mechanism and procedure is also similar to the Chit system.

The procedures of the TTS (for prescribed facility - NENT)

a) For each truckload of C&DMs leaving the Site, all truck drivers must bear a duly completed CHIT.

b) A daily record of disposal of C&DMs shall be maintained from the Site including CHIT numbers, vehicle registration marks, drivers' particulars, approximate volume, C&DMs type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground. The appointed designated person(s) shall complete Part I of the Daily Record Summary (DRS) in duplicate and inform the Engineer's staff before departure of the vehicle.

c) The Engineer's staff shall sign Part I of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Project Manager and BKSCTJV.

d) The truck shall proceed to the disposal ground as stipulated in the Contract. If the C&DM accord with the acceptance criteria, disposal of the materials will be permitted and the facility operator will give the Contractor's truck driver a Transaction Record Slip and stamp the CHIT. When the disposal of waste is not permitted (rejected by facility operator due to overloading or non-compliance with relevant acceptance criteria, closure of facility etc.), the truck will go back to the construction site and the Contractor will sort out an appropriate mitigation measure.

e) The information recorded in the DRS shall be checked against available information including site records/register and data from EPD's website [http://www.epd.gov.hk/epd/misc/cdm/scheme.htm#j.].

f) Site Engineer shall complete Part 2 of the DRS form for submission to the Project Manager within 1 working day after the records are posted at the EPD web-site.

g) Where an irregularity is observed or where requested by the Project Manager under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), BKSCTJV shall submit to the Project Manager within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped CHIT and/or the Transaction Record Slip (where relevant) to confirm proper completion of the delivery trips in question, or within 2 working days after the Project Manager has requested for such evidence, whichever is later. A fax copy of the CHIT or Transaction Record Slip is acceptable, unless otherwise directed by the Engineer.

Informing the Truck Drivers

BKSCTJV will write to all truck drivers whom he has engaged for removal of C&DMs from the Site and draw their attention to the following particular points:

(a) Each truck carrying C&DM leaving the Site for a disposal ground must bear a duly completed and stamped DDF, irrespective of the location and nature of the disposal ground.

(b) The C&DM must be disposed of at the disposal grounds as stipulated in the DDF.

(c) What constitutes an improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping License from the holder of the offending trucks.

(d) Truck drivers must bear a valid Dumping License which he can apply from the Civil Engineering and Development Department (CEDD).

(e) The Contractor will inform the truck drivers that all dump trucks engaged on site shall be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping & landfilling of C&D materials.

A sample of the “CHIT” and Daily Summary Table (DRS) is given at **Appendix D**.

5.2 Waste Recording System

BKSCTJV will record the quantities of C&DM generated each month, using the monthly summary “Waste Flow Table” (WFT) BKSCTJV shall complete the monthly summary WFT.

The following records will be kept by BKSCTJV for inspection and reporting as necessary by the Environmental Team or the Project Manager:

- Waste disposal permits or licenses
- Record of trip tickets for C&DM disposed off-site

- Record of trip tickets for chemical waste disposed off-site
- Record of non-compliance of the WMP
- Record of corrective action taken to rectify any non-compliance
- Record of the admission tickets usage.

BKSCTJV will provide, operate and maintain a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Site:

- The video cameras used in the system will be of high resolution, lowlight and colour type
- Power back up shall be provided to cater for accidental breakdown of the power supply to the system
- Videos captured by the system will be recorded continuously without break except with the agreement of the SA, or in month during which where is no disposal of C&DM off the Site for the entire month
- Videos will be captured in a format acceptable to the Engineer Representative
- The registration mark of each vehicle leaving the site will be recorded
- The loading condition of dump trucks including empty trucks will be captured
- Securely protect the videos cameras from being damaged
- Provide the software and hardware for capturing the vehicle registration mark, and the time and date for the SA's immediate taking and viewing of photograph of every truck leaving the Site and viewing the recorded videos
- Keep the videos record for at least 60 days and the photographs until such time as instructed by the Engineer Representative
- Post sufficient notices at conspicuous positions to notify the workers, drivers and staff about the purpose of the video recording system in accordance with data protection principles set out in the Personal Data (Privacy) Ordinance (Cap. 486).

5.3 GPS

According to the Environmental Permit EP-519/2016 General Conditions 2.24 (vi-vii), all dump trucks engaged on site will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials. There will be record and analysis of data collected by GPS or equivalent automatic system relating to travel routings and parking locations of dump trucks engaged on site.

The GPS installed on dump trucks will transmit self-monitoring data direct from the truck to the control center through GPRS mobile communication network.

The RTTM system allows the Contractor and the users to carry out round-the-clock monitoring of the movement of dump trucks by accessing to the designated website. This will ensure that any irregularities can be immediately identified and rectified without delay.

The RTTM system employs hot standby configuration. Two identical servers are used to handle and store data reported from GPS. Application software, such as web user interface, is provided by a standalone web server. The web user interface enables users to view the data record and analyze the data records.

The system is connected to the internet via two separate broadband networks. Each network is protected by network firewall. The firewall prevents unauthorized access to the system and route connection requests to the appropriate servers.

Dump trucks transporting C&D materials under NL/2017/03 shall not access prohibited zone of Tung Chung Road unless the dump trucks are required to enter garage located on Tung Chung Road to carry out repairing works. It can be monitored by the GPS system. When the dump trucks enter Tung Chung Road for repairing works, the alert system will be triggered, i.e. notification email will be sent to all concerned parties. It is the current practice that upon reception of the notification, EO/ES will carry out investigation and submit investigation reports with photos showing the skip condition, & dump truck arrived at the garage and the receipt, to prove that the dump trucks did not carry C&D materials when entering Tung Chung Road for repairing works.

In the event of any irregularities or non-compliance, Alert system will be provided on the user interface of Smart Site Management System through GPS. Emails will be automatically sent to the relevant parties, including ET, IEC, the Project Manager, the contractor and surveillance team, for any loaded dump tuck accessing the prohibited zones of Tung Chung Road and Tung Chung with display of the plate number. And the GPS data will be maintained for 3 months in the system.

Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the data including the travel routings, parking locations in daily base. Prohibited zones of Tung Chung Road and Tung Chung can be set by the RTTM system and signal (by email) will send to the EO, ES or the default users immediately once any irregularities / non-compliance are triggered. When the dump trucks enter Tung Chung Road for repairing works, the alert system will be triggered, i.e. notification email will be sent to all concerned parties. It is the current practice that upon reception of the notification, EO/ES will carry out the investigation and submit the investigation reports with photos showing the skip condition, & dump truck arrived at the garage and the receipt, to prove that the dump trucks did not carry C&D materials when entering Tung Chung Road for repairing works. The EO/ES will also link up the GPS data with the Trip Ticket System by merging the corresponding chit number, vehicle number etc.

5.4 Illegal Dumping and Landfilling of C&D Materials

Surveillance Team will conduct regular site inspections to identify and report immediately to the ET, IEC, the Project Manager and EPD through email on suspected illegal dumping and landfilling of C&D materials outside the designated disposal location(s) as stipulated in the relevant EP conditions.

6.0 EVENT CONTINGENCY PLAN FOR NON-COMPLIANCE AND COMPLAINT

6.1 Handling Procedure for Non-compliance and Complaint

A Contingency Group will be set up to respond to non-compliance and complaints on waste management and other environmental issues.

In the Event of Non-Compliance:

1. If any non-compliance is observed during site inspection by AECOM Asia Co. Ltd (AECOM) or CEDD, the EO/ES will raise a Corrective & Preventive Action Report (CPAR) to SA;
2. The PM will notify and liaise with the SA of non-compliance to obtain proposals and a response to the CPAR;

3. The EO will notify SA if the non-compliance is an exceedance of the stipulated requirements. In such cases, a copy of the CPAR will be issued to the AECOM as a Notification of Non-compliance (NNC);
4. After receipt of the NNC, the SA will propose corrective actions for the non-compliance in line with the JV's CPAR and implement the proposed corrective actions once they have been agreed by AECOM;
5. If the implementation of the corrective actions is satisfactory, the non-compliance record (CPAR) will be closed accordingly;
6. The SA/EO will propose preventive actions within 3 working days if it has not been already included within the JV's response after the closure of the non-compliance records; and
7. The SA/EO will record CPARs accordingly in the CPAR log sheet.
8. Environmental Team and Project Manager should be notified immediately in case of the event of non-compliance.

In the Event of Complaint

1. Complaint related to environmental management will be collected by the EO/ES. The complaint will be referred to the SA for carrying out complaint investigation procedures;
2. The SA will log complaint and date of receipt onto the complaint database and inform the SM and the AECOM immediately within 2 working day;
3. Within 2 working day after receipt of the notification of compliant, the EO/ES will identify the source of the problem and provide the AECOM relevant works site information, e.g. types and locations of construction works;
4. If the complaint is valid and due to project works, the EO/ES will liaise with SA to propose corrective actions/mitigation measures to AECOM. The SA will implement the mitigation measures once they have been agreed;
5. The EO/ES will report the investigation results and subsequent actions taken, to the AECOM after the implementation of mitigation measures; and
6. If no further comments or complaints are received from the complainant within 20 days after responding to the complainant, close the complaint record.
7. Environmental Team and Project Manager should be notified immediately in case of the event of complaint.

Follow-up actions to be taken by the Contractor and Dump Truck Drivers for Committing Suspected Offences relating to Illegal Dumping and Landfilling of C&D materials

1. The dump truck drivers will be asked to explain for the suspected offences relating to illegal dumping and landfilling of C&D materials. An investigation report will then be prepared by the EO and submit to AECOM within 2 working days.

2. The Contractor will discuss with AECOM for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.0 AUDITING PROPOSAL

General Foreman and EO/ES will conduct weekly site inspections to ensure this WMP is properly followed. In addition to internal audit will be performed to review the effectiveness on the implementation of this WMP:-

- Internal audits will be performed in line with the WMP by an environmental auditor with well experienced personnel

- Audits will be planned to by Environmental Officer determine when and where to audits which are scheduled on the basis of the status and importance of the activity

- Audit comprises of document review, site inspection and discussion with responsible person, so as to address all key elements of the WMP and implementation of procedures and maintenance of records

- Environmental and Safety Officer will monitor the status of completion of the follow-up action programme after internal auditing

- Result of audits will be taken into account for management review for reviewing the implementation status and the effectiveness of the audit system

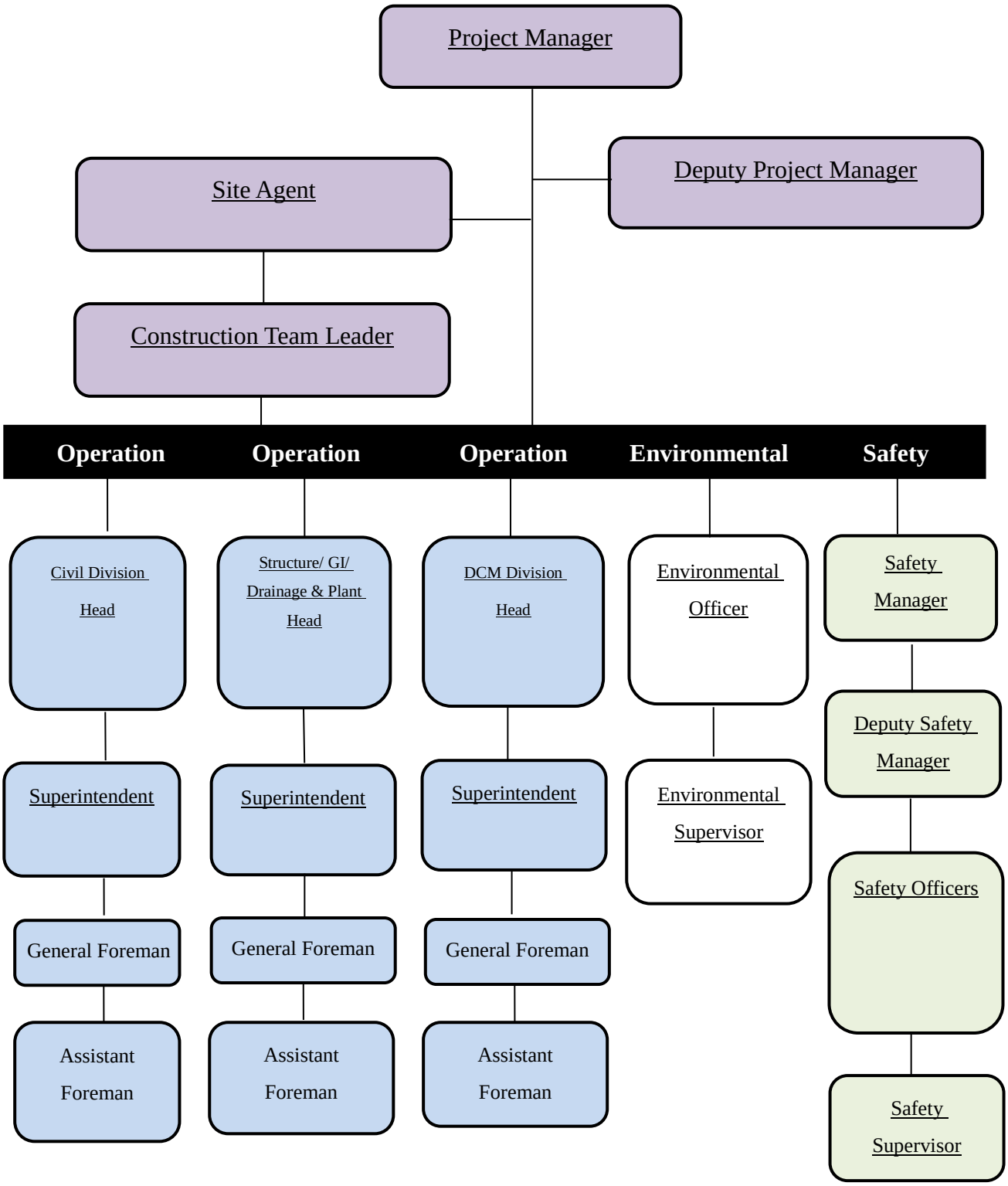
The waste (generated from construction activities) handling procedures documented in this stand-alone WMP will be incorporated into the Environmental Management Plan and the effectiveness of waste management and implementation of trip ticket system will be discussed and reviewed during the SSEMC and SSEC meetings on monthly basis.

Appendix A

Project Environmental Management Organization Chart for Waste Management

BUILD KING - SCT JOINT VENTURE

Contract No.NL/2017/03 Tung Chung New Town Extension – Reclamation and Advance Works



Management Organization of BKSCTJV
Under EP-519/2016

Appendix B

C&DM Disposal Programme

Name of Department: CEDD
Name of Contract:

Tung Chung New Town Extension - Reclamation and Advance Works

Contract. :NL/2017/03

C&D Materials Disposal Programme (Updated to Dec 2022)

Month	Programmed Quantities of C&D Materials Generated					Programmed Quantities of C&D Materials Generated					
	Hard Rock and Broken Concrete	Reused in the Contract	Rused in other Projects	Disposal as public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plasics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000ton]
Jan 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
Feb 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
Mar 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
Apr 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
May 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
Jun 2020 (Forecast)	0	0.5	0	0	400	500	0.1	0.001	1	100	0
SUB-TOTAL	0.00	3.00	0.00	0.000	2400.00	3000.00	0.60	0.01	6.00	600.00	0.00
Jul 2020 (Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
Aug 2020 (Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
Sep 2020 (Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
Oct 2020 (Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
Nov 2020(Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
Dec 2020(Forecast)	0	0	0	0	500	300	0.1	0.001	2	100	0
YEAR-TOTAL	0.00	3.00	0.00	0.000	5400.00	4800.00	1.20	0.01	18.00	1200.00	0.00
Jan 2021(Forecast)	0	0	0	0	400	0	0.2	0.001	2	100	0
Feb 2021(Forecast)	0	0	0	0	400	0	0.2	0.001	2	100	0
Mar 2021(Forecast)	0	0	0	0	200	0	0.2	0.001	2	100	0
Apr 2021(Forecast)	0	0	0	0	200	0	0.2	0.001	2	100	0
May 2021(Forecast)	0	0	0	0	200	0	0.2	0.001	2	100	0
Jun 2021(Forecast)	0	0	0	0	200	0	0.2	0.001	2	100	0
SUB-TOTAL	0.00	0.00	0.00	0.000	1600.00	0.00	1.20	0.01	12.00	600.00	0.00
Jul 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
Aug 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
Sep 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
Oct 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
Nov 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
Dec 2021(Forecast)	0	0	0	0	300	0	0.2	0.001	2	100	0
YEAR-TOTAL	0.00	0.00	0.00	0.000	3400.00	0.00	2.40	0.01	24.00	1200.00	0.00
Jan 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Feb 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Mar 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Apr 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
May 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Jun 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
SUB-TOTAL	0.00	60.00	0.00	0.000	1200.00	0.00	1.20	0.01	12.00	600.00	0.00
Jul 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Aug 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Sep 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Oct 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Nov 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
Dec 2022(Forecast)	0	10	0	0	200	0	0.2	0.001	2	100	0
YEAR-TOTAL	0.00	120.00	0.00	0.000	2400.00	0.00	2.40	0.01	24.00	1200.00	0.00
Initial Estimated (in '000tons)											**0**
Initial Estimated (in '000m^3)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Forecast Total (in '000tons)											**0**
Forecast Total (in '000m^3)	**0.00**	**123.00**	**0.00**	**0.00**	**11200.00**	**4800.00**	**6.00**	**0.04**	**66.00**	**3600.00**	**0.00**

Note:

The reasons of quantity change for "disposal as public fill" are as follows.

1. Unforeseen soft spot was found during construction, extra excavation for replacement is required.
2. Change of the size for permanent structures.
3. The conversion factor of densities of rock and soil is 2.5 tonnes/m^3 and 2.0 tonnes/m^3 respectively.
4. The conversion factor of densities of imported rock and soil is 2.0 tonnes/m^3 and 1.8 tonnes/m^3 respectively.

Appendix C

Monthly Summary of Waste Flow Table

and

Summary Table for Use of Timber in Temporary Works

Name of Department: CEDD

Contract No.: NL/2017/03

Contract Name: Tung Chung New Town Extension – Reclamation and Advance Works

Monthly Summary Waste Flow Table for

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m²)	(in '000m²)	(in '000m²)	(in '000m²)	(in '000m²)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in '000m³)
Jan											
Feb											
Mar											
Apr											
May											
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total											

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

Appendix 1.34A

SUMMARY TABLE FOR USE OF TIMBER IN TEMPORARY WORKS

(PS CLAUSE 1.115(17))

Contract No.: _____

Contract Title: _____

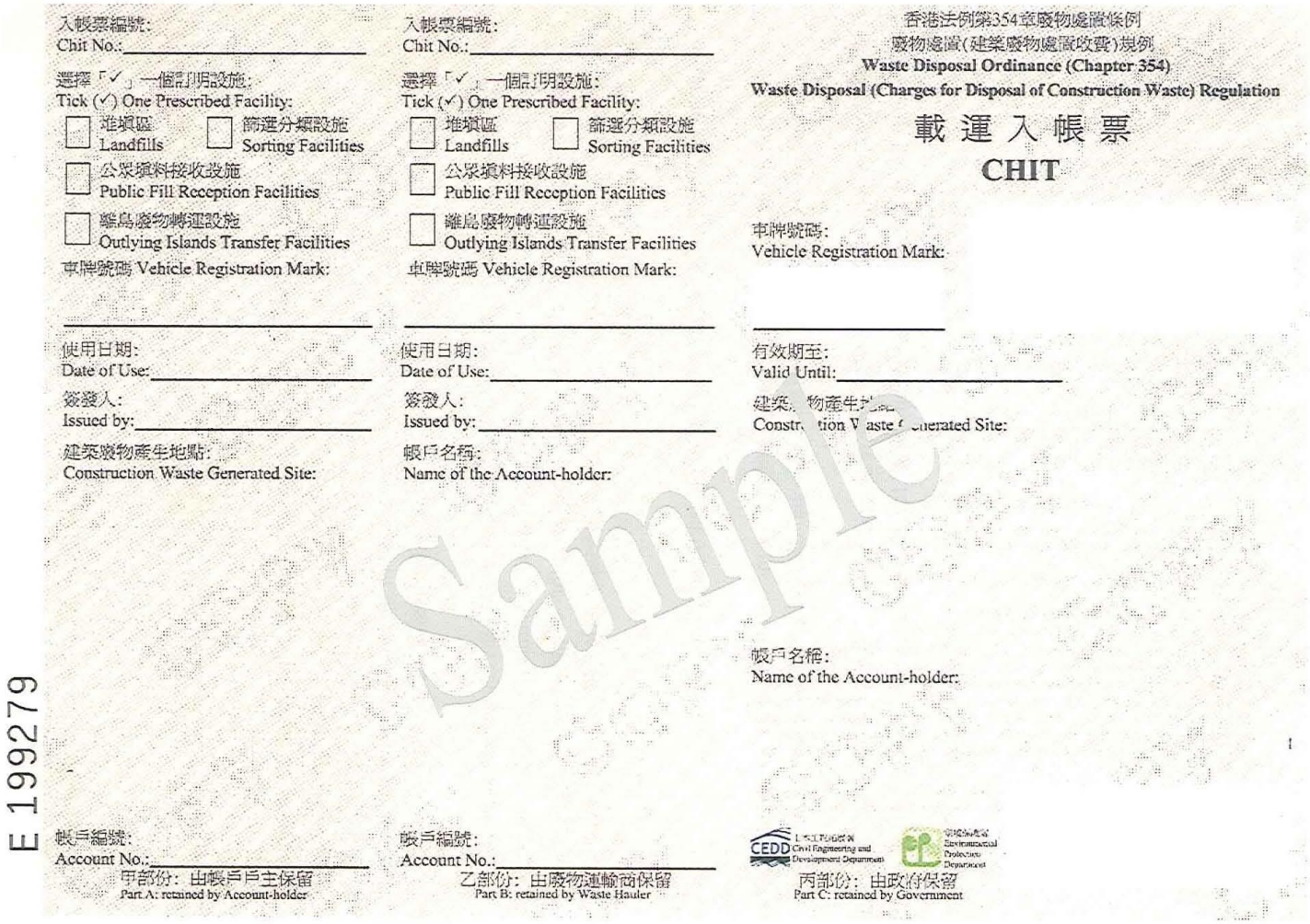
Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m^3)	Actual Quantities used (m^3)	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		Total Estimated Quantity of Timber Used			

Notes: (a) The *Contractor* shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.

(b) The summary table shall be submitted to the *Supervisor* monthly together with the Waste Flow Table for review and monitoring in accordance with PS clause 25.24(11).

Appendix D

Sample of CHIT,
&
Daily Summary Record



入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills
☐ 篩選分類設施 Sorting Facilities
☐ 公眾填料接收設施 Public Fill Reception Facilities
☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶編號:
Account No.:

甲部份：由帳戶戶主保留
Part A: retained by Account-holder

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills
☐ 篩選分類設施 Sorting Facilities
☐ 公眾填料接收設施 Public Fill Reception Facilities
☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

帳戶名稱:
Name of the Account-holder:

帳戶編號:
Account No.:

乙部份：由廢物運輸商保留
Part B: retained by Waste Hauler

香港法例第354章廢物處置條例
廢物處置(建築廢物處置收費)規例
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

車牌號碼:
Vehicle Registration Mark:

有效期至:
Valid Until:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶名稱:
Name of the Account-holder:

丙部份：由政府保留
Part C: retained by Government

E 199279

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the *Site
"每日運載記錄撮要" 記錄每日由*地盤所傾卸的拆建物料

(1) Contract no. & title 合約編號及名稱 : _____

(2) Date of disposal 傾卸日期: _____

(3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer 合約指定或建築師/工程師指示接收設施: (a) _____

(b) Others 其它 _____

(4) Approved alternative disposal grounds 另可接受的接收設施 _____

CHIT/ DDF no. 載運入帳票/ 拆建物料運載記錄票編號	**Vehicle registration mark** 車輛登記號碼	**Approx. vol (e.g. Full/Three Quarter/Half/One quarter)** 大約承載量 (例如全、3/4、半、1/4)	**C&D materials type (e.g. inert or non-inert)** 建築廢料種類 (例如惰性或非惰性)	**Disposal ground** 接收設施	**Signature & Name of the Contractor's Designated person before departure** 於離開地盤前，承建商的指定人仕姓名及簽名	**Departure time from *Site** 離開地盤時間	**Signature & name of the Architect/Engineer's supervisory staff before departure or other time as agreed between the Architect/Engineer's Representative and the Contractor[1]** 於離開地盤前或其它經承建商與建築師/工程師代表同意的時間，建築師/工程師監管人員姓名及簽名	**Actual disposal ground** 真正接收設施	**Arrival time at disposal ground** 抵達接收設施時間	**Remarks** 備註:

← Part 1[2] 甲部 → ← Part 2[3] 乙部 →

Submitted by 呈交 : _____ *[Name of Contractor's Designated Person 承建商的指定人仕姓名]*

Signature 簽名 : _____

Date 日期: _____

Received by 接收 : _____ *[Name and signature of the Architect/Engineer's staff] 建築師/工程師監管人員姓名及簽名*

Post 職位 : _____

Date & Time 日期及時間 : _____

[1] For term contract, if there are no full time site supervisory staff, the Architect/Engineer's supervisory staff should spot check and then sign as appropriate in accordance with paragraph 25 of DEVB TC(W) 6/2010 定期合約，如沒有全職地盤監管人員，應根據 DEVB TC(W) 6/2010 的第 25 段進行定點檢查及簽署

[2] Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/ Engineer's Representative. 承建商填寫甲部兩份，副本由建築師/工程師代表持有

[3] Part 2 乙部- The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承建商填寫乙部及將整份運載記錄撮要於記錄上載在環境保護署網頁後 1 個工作天內呈交給建築師/工程師代表

*Delete "Site" and substitute "Sites" for term contracts.定期合約將" Site" 刪去及以"Sites"代替

Appendix E

Mitigation Measures

Mitigation Measures

1 Construction Phase

1.1 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 transportation, storage and collection are described below.

Good Site Practices

1.2 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;
- imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;
- 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
- 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.

Waste Reduction Measures

1.3 Amount of waste generation can be significant 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 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.);

- provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

1.4 In addition to the above measures, specific mitigation measures are recommended for the specific waste types so as to minimize environmental impacts during handling, transportation and disposal of waste.

Storage, Collection and Transportation of Waste

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

- waste such as soil should be handled and stored well to ensure secure containment; and
- depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions.

1.6 The collection and transportation of waste from works area to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendation 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.

1.7 In addition to the above measures, other specific mitigation measures on handling the excavated and C&D materials, chemical waste and materials generated from construction phase are recommended in the following subsections.

C&D Materials

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

- maintain temporary stockpiles and reuse excavated fill material for backfilling;
- carry out on-site sorting;
- 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW.

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

On-site Sorting of C&D Materials

1.10 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. Non-inert portion of C&D materials should also be reused whenever possible and be disposed of at landfills as a last resort.

1.11 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 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 Contractors or frequency of removal off-site.

Reuse of C&D Materials

1.12 Based on the construction programme, all inert C&D materials would be best reused on-site during the whole construction phase to minimize offsite disposal of inert C&D materials. Should there be any surpluses Artificial Hard Material (AHM) necessary for off-site disposal, it is recommended to be disposed at public fill reception facilities.

Use of Standard Formwork and Planning of Construction Mater ials Purchasing

1.13 Standard formwork should also be used as far as practicable in order to minimize the arising of 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.

Provision of Wheel Wash Facilities

1.14 Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.

Excavated Contaminated Soil and Marine Sediments

1.15 It is considered unlikely that contaminated land issues, if any subject to site investigation, would be a concern during either the construction or the operational of the proposed development as remediation on contaminated area would be carried out prior to construction. However, as a precaution, it is recommended that standard good site practices should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater.

1.16 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 minimize 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.

1.17 The Contractors 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 Engineers.

- The Contractors 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 750m3 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.

- For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed.

- Moreover, the geosynthetic containment has also been proposed for Type 3 disposal in the EIA Study under Wan Chai Development Phase II and Central-Wan Chai Bypass (WDII) (EIA 141/2007). Several field trials had been undertaken under WDII – Design and Construction to demonstrate the feasibility on the use of the geosynthetic containment. Report on the field trials concluded that disposal by sealing sediments in geosynthetic containers and dropping these containers into the contaminated mud pits at East Sha Chau has been shown to be a successful and viable disposal method. The use of geosynthetic containment for special disposal was considered to be an effective system with negligible loss of contaminants to the marine environment during disposal.

Chemical Waste

1.18 For those processes which generated 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.

1.19 If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. 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 CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

General Refuse

1.20 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. It is expected that such arrangements would minimize potential environmental impacts.

Floating Refuse

1.21 As mentioned in **Section 7.3.2**, approximately 11.5m3 of floating refuse might be accumulated along the seawall and would be collected by future Contractor of the Project. Nevertheless, with proper seawall design and regular checking and cleaning of floating refuse, no adverse impacts are anticipated.

Appendix F

Implementation Schedule of Major Management Measures

Implementation Schedule of Major Waste Mitigation Measures

WMP Section No.	Recommended Mitigation Measures	EM&A Log Ref.	EIA Ref.	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/or Standard to be Achieved
4.1	Good Site Practices 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; • imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;	WM1	S7.4.1	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.21 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site

	• regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.							
4.3	<u>Waste Reduction Measures</u> 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 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.); • provide training to workers on the importance of appropriate waste	WM2	S7.4.1	Reduce waste generation	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.21 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site

	management procedures, including waste reduction, reuse and recycling.							
	Storage of Waste The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; and • Depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions;	WM3	S7.4.1	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.21 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.3	Collection and Transportation of Waste The following recommendation 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.	WM4	S7.4.1	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.24 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005,

								Environmental Management on Construction Site
3.1.1	Excavated and C&D Materials 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: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW; The recommended C&D materials handling should include:	WM5	S7.4.1	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.24 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
3.1.1	Excavated Contaminated Soil As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure	WM7	S7.4.1	Remediate contaminated soil	Contractor	All construction Sites where	Construction stage	1. Contract No. NL/2017/03 Particular Specification

	to contaminated soils or groundwater.					applicable		GS Clasue 25.28A 2. The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site 4. Code of Practice on the Package, Labelling and Storage of Chemical Wastes
3.1.1	<u>Excavated Marine Sediments</u> 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	WM7	S7.4.1	Handle excavated sediment	Contractor	All construction Sites where applicable	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.27A 2. The Waste Disposal (Chemical Waste) (General) Regulation

	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.							(Cap 354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site 4. Code of Practice on the Package, Labelling and Storage of Chemical Wastes
3.1.1	■ Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.							1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.27A 2. The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) 3. Works Bureau Technical Circular No. 19/2005,

								Environmental Management on Construction Site 4. Code of Practice on the Package, Labelling and Storage of Chemical Wastes
3.1.1	<u>Dumping of excavated sediment</u> ■ Keep and produce logs and other records to demonstrate compliance and ensure journeys are consistent with designated locations ■ Comply with the conditions in the dumping permit. ■ 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 750m3 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.	WM9	S7.4.1	Handle excavated sediment	Contractor	All construction Sites where applicable	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.02A 2. The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site 4. Code of Practice on

	■ For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.							the Package, Labelling and Storage of Chemical Wastes
4.4.2	Chemical Waste 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.	WM10	S7.4.1	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.28A 2.The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site

								4. Code of Practice on the Package, Labelling and Storage of Chemical Wastes
1.20	General Refuse ■ 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.	WM11	S7.4.1	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.27A 2. The Waste Disposal Ordinance (Cap.354) 3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
1.21	Floating Refuse accumulated along the seawall The floating refuse along seawall should be collected to avoid accumulation. In addition, proper seawall design should be employed, and regular checking and cleaning of floating refuse should be implemented.	WM12	S7.4.1	Control floating refuse and ensure proper disposal	Contractor	Construction sites along seawall	Construction stage	1. Contract No. NL/2017/03 Particular Specification GS Clasue 25.28A 2. The Waste Disposal Ordinance (Cap.354)

								3. Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
5.3	GPS Implementation All dump trucks engaged on site will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials.	NA	S7.4.1	Monitor tracking of dump trucks and prevent any illegal dumping	Contractor	All construction sites	Construction stage	EP-519/2016 General Conditions 2.24 (vi-vii)

APPENDIX G

Method Statement for Stockpiling and Transportation of Excavated Materials and Other Construction Wastes

CEDD CONTRACT NO. NL/2017/03
TUNG CHUNG NEW EXTENTION – RECLAMATION AND ADVANCE WORKS

Method Statement for Stockpiling and Transportation of Excavated of Excavated Materials and Other Construction Waste

Contract No. NL/2017/03

Tung Chung New Town Extension – Reclamation and Advance Works

Revision: A
Date: 7 May 2018

1. Scope of Work

- Stockpiling
- Transportation of Excavated Materials
- Transportation of Other Construction Waste

2. Construction Sequence of Works

2.1 Stockpiling:

- The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works.
- Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would be engaged for backfilling.
- The spoil will be stored in 2 m high maximum and the slope surface will be kept in 1:2.
- When amber rainstorm signal or higher is hoisted, protective measures would be provided on slope surface against rainwater such as covered with tarpaulin or plastic sheet, erecting the temporary shelters, ddition al of pumps to drive out rainwater, etc..

2.2 Transportation of Excavated Materials

- Excessive excavated material as well as surcharge will be transported to other sites for reuse as approved by the Project Manager; whilst the ET, IEC and EPD would be informed.
- The excavated material will be sprayed with water when it is dry. The aim is to control dust in work area.
- Dump truck loaded with excavated materials would be covered by tarpaulin sheeting or mechanical cover in order to prevent dust emission.
- For the transportation of excavated materials, BKSCTJV will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.
-

2.3 Transportation of Other Construction Waste

- General refuse and C&DM
  - Un-recyclable, non-inert C&DM, i.e. C&DM, floating refuse and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

  - The C&DM will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

  - Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

  - The general refuse and the un-recyclable C&DM will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

- Chemical Waste
  - For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

  - Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and

paints and paint containers.

- All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

- The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

- Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:
  - be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
  - have a capacity of less than 450L 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.

- The storage area for chemical waste will:
  - be clearly labeled and used solely for the storage of chemical waste;
  - be enclosed on at least three sides;
  - have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
  - have adequate ventilation;

- be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
- be arranged so that incompatible materials are adequately separated.

➢ A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Annex 2

Tung Chung New Town Extension – Salt Water Supply System (Contract No. NL/2020/02) (Contract 2)

Civil Engineering and Development Department

The Government of the Hong Kong Special Administrative Region

Contract No. NL/2020/02

Tung Chung New Town Extension —
Salt Water Supply System

Waste Management Plan

(EP No. EP-519/2016)

Document Review

Date	Version	Initial Signature	
2 Mar 2023	R6	Prepared By Aaren Li	Approved By Timothy Lo Site Agent

Review Record

Date	Revision	Content
21 Jul 2021	0	First Submission
6 Sep 2021	Rev. 1	Reply to Comment
11 Oct 2021	Rev. 2	Reply to Comment
18 Mar 2022	Rev. 3	Update of Appendix A & C
15 Jul 2022	Rev. 4	Reply to Comment
21 Oct 2022	Rev. 5	Reply to Comment
2 Mar 2023	Rev. 6	Reply to Comments
20 Mar 2023	Rev. 7	Revised discrepancy

Table of Contents

Contents

List of Appendices

List of Abbreviation

AECOM -	The *Project Manager* for Contract no. NL/2020/02
TCNTE -	Tung Chung New Town Extension
TCE -	Tung Chung East
TCW -	Tung Chung West
C&DM -	Construction and Demolition Material
CGC -	China Geo-Engineering Corporation
WMP -	Waste Management Plan
ET -	Environmental Team
IEC -	Independent Environmental Checker

1.1 The Waste Management Plan

This plan will outline the Contractor Waste Management Plan (WMP) proposed by the Contractor of CEDD Contract (Contract No. NL/2020/02) - Tung Chung New Town Extension - Salt Water Supply System.
The main contractor China Geo-Engineering Corporation Ltd. (hereinafter mentioned as CGC) will ensure that all his employees will implement the accepted version of this WMP as an integral part of their daily activities on site.

1.2 Scope of Works

The works mainly comprise

I. Construction of Tung Chung Salt Water Pumping Station at Tung Chung East reclamation area with a pumping capacity of 54,000 m^3 per day;

II. Construction of Tung Chung Salt Water Service Reservoir near Chek Lap Kok New Village with a storage capacity of about 11,500 m^3;

III. Laying of about 2,600m long salt watermains;

IV. Laying of about 1,500m long fresh watermains;

V. Compensatory woodland planting near Tung Chung Salt Water Service Reservoir; and

VI. Associated civil, geotechnical, structural, building services systems, electrical and mechanical engineering and landscaping works.

1.3 Purposes of the Waste Management Plan

As specified in Condition 2.24 of the EP:
“The Permit Holder shall, no later than 3 months before the commencement of construction of the Project, deposit 3 hard copies and 1 electronic copy of a Waste Management Plan for the construction of the Project with the Director.”
This WMP sets out the waste management process for the project:

- To identify and classify the types of C&DM generated in the execution of the works;
- To identify the potential for reuse, recycling minimization and disposal of C&DM from the proposed construction activities; and
- To outline the implementation, monitoring and audit programmed to ensure that the wastes arising from the construction activities are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner which complies with the contract requirements and the relevant Ordinance and Regulations in the Government of Hong Kong SAR.

"C&DM" refers to surplus materials arising from any land excavation or formation, civil/building construction, road works, building renovation or demolition activities. It includes various types of the reusable materials, building debris, rubble, earth, concrete, timber and mixed site clearance materials. When sorted properly materials suitable for land reclamation and site formation (known as public fill) should be

reused at public filling area whereas the remaining C&DM are to be disposed of at landfill.

This WMP will also describe the waste management arrangements for other wastes (such as chemical waste, general refuse) that will be generated during the construction activities.

1.4 Waste Management Requirements and Guidelines

During the contract period, CGC will comply with the following legislations, code of practices, guidelines, practical notes and technical circulars.

Statutory requirements

- Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations;
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation (Cap. 132);
- Land (Miscellaneous Provisions) Ordinance) (Cap. 28);
- Dumping at Sea Ordinance (Cap. 466); and
- Dangerous Goods Ordinance (Cap.295)

Codes of Practice, Circulars and Guidelines

CGC will meet all relevant requirements by consulting the following codes of practice, technical circulars and guidelines:

- Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005 - Environmental Management on Construction Sites;
- Environment, Transport and Works Bureau Technical Circular No. 33/2002 - Management of Construction and Demolition Material Including Rock;
- Development Bureau Technical Circular (Works) No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Material;
- Environment, Transport and Works Bureau Technical Circular (Works) No. 24/2004 - Specifications Facilitating the Use of Concrete Paving Units Made of Recycled Aggregates;
- Works Bureau Technical Circular No. 12/2002 - Specifications Facilitating the Use of Recycled Aggregates;
- Development Bureau Technical Circular (Works) No. 8/2010 - Enhanced Specification for Site Cleanliness and Tidiness;
- Works Bureau Technical Circular No. 19/2001 - Metallic Site Hoardings and Signboards;
- Works Bureau Technical Circular No. 12/2000 - Fill Management;
- Works Bureau Technical Circular No. 04/1998A - Use of Public Fill in Reclamation and Earth Filling Projects;
- Works Bureau Technical Circular No. 04/1998 - Use of Public Fill in Reclamation and Earth Filling Projects;
- Works Bureau Technical Circular No. 16/1996 - Wet Soil in Public Dumps;
- Works Bureau Technical Circular No. 02/1993B - Public Filling Facilities;
- Works Bureau Technical Circular No. 02/1993 - Public Dumps;

- Works Bureau Technical Circular No. 32/1992 - The Use of Tropical Hardwood on Construction Sites;
- A Guide to the Registration of Chemical Waste Producers;
- A Guide to the Chemical Waste Control Scheme;
- Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes;
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste – (Cap 354, Section 35) and,
- Hong Kong Planning Standards and Guidelines (2018), Planning Department, The Government of The Hong Kong Special Administrative Region.

CGC will observe all applicable statutory requirements, legislation and associated regulations, and/or code of practices with regard to the waste to be generated in the construction activities. CGC will also apply for all necessary permits and licenses under these ordinances / regulations.

1.5 License Requirements

Where appropriate, CGC will apply for all permits and licenses required under the following legislation for the handling and disposal of waste arising from the Project:

A. Chemical Waste Producer Registration under the Waste Disposal (Chemical Waste) (General) Regulation; and,
B. License to Collect and Transport Chemical Waste under Waste Disposal Ordinance
C. Public Dumping License under the Land (Miscellaneous Provisions) Ordinance.
D. Waste Producer for Disposal of Construction Waste under the Construction Waste Disposal Charging Scheme

A licensed chemical waste collector will be appointed for the disposal of chemical waste. Upon classification of any types of chemical waste as dangerous goods under the Dangerous Goods Ordinance, the handling of these wastes will comply with all the requirements of the ordinance and its regulations.

2.1 Organization and Responsibility

This Section provides an outline of the roles and responsibilities of the major site staff involved with the management of C&DM arising from the Project. The Project Director / General Manager will have the overall responsibility to ensure that the requirements of the WMP are properly implemented. The Construction Manager will act as the Waste Manager for the Contract. The Site Agent acts as Team Leader of the *Contractor's* Environmental Team for overall control of waste management practices to ensure compliance with the contract requirements. The Construction Team Leader will implement the waste management measures on site to ensure the controls are compliance with the contract requirements. The Environmental Officer and Environmental Supervisor will communicate and coordinate with ET on waste management for environmental monitoring and audit. The responsibilities of key site staff for the WMP are listed as follows: (see ***Appendix A*** of Project Environmental Organization Chart).

Project Director / General Manager / Construction Manager (Waste Manager)

The Project Director / General Manager / Construction Manager will maintain overall control of all aspects of the construction activities and will oversee the implementation of the WMP. He is also responsible for ensuring that there are adequate resources available for the implementation of the WMP. He will also chair the ad hoc meeting(s) with the Supervising Officer's Representatives to discuss the WMP.

Site Agent (Team Leader)

The Site Agent will be responsible for management and control of the construction activities in relation to waste management and mitigation measures. He will be responsible for assigning other team members to assist him for supervision and enforcement of the on-site waste management practices. The Site Agent will be responsible for:

- Identification and classification of all possible wastes arising from the construction activities;
- Analysis of effectiveness, efficiency and reliability of waste reduction programme;
- Obtaining all necessary licenses and permits for the handling and disposal of wastes;
- Planning for on-site segregation, sorting and storage of wastes;
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract;
- Carry out quarterly internal auditing for the implementation of WMP;
- Provide resources to the implementation and control of the WMP.

Construction Team Leader, CTL

- Overview and coordinate to Environmental Officer in relation to waste management
- Direct Site Engineer and Foreman as appropriate in supervising and enforcing the on-site mitigation measures

- Report to the Site Agent (Team Leader)
- Ensure all disposal records be promptly available to the EO for record or/and action as necessary

Environmental Officer, EO

- Identify legal requirements
- Ensure site comply with legal requirements
- Prepare, implement and update the WMP
- Update the Environmental Report, Waste Flow Table and Use of Timber Record
- Verify waste management activities and related results to comply with planned arrangements
- Arrange and provide the environmental training including the site-specific induction training and toolbox talks
- Organize environmental promotional activities
- Liaise on all matters relating to complaint, enquiry and non-compliance
- Carry out environmental system audits

Environmental Supervisor, ES; Safety Officer, SO and Safety Supervisor, SS (Team Members)

- Identify statutory requirements, contract requirements and corporation requirements
- Identify material that can be recycled, re-use and returned
- Arrange re-use, recycle and return work
- Monitor sub-contractors and workers to implement according to WMP
- Conduct waste management briefing to all site staff and workers
- Carry out quarterly internal auditing for the implementation of WMP

Foreman (Team Member)

- Assist Construction Team Leader and Environmental Officer to prepare location plans for storage of C&D materials to avoid or minimize relevant materials damage on site
- Arrange sorting facilities for waste materials re-use and recycling
- Arrange waste materials storage areas and disposal of waste materials according to trip-ticket System
- Ensure that daily site cleanliness and tidiness are implemented
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out weekly review for site cleanliness and tidiness

Subcontractor Representatives (Team Member)

- Ensure that construction waste are properly sorted out and disposed
- Ensure that construction waste are properly reused and recycled
- Coordinate with foremen to rectify and take follow-up actions for identified waste management issues
- Provide adequate resources for the implementation of WMP
- Direct and supervise workers to implement according to WMP

Workers

- Follow the instructions given by Foremen or Subcontractor Representatives to carry out waste management issue on site
- Reduce construction waste generation on site if possible
- Ensure that construction waste are properly sorted, re-used, recycled or returned on site
- Maintain good housekeeping of the workplaces after daily work activities

3.1 Waste Arising from the Construction Activities

Major activities that will generate waste from this Contract include site clearance, excavation, formwork construction for concreting, etc.; which can be divided into distinct categories based on their composition as follows:

- Excavated materials from slope work, watermains laying works and excavation for pumping station;
- C&DM from demolition, structural, architectural and external works;
- Chemical waste from maintenance of plant and equipment; and
- General refuse from construction works.
- Chemical waste from construction works

A summary of the estimated quantities of C&DM to be generated from the construction and demolition work under the Project and the tentative C&DM disposal programme is attached in ***Appendix B***.

3.1.1 Excavated Materials

The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works. Excavated material will also be generated from slope excavation works, watermains laying works, excavation for pumping station and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area (e.g. Portion 1 and Portion 6) and would be engaged for backfilling.

3.1.2 Construction & Demolition Material (C & DM)

C&DMs include inert public fill materials such as bricks, rubble, concrete and non-inert C&DM such as wood, steel, vegetation, office and work force waste etc.

The majority of C&DM will arise during site clearance, demolition and excavation works.

3.1.3 General Refuse

The workforce will likely generate general refuse comprising food scraps, waste paper, empty containers, etc.

3.1.4 Chemical Waste

The maintenance and servicing of construction plant and equipment generates

chemical waste, for instance, cleaning fluids, solvents, and lubrication oil and used batteries. The maintenance of vehicles also uses common chemicals, oil, lubricants and paints for this purpose. A licensed chemical waste collector would be employed for collection of chemical waste.

3.2 Designated Waste Disposal Facilities/ Outlets and Locations

A summary regarding waste classification and designated waste disposal facilities/ outlet is provided in Table 3.2.1. The designated waste disposal facilities, the locations, the possible disposal routes and the relevant criteria as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) are also summarized in Table 3.2.1. The handling/ management of each waste type are detailed in Section 4.

Type of Waste	**Designated Waste Disposal Facility/ Outlet**	**Designated Location**	**Possible Disposal Routing**	**Criteria to be adopted**
Inert C&DM	Fill Bank and/or Designated Disposal Ground	Contract NL/2017/03	Wong Lung Hang Road, Yu Tung Road, Yi Tung Road, Tung Chung Waterfront Road	Trip tickets shall be granted and adopted for disposal
C&DM (Non-inert portion [excluding contaminated materials] and not recyclable)	Landfill	North East New Territories (NENT) Landfill	Yu Tung Road, North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Castle Peak Road, Shing Mun Tunnel, Tai Po Road, Tolo Highway, Fanling Highway, Sha Tau Kok Road, Wo Keng Shan Road	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles (GN6395)
Recyclables	Recycling Bins and Litter Containers	Litter Containers to be provided at each site portion. Recycling bins for waste paper, plastic and glass will be provided at Contractor's accommodation.	Yu Tung Road, North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Castle Peak Road, Shing Mun Tunnel, Tai Po Road, Tolo Highway, Fanling Highway, Sha Tau Kok Road, Wo Keng Shan Road	Recycling waste to be properly disposed by the Government's recycling services such as WEEE PARK, GREEN @COMMUNITY, etc.

Chemical Waste	Dunwell Industrial (Holdings) Ltd.	8 Wand Lee Street, Yuen Long Industrial Estate, Yuen Long, NT, Hong Kong.	North Lantau Expressway, Tsing Ma Bridge, Ting Kau Bridge, Tai Lam Tunnel, Route 3, Castle Peak Road, Wang Lee Street	Admission tickets shall be granted and adopted for disposal

Table 3.2-1 Designation of Public Reception Facility and Landfill

CGC will also comply with the following requirement when delivery of construction waste to the landfill:

1. Any over-sized inert C&DMs will be broken down to less than 250mm in size so as to facilities its re-use by reclamation or earth-filling.
2. CGC will implement proper measures to ensure that the dump trucks delivering C&DMs are not overloaded. The measures include the checking of load cell before leaving of construction site.
3. Mixed C&DM should be sorted at source to reduce the inert content to less than 30% by weight as far as practicable before they are delivery to landfill.
4. The C&DM delivered for landfill disposal shall contain no free water and the liquid content shall not exceed 70% by weight.

4.1 Waste Management Hierarchy

CGC will implement appropriate waste management practices according to the nature and category of wastes arising. Waste management options will be selected according to the widely accepted hierarchy shown by Table 4.1.1 below.

Avoidance and minimization	Avoid and minimize waste through changing or improving practices and designs.	Highest priority ↑
Reuse of materials (with limited reprocessing)	Reuse construction waste with only limited reprocessing such as uncontaminated soil, wooden planks, metals and other materials in other construction works or process.	
Recovery and Recycling (may require reprocessing)	Undertaking on site or off-site recycling.	
Treatment	Offsite destruction and detoxification etc, of wastes into less harmful substances.	
Disposal	Release of wastes to designated areas properly so as to render them harmless.	↓ Lowest priority

Table 4.1-1 Waste Management Hierarchy

The hierarchy will be used to evaluate waste management options for the minimization of waste generation. By the implementation of this hierarchy, the

overall construction cost will be reduced by avoiding the over-ordering of construction materials and the handling and disposing of unnecessary waste.

4.2 Design and Planning of Construction Works

Prior to commencement of works, CGC will carefully consider the construction methodology, demolition procedures and programme to assess the waste generation during works and study the available opportunity to reduce waste arising. Good work planning will, not only result in a better estimation of materials required for the works, but also contribute to the performance of the works in the first instance so as to avoid abortive activity.

Prior to the commencement of works, the location and necessary facilities for construction material storage, sorting and temporary waste collection will be planned and implemented. The opportunity for the reuse and recycling of the waste material on site and off site will be carefully studied.

4.3 Waste Minimization Measure and Good Site Practice

Good management and site practice can prevent the over generation of waste. Waste reduction is best achieved at the planning and design stage as well as by ensuring the implementation of good site practice. The good site management to be adopted will include: -

A. Nomination of an approved personnel, such as a site superintendent, 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;
B. Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
C. Using the correct amount of raw materials at the correct time and the recording of materials flow to minimize over ordering. The construction materials will be stocked carefully to prevent damage or contamination. During the works, only exact quantity of materials will be collected and if necessary, any surplus will be returned to stock after consideration of its use;
D. Maximizing the utilization of materials and the avoidance of unnecessary cutting such that off-cuts will be used when short lengths or a small quantity of materials are required;
E. A preference for reusable non-timber formwork such as steel formwork or plastic facing;
F. Sorting of all excavated / demolition materials to recover the inert portion (e.g. soil and broken rock) for reuse on site, including site formation work and whenever possible or disposal to designed outlets (e.g. public filling areas). Recover all metal, cardboard and paper on site and properly stored in dry and clean conditions temporarily for later collection by recycling contractors;
G. Segregation and storage of constituents of C&DM in appropriate containers, skips or stockpiles to enhance the opportunity for reuse and recycling of materials or their proper disposal. Sufficient protective measures provided in the storage area for sorting to avoid damage or contamination;
H. Collection of aluminum cans, paper waste and plastic bottles by site staff, and

provision of separately labeled bins to segregate these wastes from other general refuse arising from the work force;

I. Provision of a designated waste working team to collect the refuse on site regularly;
J. Removal of all other un-reusable C&DM off site as soon as practicable in order to optimize the use of the on-site storage space;
K. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The foreman will ensure only dump trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&DM transported off site. The trip-tickets, with valid stamp from an agreed dumping / filling location, will be collected upon return and appropriately filed in the site records;
L. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimize fugitive dust emission;
M. Wheel Washing Facilities shall be set up at site access and all dump truck leaving the site shall pass through the wheel washing facilities to minimize dust emission;
N. Unused chemicals or those with remaining functional capacity will be retained for reuse. The chemicals will be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facilities (CWTF);
O. The setting up of special control measures to regulate storage, labeling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTF;
P. Imposition of penalty system on Contractors' improper behaviors when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;
Q. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
R. The amount of waste reused, recycled or disposed will be recorded regularly.

Mitigation measures according to the EIA will be implemented on site. The details are summarized in ***Appendix E***. The implementation schedule of major waste management measures is shown in ***Appendix F***.

4.4 Handling of C & DM

Storage, collection and transportation of the C&DM will be carefully planned and implemented to minimize any adverse impact upon the environment. The generated C&DM will be sorted on site and C&DM for recycling as appropriate in accordance with ETWB TCW No. 19/2005, or subsequent disposal at approved strategic landfill. Wherever practicable, SA will arrange the segregation of these wastes on site in order to maximize the recovery of reusable and recyclable materials. Separate areas will be designated for segregation and storage where site-specific conditions allow. The segregated types of C&DM will be stored in separate covered storage areas to avoid possible cross contamination and loss due to windblown and fugitive dust. If the C&DM are to be temporarily stored in piles on site, they will either be covered

with a tarpaulin or watered regularly to prevent the emission of fugitive dust. SA will ensure that C&DM are removed from their origin and processed at designated points in a timely manner.
The period of surcharging within any portion of site shall be deemed to commence from the time that the surcharge material has been brought to the designated height of the surcharge over the full extent of that portion. The Contractor shall critically review of the scheduling of the surcharge operations to avoid, or otherwise, minimize generation of residual C&D materials requiring disposal during and at the end of the land formation.
Recyclable materials such as steel mesh, reinforcement bars, window frames, railing, banisters, and wooden planks will be separated from other C&DM. These materials will be either reused on site or collected by an external licensed waste recycling agent. If an external recycling agent is required, details of the nominated company will be submitted to the Project Manager.

4.4.1 Waste Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert materials and a unique access checkpoint with security control. The SA will manage the waste sorting facilities and promptly remove all the sorted and processed materials arising from or in connection with the works from the site to minimize the extent of temporary stockpiling on the site. The categories of C&DM to be sorted within the waste sorting facilities include:

- Inert materials consisting of earth, building debris, rock fragments, concrete bricks, tiles, masonry and mortar etc;
- Metals;
- Paper/Cardboards; and,
- Timber.
- Waste from Landscaping Works

Following the sorting of these wastes, they will be sent separately for reuse and recycling, processing or disposed of as described in the following sections.

Other than large waste sorting facilities, CGC will provide refuse and recycling bins respectively to collect different types of refuse generated by the site office and the workforce. These will include bins to collect general refuse such as food waste and recycling bins to collect waste paper separately, plastic bottles and aluminum cans. These bins will be provided in site areas where the wastes are commonly generated such as site offices, workshops, canteen and other site accommodation areas for the workers.

(I) Inert C & DM

Following waste sorting, the remaining inert C&DM will be managed as follows:

Excavated Material

In order to minimize the amount of excess excavated material, the priority for the

management options of excess excavated material will be as followings: -

(1) Suitable excavated material will be stored for backfilling purposes;

(2) Excessive excavated material as well as surcharge will be transported to other sites for reuse as approved by the Project Manager; whilst ET, IEC and EPD will be informed.

The method statement for stockpiling and transportation of excavated materials and other construction waste is shown in ***Appendix G***.

Concrete Waste

The surplus concrete after each concrete pour will be used for some minor pre-cast elements where practicable. Dry concrete waste, including broken concrete from demolition works, will be sorted out from the other wastes for reuse in site temporary road construction.

(II) Non-Inert C & DMs

Timber Waste

As far as possible, CGC will avoid, reduce and minimize the use of timber in temporary works construction. Where the timber is used for this purpose or for one process / activity with an estimated quantity exceeding 5m3, CGC will submit a method statement to the Project Manager for agreement prior to the commencement of the works.

Metal Wastes

CGC will avoid and reduce metal waste during the design, planning and construction process. Cut metal or steel bar will be considered for re-use in temporary or minor works on site. When metal waste has arisen on site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling contractors.

General Refuse and C&DM

Un-recyclable, non-inert C&DM, i.e. C&DM and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

The C&DM will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

The general refuse and the un-recyclable C&DM will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

4.4.2 Chemical Waste

For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

Storage of Chemical Waste

Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste.

The containers to be used for the storage of chemical waste will:

a. be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
b. have a capacity of less than 450L unless the specifications have been approved by the EPD; and,
c. display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

The storage area for chemical waste will:

a. be clearly labeled and used solely for the storage of chemical waste;
b. be enclosed on at least three sides;
c. have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
d. have adequate ventilation;

e. be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
f. be arranged so that incompatible materials are adequately separated.

Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Please refer to Section 5.2 for the recording system of C&DM and waste. A sample of the Monthly Waste Flow Table and Record of Timber Usage is given at ***Appendix C***.

4.4.3 Hazardous Material

All hazardous materials generated from the excavation works shall be sorted and handled properly.

CGC will conduct a risk analysis and produce a method statement specifying the safe method of use and all associated precautions to be implemented.

CGC will ensure that material safety data sheets are available and hazard identification labels will be properly affixed to all storage containers.

Should workers be involved in the use, handling of, or exposure to hazardous substances, then the relevant information, training and proper personal protective equipment shall be provided accordingly.

The quantities of hazardous substances on the Site shall be kept to a minimum as far as is possible and practicable.

Strictly follow the guidelines provided by the material suppliers or the relevant Material Safety Data Sheet for use and storage of the hazardous material.

4.5 Promotion and Training on Waste Management

4.5.1 Environmental Training

The EO and ES are responsible for carrying out the environmental training on waste management. They will analyze the problem and the detailed need of waste management training for the employees, consult with their departmental managers, and seek advice from the senior management.

The environmental training plan shall be reviewed quarterly by the EO in consultation with the Site Agent to identify and review training needs of the construction activities and to introduce new training program.

Site Specific Induction Training

The site Specific Environmental Induction Training provided by the EO covering but not limited to environmental and waste management including the implementation of waste management plan, handling of special waste and trip ticket system will be conducted for all site staff and workers employed for the Works or in connection with the Contract. Refresher training for the aforesaid area will be provided by the EO in every six months.

The training content should also cover the subjects such as organization structure, duties and responsibilities, measures, targets, in-house rules and regulations.

Tool box talk

Workers will receive environmental toolbox talks conducted by the respective front line Supervisors, EO/ES. The toolbox talks will focus on different trade and activities and enhance environmental awareness amongst operatives.

4.5.2 Environmental Promotion

Environmental information

- Display and update appropriate Environmental Signs/Posters at the site entrances and relative works area.
- Environmental news, agenda and minutes of Site Safety Environmental Committee Meeting, emergency, environmental promotion activities will display on site safety bulletin board
- Daily Morning Briefing is an individual workforce gathering in the morning assembly prior to work start to be conducted by the supervisor or gangers. Daily morning briefing will deliver environmental messages, environmental hazards identified and environmental pollution precaution measures to workforce.

Environmental Award

The “Safety and Environmental Star – Worker Award” would be held to promote safety and environmental awareness of individual worker. The performance of the worker on waste management would also be reviewed. The assessment criteria will be based on observation by EO/ES, area foremen report and recommendation from their direct employer and written assessment of safety and environmental knowledge.

5.1 Trip Ticket System (TTS)

For the transportation of public fill and C&DM, CGC will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.

5.1.1 The manpower resources for TTS

(1) Environmental Officer shall fully responsible for implementing and overseeing the operation of the TTS; and
(2) Foreman to man each exit from the Site for the purpose of checking every truck carrying C&DM leaving the Site so as to ensure that the truck driver bears a duly completed signed and stamped Disposal Delivery Form (DDF).

5.1.2 General Procedure of the TTS

The procedures for implementation of the TTS are as follows:-

(1) CGC will establish site procedures to ensure that each truckload of C&DM leaving the Site will bear a duly completed CHIT / Disposal Delivery Form (DDF). CGC will also establish a mechanism to ensure timely retrieval of the CHIT / DDF and/or receipt from the disposal grounds. The person(s) who man the exit(s) shall record the CHIT/ DDF no., the vehicle registration mark and the departure time of every truck carrying C&DMs leaving the Site.
(2) The CHIT shall be used for disposal of C&DM at a prescribed facility as defined under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) (hereinafter referred to as "prescribed facility") and the Particular Specification, Sample of the CHIT is given in ***Appendix D***.
(3) Where the inert C&DM is delivered to other sites for reuse as approved by the Project Manager, a special designed ticket (i.e. similar to the Chit) will be deployed and the mechanism and procedure is also similar to the Chit system.

The procedures of the TTS (for prescribed facility - NENT)

(1) For each truckload of C&DMs leaving the Site, all truck drivers must bear a duly completed CHIT.
(2) A daily record of disposal of C&DMs shall be maintained from the Site including CHIT numbers, vehicle registration marks, drivers' particulars, approximate volume, C&DMs type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground. The appointed designated person(s) shall complete Part I of the Daily Record Summary (DRS) in duplicate and inform the Engineer's staff before departure of the vehicle.
(3) The Engineer's staff shall sign Part I of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Project Manager and CGC.
(4) The truck shall proceed to the disposal ground as stipulated in the Contract. If the C&DM accord with the acceptance criteria, disposal of the materials will be permitted and the facility operator will give the Contractor's truck driver a Transaction Record Slip and stamp the CHIT. When the disposal of waste is not

permitted (rejected by facility operator due to overloading or non-compliance with relevant acceptance criteria, closure of facility etc.), the truck will go back to the construction site and the Contractor will sort out an appropriate mitigation measure.

(5) The information recorded in the DRS shall be checked against available information including site records/register and data from EPD's website [http://www.epd.gov.hk/ epd/misc/cdm/scheme.htm#j.].

(6) Site Engineer shall complete Part 2 of the DRS form for submission to the Project Manager within 1 working day after the records are posted at the EPD web-site.

(7) Where an irregularity is observed or where requested by the Project Manager under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), CGC shall submit to the Project Manager within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped CHIT and/or the Transaction Record Slip (where relevant) to confirm proper completion of the delivery trips in question, or within 2 working days after the Project Manager has requested for such evidence, whichever is later. A fax copy of the CHIT or Transaction Record Slip is acceptable, unless otherwise directed by the Engineer.

5.1.3 Informing the Truck Drivers

CGC will write to all truck drivers whom he has engaged for removal of C&DMs from the Site and draw their attention to the following particular points:

- Each truck carrying C&DM leaving the Site for a disposal ground must bear a duly completed and stamped DDF, irrespective of the location and nature of the disposal ground.
- The C&DM must be disposed of at the disposal grounds as stipulated in the DDF.
- What constitutes an improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping License from the holder of the offending trucks.
- Truck drivers must bear a valid Dumping License which he can apply from the Civil Engineering and Development Department (CEDD).
- The Contractor will inform the truck drivers that all dump trucks engaged on site shall be equipped with 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.

A sample of the “CHIT” and Daily Summary Table (DRS) is given at ***Appendix D***.

5.2 Waste Recording System

CGC will record the quantities of C&DM generated each month and complete the monthly summary “Waste Flow Table” (WFT).

The following records will be kept by CGC for inspection and reporting as necessary by the Environmental Team or the Project Manager:

- Waste disposal permits or licenses
- Record of trip tickets for C&DM disposed off-site
- Record of trip tickets for chemical waste disposed off-site
- Record of non-compliance of the WMP
- Record of corrective action taken to rectify any non-compliance
- Record of the admission tickets usage.

CGC will provide, operate and maintain a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Site:

- The video cameras used in the system will be of high resolution, lowlight and colour type
- Power back up shall be provided to cater for accidental breakdown of the power supply to the system
- Videos captured by the system will be recorded continuously without break except with the agreement of the SA, or in month during which where is no disposal of C&DM off the Site for the entire month
- Videos will be captured in a format acceptable to the Engineer Representative
- The registration mark of each vehicle leaving the site will be recorded
- The loading condition of dump trucks including empty trucks will be captured
- Securely protect the videos cameras from being damaged
- Provide the software and hardware for capturing the vehicle registration mark, and the time and date for the SA's immediate taking and viewing of photograph of every truck leaving the Site and viewing the recorded videos
- Keep the videos record for at least 60 days and the photographs until such time as instructed by the Engineer Representative
- Post sufficient notices at conspicuous positions to notify the workers, drivers and staff about the purpose of the video recording system in accordance with data protection principles set out in the Personal Data (Privacy) Ordinance (Cap. 486).

5.3 GPS

According to the Environmental Permit EP-519/2016 General Conditions 2.24 (vi-vii), all dump trucks engaged on site will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials. There will be record and analysis of data collected by GPS or equivalent automatic system relating to travel routings and parking locations of dump trucks engaged on site.

The GPS installed on dump trucks will transmit self-monitoring data direct from the truck to the control center through GPRS mobile communication network.

The RTTM system allows the Contractor and the users to carry out round-the-clock monitoring of the movement of dump trucks by accessing to the designated website. This will ensure that any irregularities can be immediately identified and rectified without delay.

The RTTM system employs hot standby configuration. Two identical servers are used to handle and store data reported from GPS. Application software, such as web user interface, is provided by a standalone web server. The web user interface enables users to view the data record and analyze the data records.

The system is connected to the internet via two separate broadband networks. Each network is protected by network firewall. The firewall prevents unauthorized access to the system and route connection requests to the appropriate servers.

Dump trucks are prohibited from traveling beyond the demarcated area (or beyond the points at the junction of Shek Mun Kap and Tung Chung Road and at the road junction near Chek Lap Kok New Village at Wong Lung Hang Road) at any time.

In the event of any irregularities or non-compliance, such as the dump truck does not reach the designated disposal location after leaving the site, the server shall also generate e-mail to inform the relevant parties (e.g. PM, ET, IEC and the Contractor). Alert system shall be provided on the user interface of Smart Site Management System (managed by contract no. NL/2020/03) through GPS.

Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the data including the travel routings, parking locations on a daily basis. Restricted areas (e.g. Tung Chung Road southbound) can be set by the RTTM system and signal (by email) will send to the EO, ES or the default users immediately once any irregularities / non-compliance are triggered. The EO/ ES will also link up the GPS data with the Trip Ticket System by merging the corresponding chit number, vehicle number etc. Upon reception of the notification email, EO/ES will carry out investigation and submit investigation reports on the event.

Environmental Officer (EO)/ Environmental Supervisor (ES) will analyze the GPS data such as travel routings, parking location at a daily basis. The corresponding historical GPS vehicle location data shall be maintained for at least 6 months after any C&D material disposal trips for retrieval if needed.

EO/ES will also consolidate the GPS data with the Trip Ticket System by merging the corresponding chit number/ DDF number, vehicle number, truck build-in weight record, recorded weight of the transaction (Government Facility) or other accepted/ designated disposal ground. In addition, ET, IEC, Project Manager/ Supervisor, contractor and surveillance team can track the real-time position of the trucks on the web-based application.

5.4 Illegal Dumping and Landfilling of C & D Materials

Surveillance Team will conduct regular site inspections to identify and report immediately to the ET, IEC, the Project Manager and the Director of Environmental Protection through email on suspected illegal dumping and landfilling of C&D materials outside the designated disposal location(s) as stipulated in the relevant EP conditions.

6.1 Handling Procedure for Non-Compliance and Complaints

A Contingency Group will be set up to respond to non-compliance and complaints on waste management and other environmental issues.

In the Event of Non-Compliance:

(1) If any non-compliance is observed during site inspection by AECOM or CEDD, the EO/ES will raise a Corrective & Preventive Action Report (CPAR) to SA;
(2) The PM will notify and liaise with the SA of non-compliance to obtain proposals and a response to the CPAR;
(3) The EO will notify SA if the non-compliance is an exceedance of the stipulated requirements. In such cases, a copy of the CPAR will be issued to the AECOM as a Notification of Non-compliance (NNC);
(4) After receipt of the NNC, the SA will propose corrective actions for the non-compliance in line with the CGC's CPAR and implement the proposed corrective actions once they have been agreed by AECOM;
(5) If the implementation of the corrective actions is satisfactory, the non-compliance record (CPAR) will be closed accordingly;
(6) The SA/EO will propose preventive actions within 3 working days if it has not been already included within the JV's response after the closure of the non-compliance records; and
(7) The SA/EO will record CPARs accordingly in the CPAR log sheet.
(8) Environmental Team and Project Manager should be notified immediately in case of the event of non-compliance.

In the Event of Complaint:

(1) Complaint related to environmental management will be collected by the EO/ES. The complaint will be referred to the Construction Team Leader (CTL) for carrying out complaint investigation procedures;
(2) The CTL will log complaint and date of receipt onto the complaint database and inform the Site Agent (SA) and the AECOM immediately within 2 working day;
(3) Within 2 working day after receipt of the notification of complaint, the EO/ES will identify the source of the problem and provide the AECOM relevant works site information, e.g. types and locations of construction works;
(4) If the complaint is valid and due to project works, the EO/ES will liaise with SA to propose corrective actions/ mitigation measures to AECOM. The CTL will implement the mitigation measures once they have been agreed;
(5) The EO/ES will report the investigation results and subsequent actions taken, to the AECOM after the implementation of mitigation measures;
(6) If no further comments or complaints are received from the complainant within 20 days after responding to the complainant, close the complaint record; and

(7) Environmental Team and Project Manager should be notified immediately in case of the event of complaint.

Follow-up actions to be taken by the Contractor and Dump Truck Drivers for Committing Suspected Offences relating to Illegal Dumping and Landfilling of C&D materials

(1) The dump truck drivers will be asked to explain for the suspected offences relating to illegal dumping and landfilling of C&D materials. An investigation report will then be prepared by the EO and submit to AECOM within 2 working days.

(2) The Contractor will discuss with AECOM for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.1 Auditing Proposal

General Foreman and EO/ES will conduct weekly site inspections to ensure this WMP is properly followed. In addition to internal audit will be performed to review the effectiveness on the implementation of this WMP:-

- Internal audits will be performed in line with the WMP by the Site Agent.
- Audits will be planned by Environmental Officer to determine when and where to adults which are scheduled on the basis of the status and importance of the activity.
- Audit comprises of document review, site inspection and discussion with responsible person, so as to address all key elements of the WMP and implementation of procedures and maintenance of records
- Environmental and Safety Officer will monitor the status of completion of the follow-up action programme after internal auditing
- Result of audits will be taken into account for management review for reviewing the implementation status and the effectiveness of the audit system

The waste (generated from construction activities) handling procedures documented in this stand-alone WMP will be incorporated into the Environmental Management Plan and the effectiveness of waste management and implementation of trip ticket system will be discussed and reviewed during the SSEMC and SSEC meetings on monthly basis.

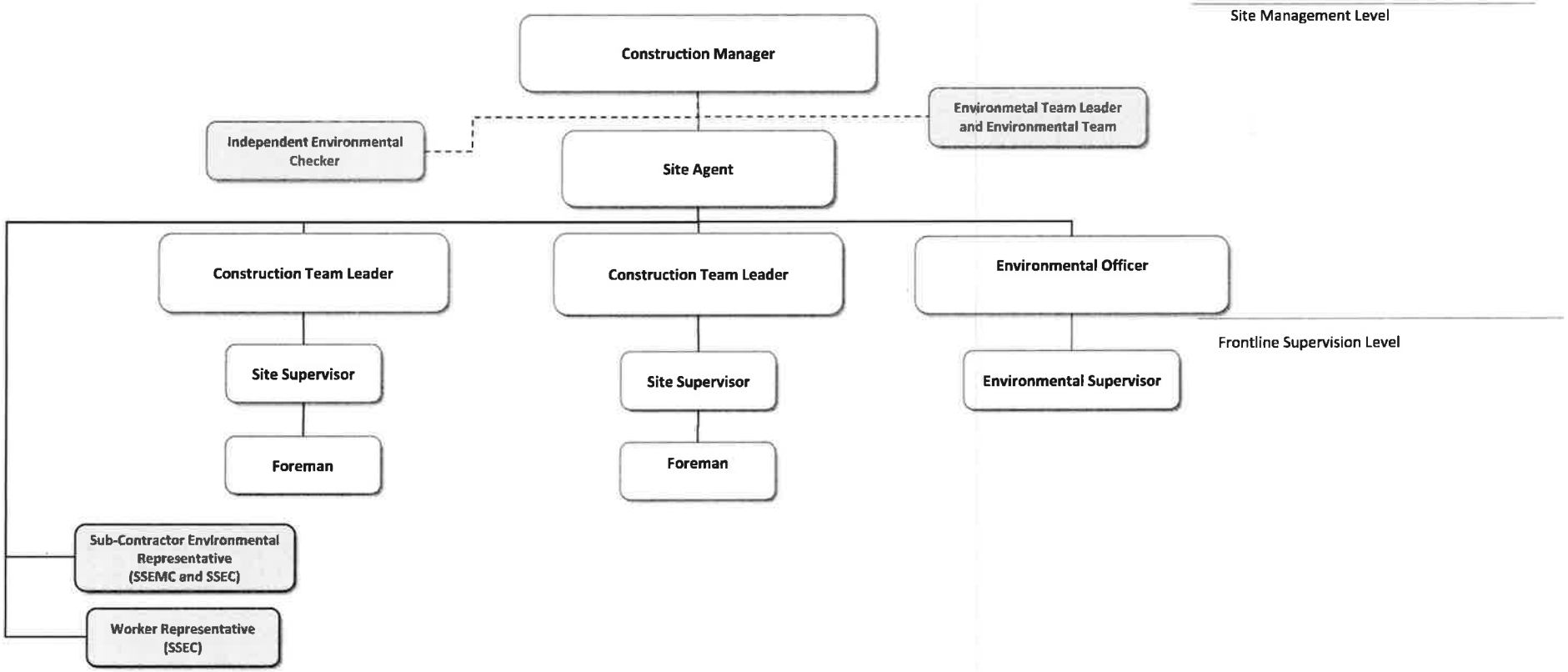
Appendix A – Project Environmental Management Organization Chart for Waste Management

Contract No. NL/2020/02

Tung Chung New Town Extension — Salt Water Supply System

Project Environmental Organization Chart (Rev.8)

中国地质工程集团有限公司
CHINA GEO-ENGINEERING CORPORATION



Appendix B –
C & DM Disposal Programme

Name of Department: CEDD
Name of Contract:

Contract No.: NL/2020/02

Tung Chung New Town Extension - Salt Water Supply System

C&D Materials Disposal Programme (Forecast to Oct 2023)

Month	Programmed Quantities of C&D Materials Generated					Programmed Quantities of C&D Materials Generated					
	Hard Rock and Broken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper/ cardboard packaging	Plastics (1)	Chemical Waste	Others, e.g. general refuse	Special Waste
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m³)
Jul 2021 (Forecast)	0	0	0	0	0	0	0	0	0	50	0
Aug 2021 (Forecast)	0	0	0	0	0	0	0	0	0	50	0
Sep 2021 (Forecast)	0	0	0	0	0	0	0	0	0	50	0
Oct 2021 (Forecast)	0	700	1400	0	0	0	0	0	0	50	0
Nov 2021 (Forecast)	0	1750	3500	0	0	0	0	0	0	50	0
Dec 2021 (Forecast)	0	1850	3700	0	0	0	0	0	0	50	0
Year Total	0	4300	8600	0	0	0	0	0	0	300	0
Jan 2022 (Forecast)	200	1350	2500	0	0	0	0	0	0	80	0
Feb 2022 (Forecast)	1200	3600	6000	0	0	0	0	0	0	80	0
Mar 2022 (Forecast)	1200	4600	8000	0	0	0	0	0	0	80	0
Apr 2022 (Forecast)	700	2100	3500	0	0	0	0	0	0	80	0
May 2022 (Forecast)	200	600	1000	0	0	0	0	0	0	80	0
Jun 2022 (Forcast)	0	100	200	0	0	0	0	0	0	80	0
Sub Total	3500	12350	21200	0	0	0	0	0	0	480	0
Jul 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Aug 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Sep 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Oct 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Nov 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Dec 2022 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Year Total	3500	12950	22400	0	0	0	0	0	0	1080	0
Jan 2023 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Feb 2023 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Mar 2023 (Forcast)	0	350	700	0	0	0	0	0	0	100	0
Apr 2023 (Forcast)	0	350	700	0	0	0	0	0	0	100	0
May 2023 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Jun 2023 (Forcast)	0	100	200	0	0	0	0	0	0	100	0
Sub Total	0	1100	2200	0	0	0	0	0	0	600	0
Jul 2023 (Forcast)	0	0	0	0	0	0	0	0	0	80	0
Aug 2023 (Forcast)	0	0	0	0	0	0	0	0	0	80	0
Sep 2023 (Forcast)	0	0	0	0	0	0	0	0	0	100	0
Oct 2023 (Forcast)	0	0	0	0	0	0	0	0	0	100	0
Year Total	0	1100	2200	0	0	0	0	0	0	960	0
Initial Estimated (in '000tons)	7350	34665	63080	0	0	0	0	0	0	1872	0
Initial Estimated (in '000m3)	3500	18350	33200	0	0	0	0	0	0	2340	0
Forcast Total (in '000tons)	7350	34865	63080	0	0	0	0	0	0	1872	0
Forcast Total (in '000m3)	3500	18350	33200	0	0	0	0	0	0	2340	0

Note:

The reasons of quantity change for "Disposal as public fill" are as follows:
1. Unforeseen soft spot was found during construction, extra excavation for replacement is required.
2. Change of the size for permanent structures.
3. The conversion factor of densities of rock and soil is 2.5 tonnes/m3 and 2.0 tonnes/m3 respectively.
4. The conversion factor of densities of imported rock and soft is 2.0 tonnes/m3 and 1.8 tonnes/m3 respectively.

Appendix C – Monthly Summary of Waste Flow Table and Summary Table for Use of Timber in Temporary Works

Monthly Summary Waste Flow Table for 2022

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated		Hard Rock and Large Broken Concrete		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Imported Fill		Metals		Paper/ cardboard packaging		Plastics (see Note 2)		Chemical Waste		Others, e.g. general refuse	
	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)	Actual	Estimate (4)
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000 kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)	
Jan	7967.7	4700.0	---	---	---	---	7967.7	4700.0	---	---	---	---	---	---	---	---	---	---	---	---	15.7	15.7
Feb	6086.0	3700.0	---	0.0	---	---	6086.0	3700.0	---	---	---	---	---	---	---	---	---	---	---	---	5.3	5.3
Mar	3655.3	7200.0	---	1200.0	---	---	3655.3	7200.0	---	---	---	---	---	---	---	---	---	---	---	---	37.4	10.0
Apr	1346.3	9200.0	---	1200.0	---	---	1346.3	9200.0	---	---	---	---	---	---	---	---	---	---	---	---	6.4	10.0
May	7558.0	4200.0	---	700.0	---	---	7558.0	4200.0	---	---	---	---	---	---	---	---	---	---	---	---	0.0	10.0
June	3617.0	1200.0	---	200.0	---	---	3617.0	1200.0	---	---	---	---	---	---	---	---	---	---	---	---	0.9	10.0
Sub-total	30230.2	30200.0	0.0	3300.0	0.0	0.0	30230.2	30200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.7	61.0
July	2499.8	200.0	---	200.0	---	---	2499.8	200.0	---	---	---	---	---	---	---	---	---	---	---	---	10.9	10.0
Aug	3615.7	200.0	---	200.0	---	---	3615.7	200.0	---	---	---	---	---	---	---	---	---	---	---	---	4.8	10.0
Sept	9289.6	---	---	---	---	---	9289.6	200.0	---	---	---	---	---	---	---	---	---	---	---	---	2.8	10.0
Oct		---	---	---	---	---		200.0														10.0
Nov		---	---	---	---	---		200.0														10.0
Dec		---	---	---	---	---		200.0														10.0
Total	45635.4	30600.0	0.0	3700.0	0.0	0.0	45635.4	31400.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.3	121.0

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use to the site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) All recyclable materials, including metals, paper / cardboard packaging, plastics & etc. will be collected by registered collector for recycling.

(4) Conversion factors for reporting purpose : excavated soil - 1.8 tonnes / M^3

(5) Estimate

Appendix D –
Sample of CHIT & Daily Summary Record

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities

☐ 公眾填料接收設施 Public Fill Reception Facilities

☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

建築廢物產生地點:
Construction Waste Generated Site:

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities

☐ 公眾填料接收設施 Public Fill Reception Facilities

☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

賬戶名稱:
Name of the Account-holder:

香港法例第354章廢物處置條例
廢物處置(建築廢物處置收費)規例
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

車牌號碼:
Vehicle Registration Mark:

有效期至:
Valid Until:

建築廢物產生地點:
Construction Waste Generated Site:

賬戶名稱:
Name of the Account-holder:

E 199279

賬戶編號:
Account No.:

甲部份: 由賬戶持有人保留
Part A: retained by Account-holder

賬戶編號:
Account No.:

乙部份: 由廢物運輸商保留
Part B: retained by Waste Hauler

丙部份: 由政府保留
Part C: retained by Government

"Daily Record Summary" (DRS) to record daily disposal of construction & demolition (C&D) materials from the Site
"運載記錄撮要" 記錄每日由地盤所傾倒的拆建物料

(1) Contract no. & title 合約編號及名稱 : _____

(2) Date of disposal 傾倒日期: _____

(3) Disposal ground (s) designated in the Contract or directed by the Consultant: (a)
合約指定或顧問指示接收設施 (b)
Others 其它

(4) Approved alternative disposal grounds 另可接受的接收設施 _____

CHIT/ DDF no. 載運入帳單/拆建物料運載記錄單編號	Vehicle registration number 車輛登記號碼	Approx. vol (e.g. Full/Three Quarter/ Half/One quarter) 大約承載量(例如全、3/4、半、1/4)	C&D material type (e.g. inert or non-inert) 建築廢料種類 (例如惰性或非惰性)	Disposal ground 接收設施	Signature & name of the Contractor's designated person before departure 於離開地盤前，承建商的指定人士姓名及簽名	Departure time from Site 離開地盤時間	Signature & name of Consultant's staff before departure or other time as agreed between Consultant's Representative and Contractor 於離開地盤前或其他經承建商與顧問代表同意的時間，顧問監管人員姓名及簽名	Actual disposal ground 真正接收設施	Arrival time at disposal ground 抵達接收設施時間	Remarks 備註

Part 1[1]甲部 **Part 2[2]乙部**

Submitted by 呈交 : _____ *[Name of Contractor's Designated Person] 承建商的指定人士姓名*

Signature 簽名 : _____

Date 日期 : _____

Received by 接收 : _____ *[Name and signature of the Consultant's staff] 顧問監管人員姓名及簽名*

Post 職位 : _____

Date & Time 日期及時間 : _____

[1] Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Consultant's Representative. 承建商填寫甲部兩份，副本由顧問代表持有

[2] Part 2 乙部- The Contractor shall complete Part 2 and submit the whole DRS to the Consultant's Representative within 1 working day after the records are posted at the EPD website. 承建商填寫乙部及將整份運載記錄撮要於記錄上載在環境保護署網頁後 1 個工作天內呈交給顧問代表

Appendix E – Mitigation Measures

Mitigation Measures

1 Construction Phase

1.1 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 transportation, storage and collection are described below.

Good Site Practices

1.2 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;
- imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;
- 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
- 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.

Waste Reduction Measures

1.3 Amount of waste generation can be significant 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 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.);
- provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

1.4 In addition to the above measures, specific mitigation measures are recommended for the specific waste types so as to minimize environmental impacts during handling, transportation and disposal of waste.

Storage, Collection and Transportation of Waste

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

- waste such as soil should be handled and stored well to ensure secure containment; and
- depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions.

1.6 The collection and transportation of waste from works area to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendation 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.

1.7 In addition to the above measures, other specific mitigation measures on handling the excavated and C&D materials, chemical waste and materials generated from construction phase are recommended in the following subsections.

C&D Materials

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

- maintain temporary stockpiles and reuse excavated fill material for backfilling;
- carry out on-site sorting;
- 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW.

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

On-site Sorting of C&D Materials

1.10 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. Non-inert portion of C&D materials should also be reused whenever possible and be disposed of at landfills as a last resort.

1.11 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 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 Contractors or frequency of removal off-site.

Reuse of C&D Materials

1.12 Based on the construction programme, all inert C&D materials would be best reused on-site during the whole construction phase to minimize offsite disposal of inert C&D materials. Should there be any surpluses AHM necessary for off-site disposal, it is recommended to be disposed at public fill reception facilities.

Use of Standard Formwork and Planning of Construction Materials Purchasing

1.13 Standard formwork should also be used as far as practicable in order to minimize the arising of 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.

Provision of Wheel Wash Facilities

1.14 Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.

Chemical Waste

1.15 For those processes which generated 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.

1.16 If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. 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 CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

General Refuse

1.17 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. It is expected that such arrangements would minimize potential environmental impacts.

Appendix F – Implementation Schedule of Major Waste Management Measures

Appendix F

EIA Ref.	EM&A Log Ref	WMP Section/ Clause Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Waste Management (Construction Waste)								
S7.4.1	WM1	S4.3	<u>Good Site Practices</u> 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; • imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.	Minimize waste Generation during construction	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance

Appendix F

EIA Ref.	EM&A Log Ref	WMP Section/ Clause Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S7.4.1	WM2	S4.3	Waste Reduction Measures 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 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.); • provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	Reduce waste generation	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM3	S4.3	Storage of Waste The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; and • Depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions;	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005

Appendix F

EIA Ref.	EM&A Log Ref	WMP Section/ Clause Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S7.4.1	WM4	S4.3	Collection and Transportation of Waste The following recommendation 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.	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM5	S4.3	Excavated and C&D Materials 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: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW; The recommended C&D materials handling should include:	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 • Project Administrative Handbook for Civil Engineering Works, 2012 Edition

Appendix F

EIA Ref.	EM&A Log Ref	WMP Section/ Clause Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			• On-site sorting of C&D materials • Reuse of C&D materials • Use of Standard Formwork and Planning of Construction Materials purchasing					
S7.4.1	WM6	S4.3	Provision of Wheel Wash Facilities Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.	Minimize waste impacts from trucks transportation	Contractor	All construction sites	Construction Stage	N/A
S7.4.1	WM10	S4.4	Chemical Waste 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	-Waste Disposal (Chemical Waste) General) Regulation -Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

Appendix F

EIA Ref.	EM&A Log Ref	WMP Section/ Clause Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S7.4.1	WM11	S4.4	General Refuse • 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM12	S5.3	GPS Implementation All dump trucks engaged on site will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials.	Ensure that any irregularities, such as the dump truck does not reach the designated disposal location after leaving the site and dump truck entering can be immediately identified and rectified without delay.	Contractor	All construction sites	Construction stage	As stipulated in WMP S5.3

Appendix G –
Method Statement for Stockpiling and Transportation of Excavated Materials and other Construction Wastes

1 *Scope of Work*

- Stockpiling
- Transportation of Excavated Materials
- Transportation of Other Construction Waste

2 *Construction Sequence of works*

2.1 Stockpiling:

- The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works.

- Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would be engaged for backfilling.

- The spoil will be stored in 2 m high maximum and the slope surface will be kept in 1:2.

- When amber rainstorm signal or higher is hoisted, protective measures would be provided on slope surface against rainwater such as covered with tarpaulin or plastic sheet. erecting the temporary shelters. additional of pumps to drive out rainwater, etc.

2.2 Transportation of Excavated Materials

- Excessive excavated material as well as surcharge will be transported to other sites for reuse as approved by the Project Manager; whilst the ET, IEC and EPD would be informed.

- The excavated material will be sprayed with water when it is dry. The aim is to control dust in work area.

- Dump truck loaded with excavated materials would be covered by tarpaulin sheeting or mechanical cover in order to prevent dust emission.

➢ For the transportation of excavated materials, CGC will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.

2.3 Transportation of Other Construction Waste

- General refuse and C&DM

➢ Un-recyclable, non-inert C&DM, i.e. C&DM. floating refuse and general refuse, which mainly consists of food waste. aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

➢ The C&DM will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

➢ Other waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. Genera1 refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle constructions will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

➢ The general refuse and the un-recyclable C&DM will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the tran9poFtation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

- Chemical Waste

➢ For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

➢ < Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil. cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

➢ All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

➢ The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

➢ Chemical waste air be stood at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:

- be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
- have a capacity of less than 450L 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.

- The storage area for chemical waste will:
  - be clearly labeled and used solely for the storage of chemical waste:
  - be enclosed on at least three sides;
  - have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
  - have adequate ventilation;
  - be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
  - be arranged so that incompatible materials area adequately separated.

- A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Annex 3

Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract No. NL/2020/03) (Contract 3)

Civil Engineering and Development Department
Contract No. NL/2020/03

Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East

Waste Management Plan (Rev.8)

Prepared By :	Authorized for issue :
Signature :	Signature :
Name: Mr. Allen Wong Post : Environmental Officer Date : 27 Feb 2023	Name: Aldous Lo Post : Site Agent Date : 27. 2. 2023

Revision History		
Rev.	**Description of Change**	**Effective Date**
0.0	First Submission	10 Aug 2021
1.0	Revised based on PM's comment	19 Aug 2021
2.0	Revised as per PM's comments	4 Oct 2021
3.0	Revised as per ET/IEC's comments	20 Oct 2021
4.0	Revised as per IEC's comments	7 Feb 2022
5.0	Revised as per PM/IEC's comments	17 Mar 2022
6.0	Revised as per EPD's comments	30 June 2022
7.0	Revised as per EPD and PM's comments	28 Sept 2022
8.0	Revised as per EPD's comments	17 Feb 2023

Contents

Appendices

Appendix A	Project Environmental Management Organization Chart for Waste Management
Appendix B	Tentative C&D Materials Disposal Programme
Appendix C	Mitigation Measures for Waste Management
Appendix D	Environmental Mitigation Implementation Schedule
Appendix E	The Planned Sorting Facility Location
Appendix F	Monthly Summary of Waste Flow Table and Summary Table for Use of Timber in Temporary Works
Appendix G	Sample of CHIT and Daily Summary Record
Appendix H	Method Statement for Stockpiling and Transportation of Excavated Materials and Other Construction Wastes
Appendix I	PS Appendix 25.2 Standards - Weighing System at Recorder House within Stockpiling Sites
Appendix J	Details of the Load Cell System

Abbreviation List

Abbreviation	Explanation
AECOM	AECOM Asia Company Limited
BKCEL	Build King Civil Engineering Limited
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring & Audit
TCNTE	Tung Chung New Town Extension
TCE	Tung Chung East
TCW	Tung Chung Wes
C&DM	Construction & Demolition Materials
WMP	Waste Management Plan
ET	Environmental Team
IEC	Independent Environmental Checker

1.0 INTRODUCTION

1.1 Background

The development of Tung Chung New Town Extension (TCNTE), comprising Tung Chung East (TCE) and Tung Chung West (TCW), is a mega-scale and complex project aiming to provide land to meet the future housing economic and social development needs of Hong Kong. Due to the fact that the proposed works are geographically separated, the implementation of mega-scale Project is divided into two packages, namely TCE and TCW respectively. In accordance with the tight delivery programme, the Project will be implemented in phases under separate contracts for the developments of TCE and TCW. This Plan only covers the work in TCE. Waste Management Plan for TCW can be found at dedicated project website: www.env.tcnte-west.hk/ep-submissions.html.

This plan will outline the Contractor WMP proposed by the Contractor for CEDD Contract (Contract No. NL/2020/03) - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East. The main contractor Build King Civil Engineering Limited (BKCEL) will ensure that all his employees will implement the accepted version of this WMP as an integral part of their daily activities on site.

1.2 Scope of Works

The works mainly comprise

- Construction of around 10km of roads, drainage, sewerage, watermains and utilities respectively
- Construction of 2.7 km Box Culvert No.3 and No.4 (plus 0.6km for top slab construction);
- Construction of Bridge L2;
- Construction of Underpass D1;
- Construction of 0.4km Noise Barriers 1 to 4;
- Construction of 1.7km of Common Utility Tunnel;
- Construction of West Sewage Pumping Station;
- Construction of East Sewage Pumping Station;
- Installation of street furniture.
- Ancillary works including associated civil, geotechnical, structural, electrical and mechanical engineering and landscaping works;
- Construction of 4 nos. of cycle subways with total length 1.4km and associated roadworks (subject to excision); and,
- Construction of Entrusted District Cooling Mains (subject to excision).
- Construction of road pavement

1.3 Purposes of the Waste Management Plan

This WMP provides necessary technical information, guidance and instructions to designated personnel who are responsible for the management of Construction and Demolition Materials (C&D Materials). This WMP includes the recommended mitigation measures on waste management that are contained in the EIA report and EM&A manual.

The aims of this WMP are:

- To identify and classify the types of C&D Materials generated in the execution of the works;
- To identify the potential for reuse, recycling minimization and disposal of C&D Materials from the proposed construction activities; and
- To outline the implementation, monitoring and audit programmed to ensure that the wastes arising from the construction activities are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner which complies with the contract requirements, EP Condition and the relevant *Ordinance* and *Regulations* in the Government of Hong Kong SAR.

"C&D Materials" refers to surplus materials arising from any land excavation or formation, civil/building construction, road works, building renovation or demolition activities. It includes various types of the reusable materials, building debris, rubble, earth, concrete, timber and mixed site clearance materials. When sorted properly materials suitable for land reclamation and site formation (known as public fill) should be reused at public filling area whereas the remaining C&D Materials are to be disposed of at landfills.

This WMP will also describe the waste management arrangements for other wastes (such as chemical waste, general refuse) that will be generated during the construction activities.

1.4 Waste Management Requirements and Guidelines

During the contract period, BKCEL will comply with the following legislations, code of practices, guidelines, practical notes and technical circulars.

■ **Statutory requirements**

- Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations;
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation (Cap. 132);
- Land (Miscellaneous Provisions) Ordinance) (Cap. 28);
- Dumping at Sea Ordinance (Cap. 466); and
- Dangerous Goods Ordinance (Cap.295)

■ **Codes of Practice, Circulars and Guidelines**

BKCEL will meet all relevant requirements by consulting the following codes of practice, technical circulars and guidelines:

a. Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005 - Environmental Management on Construction Sites;
b. Environment, Transport and Works Bureau Technical Circular No. 33/2002 - Management of Construction and Demolition Material Including Rock;
c. Development Bureau Technical Circular (Works) No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Material;

d. Environment, Transport and Works Bureau Technical Circular (Works) No. 24/2004 - Specifications Facilitating the Use of Concrete Paving Units Made of Recycled Aggregates;
e. Works Bureau Technical Circular No. 12/2002 - Specifications Facilitating the Use of Recycled Aggregates;
f. Development Bureau Technical Circular (Works) No. 8/2010 - Enhanced Specification for Site Cleanliness and Tidiness;
g. Works Bureau Technical Circular No. 19/2001 - Metallic Site Hoardings and Signboards;
h. Works Bureau Technical Circular No. 12/2000 - Fill Management;
i. Works Bureau Technical Circular No. 04/1998A - Use of Public Fill in Reclamation and Earth Filling Projects;
j. Works Bureau Technical Circular No. 04/1998 - Use of Public Fill in Reclamation and Earth Filling Projects;
k. Works Bureau Technical Circular No. 16/1996 - Wet Soil in Public Dumps;
l. Works Bureau Technical Circular No. 02/1993B - Public Filling Facilities;
m. Works Bureau Technical Circular No. 02/1993 - Public Dumps;
n. Works Bureau Technical Circular No. 32/1992 - The Use of Tropical Hardwood on Construction Sites;
o. A Guide to the Registration of Chemical Waste Producers;
p. A Guide to the Chemical Waste Control Scheme;
q. Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes;
r. Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste – (Cap 354, Section 35) and,
s. Environmental Guidelines for Planning in Hong Kong (2014), Hong Kong Planning Standards and Guidelines, Hong Kong Government (2018).

BKCEL will observe all applicable statutory requirements, legislation and associated regulations, and/or code of practices with regard to the waste to be generated in the construction activities. BKCEL will also apply for all necessary permits and licenses under these ordinances / regulations

1.5 License Requirements

Where appropriate, BKCEL will apply for all permits and licenses required under the following legislation for the handling and disposal of waste arising from the Project:

a. Chemical Waste Producer Registration under the Waste Disposal (Chemical Waste) (General) Regulation; and,
b. License to Collect and Transport Chemical Waste under Waste Disposal Ordinance
c. Public Dumping License under the Land (Miscellaneous Provisions) Ordinance.
d. Billing Account under for Disposal of Construction Waste under Waste Disposal (Charges for Disposal of Construction Waste) Regulation

A licensed chemical waste collector will be appointed for the disposal of chemical waste. Upon classification of any types of chemical waste as dangerous goods under the Dangerous Goods Ordinance, the handling of these wastes will comply with all the requirements of the ordinance and its regulations.

2.0 ORGANISATION AND STRUCTURE

This Section provides an outline of the roles and responsibilities of the major site staff involved with the management of C&D Materials arising from the Project.

2.1 Organization and Responsibility

The Site Agent or Construction Manager will have the overall responsibility to ensure that the requirements of the WMP are properly implemented. The Deputy Site Agent will act as the Waste Manager for the Contract. The Construction Team Leader or Deputy Construction Team Leader acts as Deputy Waste Manager and Team Leader of the Contractor's Environmental Team for overall control of waste management practices to ensure compliance with the contract requirements. The Environmental Officer and Environmental Supervisor will communicate and coordinate with ET on waste management for environmental monitoring and audit. The responsibilities of key site staff for the WMP are listed as follows: (see ***Appendix A*** of Project Environmental Organization Chart).

Construction Manager CM (Chairman)

The CM will maintain overall control of all aspects of the construction activities and will oversee the implementation of the WMP. He is also responsible for ensuring that there are adequate resources available for the implementation of the WMP. He will also chair the ad hoc meeting(s) with the Supervising Officer's Representatives to discuss the WMP.

Site Agent SA / Deputy Site Agent DSA (Deputy Chairman)

The SA/DSA will be responsible for management and control of the construction activities in relation to waste management and mitigation measures. He will be responsible for assigning other team members to assist him for supervision and enforcement of the on-site waste management practices. The SA/DSA will be responsible for:

- Identification and classification of all possible wastes arising from the construction activities
- Analysis of effectiveness, efficiency and reliability of waste reduction programme
- Obtaining all necessary licenses and permits for the handling and disposal of wastes
- Planning for on-site segregation, sorting and storage of wastes
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract
- Carry out quarterly internal auditing for the implementation of WMP
- Provide resources to the implementation and control of the WMP

Environmental Officer, EO

- Identify legal requirements
- Ensure site comply with legal requirements
- Prepare, implement and update the WMP
- Update the Waste Flow Table and Use of Timber Record
- Verify waste management activities and related results to comply with planned arrangements
- Arrange and provide the environmental training including the site specific induction training

and toolbox talks
- Organize environmental promotional activities
- Liaise on all matters relating to complaint, enquiry and non-compliance
- Carry out environmental system audits
- Report to the SA/DSA

Environmental Supervisor, ES; Safety Officer, SO and Safety Supervisor, SS (Team Member)

- Identify statutory requirements, contract requirements and corporation requirements
- Identify material that can be recycled, re-use and returned
- Arrange re-use, recycle and return work
- Monitor sub-contractors and workers to implement according to WMP
- Conduct waste management briefing to all site staff and workers
- Carry out quarterly internal auditing for the implementation of WMP

Construction Team Leader (Team Member)

- Assist SA/DSA to identification and classification of all possible wastes arising from the construction activities
- Analysis of effectiveness, efficiency and reliability of waste reduction programme
- Carry out immediate corrective action to rectify any non-compliance of environmental requirements of the WMP
- Planning for on-site segregation, sorting and storage of wastes
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract
- Assist SA/DSA to provide resources to the implementation and control of the WMP

General Foreman, GF (Team Member)

- Prepare location plans for storage of building materials to avoid or minimize construction materials damage on site
- Ensure WMP is implemented and maintained
- Instruct relevant parties to solve management problems
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out monthly review for the implementation of WMP

Foremen, FN (Team Member)

- Assist General Foreman to prepare location plans for storage of building materials to avoid or minimize relevant materials damage on site
- Arrange sorting facilities for waste materials re-use and recycling
- Arrange waste materials storage areas and disposal of waste materials according to trip-ticket System
- Ensure that daily site cleanliness and tidiness are implemented
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out weekly review for site cleanliness and tidiness

Subcontractor Representatives, SR (Team Member)

- Ensure that construction waste are properly sorted out and disposed
- Ensure that construction waste are properly reused and recycled
- Coordinate with foremen to rectify and take follow-up actions for identified waste management issues
- Provide adequate resources for the implementation of WMP
- Direct and supervise workers to implement according to WMP

Workers, WR

- Follow the instructions given by General Foreman, Foremen or Subcontractor Representatives to carry out waste management issue on site
- Reduce construction waste generation on site if possible
- Ensure that construction waste are properly sorted, re-used, recycled or returned on site
- Maintain good housekeeping of the workplaces after daily work activities

3.0 IDENTIFICATION AND CLASSIFICATION OF WASTE GENERATED FROM THE CONSTRUCTION ACTIVITIES

3.1 Waste Arising from the Construction Activities

Major activities that will generate waste from this Project include site clearance, excavation, formwork construction for concreting, etc.; which can be divided into distinct categories based on their composition as follows:

- Excavated materials from foundation work and underground services works;
- C&D Materials from demolition, structural, architectural and external works;
- Chemical waste from maintenance of plant and equipment; and
- General refuse from construction works.
- Chemical waste from construction works
- Recyclable Waste from construction works

A summary of the estimated quantities of C&D Materials to be generated from the construction and demolition work under the Project and the tentative C&D Materials disposal programme is attached in ***Appendix B***.

3.1.1 Excavated Material

The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works. Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would be engaged for backfilling.

3.1.2 Construction & Demolition Materials (C&D Materials)

C&D Materials include inert public fill materials such as bricks, rubble, concrete and non-inert C&D Materials such as wood, steel, vegetation, floating refuse, office and work force waste etc.

The majority of C&D Materials will arise during site clearance, demolition and excavation works.

3.1.3 General Refuse

The workforce will likely generate general refuse comprising food scraps, waste paper, empty containers, etc.

3.1.4 Chemical Waste

The maintenance and servicing of construction plant and equipment generates chemical waste, for instance, cleaning fluids, solvents, and lubrication oil and used batteries. The maintenance of vehicles also uses common chemicals, oil, lubricants and paints for this purpose. A licensed chemical waste collector would be employed for collection of chemical waste.

3.1.5 Recyclable Waste

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 Contract. All recyclable material that is generated during the course of the Contract will be collected by registered contractors and transported to an approved facility. 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:

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

3.2 Designated Waste Disposal Facilities and Disposal Criteria

A summary regarding waste classification and designated waste disposal facilities / outlet is provided in Table 3.1. The designated waste disposal facilities, the locations, the possible disposal routes and the relevant criteria as stipulated in the *Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap. 354L)* are also summarized in Table 3.1. The handling / management of each waste type are detailed in Section 4.

The designation of landfill facilities, the possible disposal routes and the relevant criteria as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) are summarized in Table 3.1.

Table 3.1 Designated Waste Disposal Facilities / Outlets and Locations

Type of Waste	Designated Waste Disposal Facility / Outlet	Designated Location	Possible Disposal Routing	Criteria to be adopted
Inert C&D Materials (excluding slurry and bentonite)	Fill Bank	Tuen Mun Area 38 Fill Bank (TM38FB)	North Lantau Expressway, TM-CKL, Lung Mun Road,	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles
Inert C&D Materials (for slurry and bentonite)	Fill Bank	Tseung Kwan O Area 137 Fill Bank (TKO137FB)	North Lantau Expressway, Tsing Ma Bridge, Cheung Tsing Tunnel, Ching Cheung Road, Lung Cheung Road, Kwun Tong Road, Tseung Kwan O Road, Tseung Kwan O Tunnel, Wan Po Road	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles
C&D Materials (Non-inert portion [excluding contaminated materials] and not recyclable)	Landfill	North East New Territories (NENT) Landfill	North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Castle Peak Road, Shing Mun Tunnel, Tai Po Road, Tolo Highway, Fanling Highway, Sha Tau Kok Road, Wo Keng Shan Road	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles

Chemical Waste	Dunwell Industrial (Holdings) Ltd.	8 Wand Lee Street, Yuen Long Industrial Estate, Yuen Long, NT, Hong Kong.	North Lantau Expressway, Tsing Ma Bridge, Ting Kau Bridge, Tai Lam Tunnel, Route 3, Castle Peak Road, Wang Lee Street	Admission tickets shall be granted and adopted for disposal
Other Waste Disposal/ Recycling Facilities	Islands Community Green Station	No. 1 Chung Mun Road, Tung Chung, Lautau, Hong Kong	Ying Hei Road, Yi Tung Road, Yu Tung Road, Chung Mun Road	Photo record shall be taken and receipt or certificate of each event shall be obtained from the recycling facility

BKCEL will also comply with the following requirement when delivery of construction waste to the landfills:

(1) Any over-sized inert C&D Materials will be broken down to less than 250mm in size so as to facilities its re-use by reclamation or earth-filling.
(2) BKCEL will implement proper measures to ensure that the dump trucks delivering C&D Materials are not overloaded. The measures include the checking of load cell before leaving of construction site.
(3) Mixed C&D Materials should be sorted at source to reduce the inert content to less than 30% by weight as far as practicable before they are delivery to landfills.
(4) The C&D Materials delivered for landfill disposal shall contain no free water and the liquid content shall not exceed 70% by weight.

4.0 PROPOSAL FOR WASTE MANAGEMENT

4.1 Waste Management Hierarchy

BKCEL will implement appropriate waste management practices according to the nature and category of wastes arising. Waste management options will be selected according to the widely accepted hierarchy shown by Table 4.1 below.

Table 4.1 Waste Management Hierarchy

Avoidance and minimization	Avoid and minimize waste through changing or improving practices and designs.	↑ Highest priority Lowest priority ↓
Reuse of materials (with limited reprocessing)	Reuse construction waste with only limited reprocessing such as uncontaminated soil, wooden planks, metals and other materials in other construction works or process.	
Recovery and Recycling (may require reprocessing)	Undertaking on site or off site recycling.	
Treatment	Offsite destruction and detoxification etc, of wastes into less harmful substances.	
Disposal	Release of wastes to designated areas properly so as to render them harmless.	

The hierarchy will be used to evaluate waste management options for the minimization of waste generation. By the implementation of this hierarchy, the overall construction cost will be reduced by avoiding the over-ordering of construction materials and the handling and disposing of unnecessary waste.

4.2 Design and Planning of Construction Works

Prior to commencement of works, BKCEL will carefully consider the construction methodology, demolition procedures and programme to assess the waste generation during works and study the available opportunity to reduce waste arising. Good work planning will, not only result in a better estimation of materials required for the works, but also contribute to the performance of the works in the first instance so as to avoid abortive activity.

Prior to the commencement of works, the location and necessary facilities for construction material storage, sorting and temporary waste collection will be planned and implemented. The opportunity for the reuse and recycling of the waste material on site and off site will be carefully studied.

4.3 Waste Minimization Measures and Good Site Practice

Good management and site practice can prevent the over generation of waste. Waste reduction is best achieved at the planning and design stage as well as by ensuring the implementation of good site practice. The good site management to be adopted will include: -

a. 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;

b. Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;

c. Using the correct amount of raw materials at the correct time and the recording of materials flow to minimize over ordering. The construction materials will be stocked carefully to prevent damage or contamination. During the works, only exact quantity of materials will be collected and if necessary, any surplus will be returned to stock after consideration of its use;

d. Maximizing the utilization of materials and the avoidance of unnecessary cutting such that off-cuts will be used when short lengths or a small quantity of materials are required;

e. A preference for reusable non-timber formwork such as steel formwork or plastic facing;

f. Sorting of all excavated / demolition materials to recover the inert portion (e.g. soil and broken rock) for reuse on site whenever possible or disposal to designed outlets (e.g. public filling areas). Recover all metal, cardboard and paper on site and properly stored in dry and clean conditions temporarily for later collection by recycling contractors;

g. Segregation and storage of constituents of C&D Materials in appropriate containers, skips or stockpiles to enhance the opportunity for reuse and recycling of materials or their proper disposal. Sufficient protective measures provided in the storage area for sorting to avoid damage or contamination;

h. Collection of aluminum cans, paper waste and plastic bottles by site staff, and provision of separately labeled bins to segregate these wastes from other general refuse arising from the work force;

i. Provision of a designated waste working team to collect the refuse on site regularly;

j. Removal of all other un-reusable C&D Materials off site as soon as practicable in order to optimize the use of the on-site storage space;

k. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The Experienced person(s) will ensure only dump trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&D Materials transported off site. The trip-tickets, with valid stamp from an agreed dumping / filling location, will be collected upon return and appropriately filed in the site records;

l. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimize fugitive dust emission;

m. Unused chemicals or those with remaining functional capacity will be retained for reuse. The chemicals will be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facilities (CWTF);

n. The setting up of special control measures to regulate storage, labeling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTF;

o. Imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;

p. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;

q. The amount of waste reused, recycled or disposed will be recorded regularly.

Mitigation measures according to the EIA will be implemented on site. The details are summarized in **Appendix C**, and the mitigation measures implementation schedule is provided in **Appendix D**.

4.4 Handling of C&D Materials

Storage, collection and transportation of the C&D Materials will be carefully planned and implemented to minimize any adverse impact upon the environment. The generated C&D Materials will be sorted on site and C&D Materials for recycling as appropriate in accordance with ETWB TCW No. 19/2005, or subsequent disposal at approved strategic landfills. Wherever practicable, SA/DSA will arrange the segregation of these wastes on site in order to maximize the recovery of reusable and recyclable materials. Separate areas will be designated for segregation and storage where site-specific conditions allow.

The segregated types of C&D Materials will be stored in separate covered storage areas to avoid possible cross contamination and loss due to windblown and fugitive dust. If the C&D Materials are to be temporarily stored in piles on site, they will either be covered with a tarpaulin or watered regularly to prevent the emission of fugitive dust. SA/DSA will ensure that C&D Materials are removed from their origin and processed at designated points in a timely manner.

The period of surcharging within any portion of site shall be deemed to commence from the time that the surcharge material has been brought to the designated height of the surcharge over the full extent of that portion. BKCEL will maximization of the use of C&D materials for the land formation work and critically review of the scheduling of the surcharge operations to avoid, or otherwise, minimize generation of residual C&D materials requiring disposal during and at the end of the land formation as per EP Condition 2.24 (iii).

Recyclable materials such as steel mesh, reinforcement bars, window frames, railing, banisters, and wooden planks will be separated from other C&D Materials. These materials will be either reused on site or collected by an external licensed waste recycling agent. If an external recycling agent is required, details of the nominated company will be submitted to the Project Manager.

The details for stockpiling and transportation of excavated materials and other construction wastes is provided in **Appendix H**.

4.4.1 Waste Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert materials and a unique access checkpoint with security control. The SA/DSA will manage the waste sorting facilities and promptly remove all the sorted and processed materials arising from or in connection with the works from the site to minimize the extent of temporary stockpiling on the site. The planned sorting facility location is given at **Appendix E**. The categories of C&D Materials to be sorted within the waste sorting facilities include:

- Inert materials consisting of earth, building debris, rock fragments, concrete bricks, tiles, masonry and mortar etc;
- Metals;
- Paper/Cardboards; and,
- Timber.
- Waste from Landscaping Works

Following the sorting of these wastes, they will be sent separately for reuse and recycling, processing or disposed of as described in the following sections.

Other than large waste sorting facilities, BKCEL will provide refuse and recycling bins respectively to collect different types of refuse generated by the site office and the workforce. These will include bins to collect general refuse such as food waste and recycling bins to collect waste paper separately, plastic bottles and aluminum cans. These bins will be provided in common areas where the wastes are commonly generated such as site offices, workshops, canteen and other site accommodation areas for the workers.

(I) Inert C&D Materials

Following waste sorting, the remaining inert C&D Materials will be managed as follows:

Excavated Material

In order to minimize the amount of excess excavated material, the priority for the management options of excess excavated material will be as followings: -

a. Suitable excavated material will be stored for backfilling purposes;
b. Excessive excavated material will be transported to other sites for reuse as approved by the Project Manager; whilst ET and IEC and EPD will be informed.

Concrete Waste

The surplus concrete after each concrete pour will be used for some minor pre-cast elements where practicable. Dry concrete waste, including broken concrete from demolition works, will be sorted out from the other wastes for reuse in site temporary road construction.

(II) Non-Inert C&D Materials

Timber Waste

As far as possible, BKCEL will avoid, reduce and minimize the use of timber in temporary works construction. Where the timber is used for this purpose or for one process / activity with an estimated quantity exceeding $5m^3$, BKCEL will submit a method statement to the Project Manager for agreement prior to the commencement of the works.

Metal Wastes

BKCEL will avoid and reduce metal waste during the design, planning and construction process. Cut metal or steel bar will be considered for re-use in temporary or minor works on site. When metal

waste has arisen on site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling contractors.

General Refuse and C&D Materials

Un-recyclable, non-inert C&D Materials, i.e. C&D Materials, floating refuse and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

The C&D Materials will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

The general refuse and the un-recyclable C&D Materials will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

4.4.2 Chemical Waste

For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

Storage of Chemical Waste

Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:

a. be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
b. have a capacity of less than 450L unless the specifications have been approved by the EPD; and,
c. display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

The storage area for chemical waste will:

a. be clearly labeled and used solely for the storage of chemical waste;
b. be enclosed on at least three sides;
c. have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
d. have adequate ventilation;
e. be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
f. be arranged so that incompatible materials are adequately separated.

Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Please refer to Section 5.2 for the recording system of C&D Materials and waste. A sample of the Record of Timber Usage and Monthly Waste Flow Table are provided in **Appendix F and Appendix G.**

4.4.3 Hazardous Material

All hazardous materials generated from the demolition works shall be sorted and handled properly. For the grits and any other depositions collected from the contract, Admission Ticket shall be applied to deliver such special waste to designated landfill site.

BKCEL will conduct a risk analysis and produce a method statement specifying the safe method of use and all associated precautions to be implemented.

BKCEL will ensure that material safety data sheets are available and hazard identification labels will be properly affixed to all storage containers.

All workers be involved in the use, handling of, or exposure to hazardous substances, then the relevant information, training and proper personal protective equipment shall be provided accordingly.

The quantities of hazardous substances on the Site shall be kept to a minimum as far as is possible and practicable.

Strictly follow the guidelines provided by the material suppliers or the relevant Material Safety Data Sheet for use and storage of the hazardous material.

4.4.4 Excavated Trim Materials

All excavated trim material generated from the works will be treated on site by cement solidification or stabilization, the treated trim material will be re-used on site rather than off-site disposal.

The location of planned excavated trim treatment yard is given at **Appendix E**.

4.5 Promotion and Training on Waste Management

4.5.1 Environmental Training

The EO and ES are responsible for carrying out the environmental training on waste management. They will analyze the problem and the detailed need of waste management training for the employees, consult with their departmental managers, and seek advice from the senior management.

The environmental training plan shall be reviewed quarterly by the EO in consultation with the Site Agent to identify and review training needs of the construction activities and to introduce new training program.

Site Specific Induction Training

The site Specific Environmental Induction Training provided by the EO covering but not limited to environmental and waste management including the implementation of waste management plan, handling of special waste and trip ticket system will be conducted for all site staff and workers employed for the Works or in connection with the Contract. Refresher training for the aforesaid area will be provided by the EO in every six months.

The training content should also cover the subjects such as organization structure, duties and responsibilities, measures, targets, in-house rules and regulations.

Tool box talk

Workers will receive environmental toolbox talks conducted by the respective front line Supervisors, EO/ES. The toolbox talks will focus on different trade and activities and enhance environmental awareness amongst operatives.

4.5.2 Environmental Promotion

Environmental information

- Display and update appropriate Environmental Signs/Posters at the site entrances and relative works area.
- Environmental news, agenda and minutes of Site Safety Environmental Committee Meeting, emergency, environmental promotion activities will display on site safety bulletin board
- Daily Morning Briefing is an individual workforce gathering in the morning assembly prior to work start to be conducted by the supervisor or gangers. Daily morning briefing will deliver environmental messages, environmental hazards identified and environmental pollution precaution measures to workforce.

Environmental Award

The "Safety and Environmental Star – Worker Award" would be held to promote safety and environmental awareness of individual worker. The performance of the worker on waste management would also be reviewed. The assessment criteria will be based on observation by EO/ES, area foremen report and recommendation from their direct employer and written assessment of safety and environmental knowledge.

5.0 TRIP TICKET SYSTEM AND RECORDING

5.1 Trip Ticket System (TTS)

For the transportation of public fill and C&D Materials, BKCEL will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.

The manpower resources for TTS

(1) A senior staff member (with at least two-year experience in site management) fully responsible for implementing and overseeing the operation of the TTS; and

(2) Experienced person(s) to man each exit from the Site for the purpose of checking every truck carrying C&D Materials leaving the Site so as to ensure that the truck driver bears a duly completed signed and stamped Disposal Delivery Form (DDF).

General Procedure of the TTS

The procedures for implementation of the TTS are as follows:-

(1) BKCEL will establish site procedures to ensure that each truckload of C&D Materials leaving the Site will bear a duly completed CHIT / Disposal Delivery Form (DDF). BKCEL will also establish a mechanism to ensure timely retrieval of the CHIT / DDF and/or receipt from the disposal

grounds. The person(s) who man the exit(s) shall record the CHIT/ DDF no., the vehicle registration mark and the departure time of every truck carrying C&D Materials leaving the Site.

(2) The CHIT shall be used for disposal of C&D Materials at a prescribed facility as defined under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) (hereinafter referred to as "prescribed facility") and the Particular Specification, Sample of the CHIT is provided in **Appendix H**.

(3) Where the inert C&D Materials is delivered to other sites for reuse as approved by the Project Manager, a special designed ticket (i.e. similar to the Chit) will be deployed and the mechanism and procedure is also similar to the Chit system. The ET and IEC will be notified for the C&D Materials delivery.

The procedures of the TTS (for prescribed facility - NENT)

a) For each truckload of C&D Materials leaving the Site, all truck drivers must bear a duly completed CHIT.

b) A daily record of disposal of C&D Materials shall be maintained from the Site including CHIT numbers, vehicle registration marks, drivers' particulars, approximate volume, C&D materials type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground. The appointed designated person(s) shall complete Part I of the Daily Record Summary (DRS) in duplicate and inform the Engineer's staff before departure of the vehicle.

c) The Engineer's staff shall sign Part I of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Project Manager and BKCEL.

d) The truck shall proceed to the disposal ground as stipulated in the Contract. If the C&D Materials accord with the acceptance criteria, disposal of the materials will be permitted and the facility operator will give the Contractor's truck driver a Transaction Record Slip and stamp the CHIT. When the disposal of waste is not permitted (rejected by facility operator due to overloading or non-compliance with relevant acceptance criteria, closure of facility etc.), the truck will go back to the construction site and the Contractor will sort out an appropriate mitigation measure.

e) The information recorded in the DRS shall be checked against available information including site records/register and data from EPD's website [https://www.epd.gov.hk/epd/misc/cdm/scheme.htm.].

f) Site Engineer shall complete Part 2 of the DRS form for submission to the Project Manager within 1 working day after the records are posted at the EPD web-site.

g) Where an irregularity is observed or where requested by the Project Manager under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), BKCEL shall submit to the Project Manager within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped CHIT and/or the

Transaction Record Slip (where relevant) to confirm proper completion of the delivery trips in question, or within 3 working days after the Project Manager has requested for such evidence, whichever is later. A fax copy of the CHIT or Transaction Record Slip is acceptable, unless otherwise directed by the Engineer.

Informing the Truck Drivers

BKCEL will write to all truck drivers whom he has engaged for removal of C&D Materials from the Site and draw their attention to the following particular points:

(a) Each truck carrying C&D Materials leaving the Site for a disposal ground must bear a duly completed and stamped DDF, irrespective of the location and nature of the disposal ground.

(b) The C&D Materials must be disposed of at the disposal grounds as stipulated in the DDF.

(c) What constitutes an improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping License from the holder of the offending trucks.

(d) Truck drivers must bear a valid Dumping License which he can apply from the Civil Engineering and Development Department (CEDD).

(e) The Contractor will inform the truck drivers that all dump trucks engaged on site shall be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping & landfilling of C&D materials.

A sample of the "CHIT" and Daily Summary Table (DRS) is given at **Appendix H**.

5.2 Waste Recording System

BKCEL will record the quantities of C&D Materials generated each month by using the monthly summary "Waste Flow Table" (WFT).

The following records will be kept by BKCEL for inspection and reporting as necessary by the Environmental Team or the Project Manager:

- Waste disposal permits or licenses
- Record of trip tickets for C&D Materials disposed off-site
- Record of trip tickets for chemical waste disposed off-site
- Record of non-compliance of the WMP
- Record of corrective action taken to rectify any non-compliance
- Record of the admission tickets usage.

BKCEL will provide, operate and maintain a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Site:

- The video cameras used in the system will be of high resolution, lowlight and colour type
- Power back up shall be provided to cater for accidental breakdown of the power supply to the system

- Videos captured by the system will be recorded continuously without break except with the agreement of the SA/DSA, or in month during which where is no disposal of C&D Materials off the Site for the entire month
- Videos will be captured in a format acceptable to the Engineer Representative
- The registration mark of each vehicle leaving the site will be recorded
- The loading condition of dump trucks including empty trucks will be captured
- Securely protect the videos cameras from being damaged
- Provide the software and hardware for capturing the vehicle registration mark, and the time and date for the SA/DSA's immediate taking and viewing of photograph of every truck leaving the Site and viewing the recorded videos
- Keep the videos record for at least 60 days and the photographs until such time as instructed by the Engineer Representative
- Post sufficient notices at conspicuous positions to notify the workers, drivers and staff about the purpose of the video recording system in accordance with data protection principles set out in the Personal Data (Privacy) Ordinance (Cap. 486).

5.3 Global Positioning System (GPS) and Load Cell System

According to the Environmental Permit EP-519/2016 General Conditions 2.24 (vi-vii) and PS Clause 25.25A (ii), all dump trucks engaged on site will be equipped with Global Positioning System (GPS) and load cell system or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings, parking locations and loads of dump trucks to prohibit illegal dumping and landfilling of C&D materials. There will be record and analysis of data collected by GPS or equivalent automatic system relating to travel routing parking locations of dump trucks engaged on site.

The GPS and load cell system installed on dump trucks will transmit self-monitoring data direct from the truck to the control center through GPRS mobile communication network.

The RTTM system allows the Contractor and the users to carry out round-the-clock monitoring of the movement of dump trucks by accessing to the designated website. This will ensure that any irregularities can be immediately identified and rectified without delay.

The RTTM system employs hot standby configuration. Two identical servers are used to handle and store data reported from GPS and load cell system. Application software, such as web user interface, is provided by a standalone web server. The web user interface enables users to view the data record and analyze the data records. The corresponding historical GPS vehicle location data shall be maintained for at least 3 months after any C&D material disposal trips for retrieval if needed.

The system is connected to the internet via two separate broadband networks. Each network is protected by network firewall. The firewall prevents unauthorized access to the system and route connection requests to the appropriate servers.

Refer to the PS Section 25.25A(1), all dump trucks transporting C&D materials under NL/2020/03 shall not access "Tung Chung Road" unless the dump trucks are required to enter garage located on

Tung Chung Road to carry out repairing works. It will be monitored by the GPS system. When the dump trucks enter Tung Chung Road for repairing works, the alert system will be triggered, i.e. notification email will be sent to all concerned parties. It is the current practice that upon reception of the notification, EO/ES will carry out investigation and submit investigation reports with photos showing the skip condition, & dump truck arrived at the garage and the receipt, to prove that the dump trucks did not carry C&D materials when entering Tung Chung Road for repairing works.

In the event of any irregularities or non-compliance, the server will generate e-mail to inform the relevant parties (e.g. PM, ET, IEC and the Contractor). Alert system will be provided on the user interface of Smart Site Management System through GPS. Email will be automatically sent to the relevant parties, including ET, IEC, the Project Manager, and the Contractor and surveillance team for any loaded dump truck accessing the restricted Zones on Tung Chung Road and "Tung Chung Road west of Shek Mun Kap" with display of the plate number.

Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the data including the travel routings, parking locations on a daily basis. Restricted Zones (e.g. Tung Chung Road) can be set by the RTTM system and signal (by email) will send to the EO, ES or the default users immediately once any irregularities / non-compliance are triggered. The EO/ES will also link up the GPS data with the Trip Ticket System by merging the corresponding chit number, vehicle number etc.
The details of the load cell system is provided in the **Appendix J.**

5.4 Illegal Dumping and Landfilling of C&D Materials

Surveillance Team will conduct regular site inspections to identify and report immediately to the ET, IEC, the Project Manager and EPD through email on suspected illegal dumping and landfilling of C&D materials outside the designated disposal location(s) as stipulated in the relevant EP conditions.

5.5 Weighting System at Recorder House

The Weighing System installed at each of the Recorder House within the Stockpiling Sites is a system to collect information in respect of loads of surplus filling materials delivered to and removed from the Stockpiling Sites by the following:

a) Dump trucks by the Contractor, including those excavated within the contract boundary, and transporting between individual stockpiling sites;
b) Dump trucks by the Contractor or others for collecting fill material or removing fill from the stockpiling areas; and
c) Others as directed by the Project Manager.

The Weighing System will comply with the requirement stated in PS Appendix 25.2, the details are provided in Appendix I.

6.0 EVENT CONTINGENCY PLAN FOR NON-COMPLAINCE AND COMPLAINT

6.1 In the Event of Non-Compliance

A Contingency Group will be set up to respond to non-compliance on waste management and other environmental issues.

1. If any non-compliance is observed during site inspection by AECOM or CEDD, the EO/ES will raise a Corrective & Preventive Action Report (CPAR) to SA/DSA;
2. The PM will notify and liaise with the SA/DSA of non-compliance to obtain proposals and a response to the CPAR;
3. The EO will notify SA/DSA if the non-compliance is an exceedance of the stipulated requirements. In such cases, a copy of the CPAR will be issued to the AECOM as a Notification of Non-compliance (NNC);
4. After receipt of the NNC, the SA/DSA will propose corrective actions for the non-compliance in line with the BKCEL's CPAR and implement the proposed corrective actions once they have been agreed by AECOM;
5. If the implementation of the corrective actions is satisfactory, the non-compliance record (CPAR) will be closed accordingly;
6. The SA/DSA/EO will propose preventive actions within 3 working days if it has not been already included within the BKCEL's response after the closure of the non-compliance records; and
7. The SA/DSA/EO will record CPARs accordingly in the CPAR log sheet.
8. Environmental Team and Project Manager should be notified immediately in case of the event of non-compliance.

6.2 In the Event of Complaint:

1. Complaint related to environmental management will be collected by the EO/ES. The complaint will be referred to the SA for carrying out complaint investigation procedures;
2. The SA will log complaint and date of receipt onto the complaint database and inform the SM and the AECOM immediately within 2 working day;
3. Within 2 working day after receipt of the notification of compliant, the EO/ES will identify the source of the problem and provide the AECOM relevant works site information, e.g. types and locations of construction works;
4. If the complaint is valid and due to project works, the EO/ES will liaise with SA to propose corrective actions/mitigation measures to AECOM. The SA will implement the mitigation measures once they have been agreed;
5. The EO/ES will report the investigation results and subsequent actions taken, to the AECOM after the implementation of mitigation measures; and
6. If no further comments or complaints are received from the complainant within 20 days after responding to the complainant, close the complaint record.
7. Environmental Team and Project Manager should be notified immediately in case of the event of complaint.

Follow-up actions to be taken by the Contractor and Dump Truck Drivers for Committing Suspected Offences relating to Illegal Dumping and Landfilling of C&D materials

1. The dump truck drivers will be asked to explain for the suspected offences relating to illegal dumping and landfilling of C&D materials. An investigation report will then be prepared by the EO and submit to AECOM.

2. The Contractor will discuss with AECOM for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.0 AUDITING PROPOSAL

General Foreman and EO/ES will conduct weekly site inspections to ensure this WMP is properly followed. In addition to internal audit will be performed to review the effectiveness on the implementation of this WMP:-

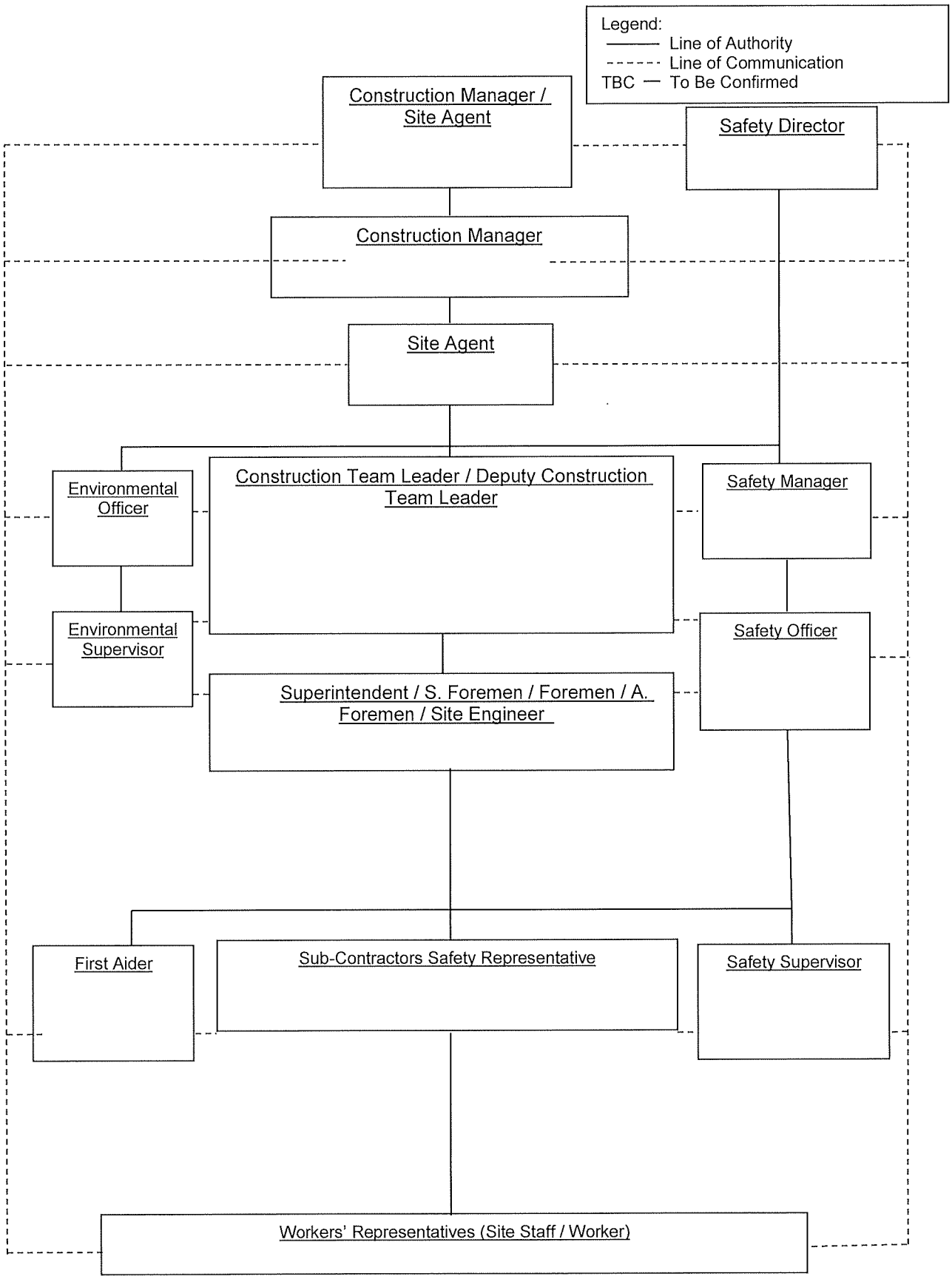
- Internal audits will be performed in line with the WMP by BKCEL Head Office management team
- Audits will be planned by Environmental Officer to determine when and where to audits which are scheduled on the basis of the status and importance of the activity
- Audit comprises of document review, site inspection and discussion with responsible person, so as to address all key elements of the WMP and implementation of procedures and maintenance of records
- Environmental and Safety Officer will monitor the status of completion of the follow-up action programme after internal auditing
- Result of audits will be taken into account for management review for reviewing the implementation status and the effectiveness of the audit system

The waste (generated from construction activities) handling procedures documented in this stand-alone WMP will be incorporated into the Environmental Management Plan and the effectiveness of waste management and implementation of trip ticket system will be discussed and reviewed during the SSEMC and SSEC meetings on monthly basis.

Appendix A

Project Environmental Management Organization Chart for Waste Management

Site Safety & Environmental Organization Chart



Appendix B

Tentative C&D Materials Disposal Programme

Name of Department: Civil Engineering Development Department

Contract No.: NL/2020/03

Monthly Summary Waste Flow Table for 2022

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (a=c+d+e)	b. Hard Rock and Large Broken Concrete	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill	f. Imported Fill	g. Metals	h. Paper / Cardboard Packaging	i. Plastics	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
February	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
March	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
April	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.030
Sub-total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6000	0.0000	0.0000	0.1800
July	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
August	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
September	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
October	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
November	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
December	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0400
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.2000	0.0000	0.0000	0.4200

Remark:

Conversion factor: Glass Cullet;1.6 ton/m3, Soil;1.8 ton/m3, Rock;2.5 ton/m3, Chemical;1.0 kg/L, Broken Concrete;2.0 ton/m3, Sand;1.65 ton/m3, G200/400;2.2 ton/m3, Non-inert Waste;0.9 ton/m3, Yard Waste;0.7 ton/m3

Name of Department: Civil Engineering Development Department

Contract No.: NL/2020/03

Monthly Summary Waste Flow Table for 2023

Month	Forcast Quantities of Inert C&D Materials Generated Monthly						Forcast Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (a=c+d+e)	b. Hard Rock and Large Broken Concrete	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill	f. Imported Fill	g. Metals	h. Paper / Cardboard Packaging	i. Plastics	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	6.079	0.000	0.000	6.079	0.000	0.000	0.000	0.277	0.000	0.000	0.007
February	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
March	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
April	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
May	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.777	0.000	0.000	0.257
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
October	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
November	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
December	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
Total	26.079	0.000	0.000	26.079	0.000	0.000	0.000	1.377	0.000	0.000	0.557

Remark:

Conversion factor: Glass Cullet;1.6 ton/m3, Soil;1.8 ton/m3, Rock;2.5 ton/m3, Chemical;1.0 kg/L, Broken Concrete;2.0 ton/m3, Sand;1.65 ton/m3, G200/400;2.2 ton/m3, Non-inert Waste;0.9 ton/m3, Yard Waste;0.7 ton/m3

Appendix C

Environmental Mitigation for Waste Management

Mitigation Measures for Waste Management

Construction Phase

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 transportation, storage and collection are described below.

Good Site Practices

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;
- imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;
- 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
- 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.

Waste Reduction Measures

Amount of waste generation can be significant 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 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.);

- provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

In addition to the above measures, specific mitigation measures are recommended for the specific waste types so as to minimize environmental impacts during handling, transportation and disposal of waste.

Storage, Collection and Transportation of Waste

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

- waste such as soil should be handled and stored well to ensure secure containment; and
- depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions.
- The collection and transportation of waste from works area to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendation 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.

In addition to the above measures, other specific mitigation measures on handling the excavated and C&D materials, chemical waste and materials generated from construction phase are recommended in the following subsections.

C&D Materials

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

- maintain temporary stockpiles and reuse excavated fill material for backfilling;
- carry out on-site sorting;
- 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW.

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

On-site Sorting of C&D Materials

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. Non-inert portion of C&D materials should also be reused whenever possible and be disposed 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 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 Contractors or frequency of removal off-site.

Reuse of C&D Materials

Based on the construction programme, all inert C&D materials would be best reused on-site during the whole construction phase to minimize offsite disposal of inert C&D materials. Should there be any surpluses Artificial Hard Material (AHM) necessary for off-site disposal, it is recommended to be disposed at public fill reception facilities.

Use of Standard Formwork and Planning of Construction Materials Purchasing

Standard formwork should also be used as far as practicable in order to minimize the arising of 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.

Provision of Wheel Wash Facilities

Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.

Excavated Contaminated Soil and Marine Sediments

It is considered unlikely that contaminated land issues, if any subject to site investigation, would be a concern during either the construction or the operational of the proposed development as remediation on contaminated area would be carried out prior to construction. However, as a precaution, it is recommended that standard good site practices should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater.

- 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 minimize 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.

The Contractors 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 Engineers.

- The Contractors 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 750m3 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.
- For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed.
- Moreover, the geosynthetic containment has also been proposed for Type 3 disposal in the EIA Study under Wan Chai Development Phase II and Central-Wan Chai Bypass (WDII) (EIA 141/2007). Several field trials had been undertaken under WDII – Design and Construction to demonstrate the feasibility on the use of the geosynthetic containment. Report on the field trials concluded that disposal by sealing sediments in geosynthetic containers and dropping these containers into the contaminated mud pits at East Sha Chau has been shown to be a successful and viable disposal method. The use of geosynthetic containment for special disposal was considered to be an effective system with negligible loss of contaminants to the marine environment during disposal.

Chemical Waste

For those processes which generated 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.

If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. 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 CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

General Refuse

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. It is expected that such arrangements would minimize potential environmental impacts.

Appendix D

Environmental Mitigation Implementation Schedule

Implementation Schedule of Major Waste Mitigation Measures

WMP Section No.	Recommended Mitigation Measures	EM&A Log Ref.	EIA Ref.	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/or Standard to be Achieved
4.3	Good Site Practices 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; • imposition of penalty system on Contractors' improper behaviors when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • 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 • 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation	WM1	S7.4.1	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site

	measures proposed in the EIA Report and the EM&A Manual should be adopted.							
4.3	Waste Reduction Measures 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 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.); • provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	WM2	S7.4.1	Reduce waste generation	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.4	Storage of Waste The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; and • Depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions;	WM3	S7.4.1	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical

								Circular No. 19/2005, Environmental Management on Construction Site
4.4	Collection and Transportation of Waste The following recommendation 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.	WM4	S7.4.1	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.4	Excavated and C&D Materials Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure implemented in handling the excavated and C&D materials: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and	WM5	S7.4.1	Minimize waste Impacts from excavated and C&D materials	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical

	• implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW; • The recommended C&D materials handling should include: • On-site sorting of C&D materials • Reuse of C&D materials • Use of Standard Formwork and Planning of Construction Materials purchasing							Circular No. 19/2005, Environmental Management on Construction Site
4.4	<u>Excavated Contaminated Soil</u> As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater.	WM7	S7.4.1	Remediate contaminated soil	Contractor	All construction Sites where applicable	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.4	<u>Dumping of excavated sediment</u> • Keep and produce logs and other records to demonstrate compliance and ensure journeys are consistent with designated locations • Comply with the conditions in the dumping permit.	WM9	S7.4.1	Handle excavated sediment	Contractor	All construction Sites where applicable	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal

	• 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 750m3 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. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.							Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.3	<u>Chemical Waste</u> 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.	WM10	S7.4.1	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical

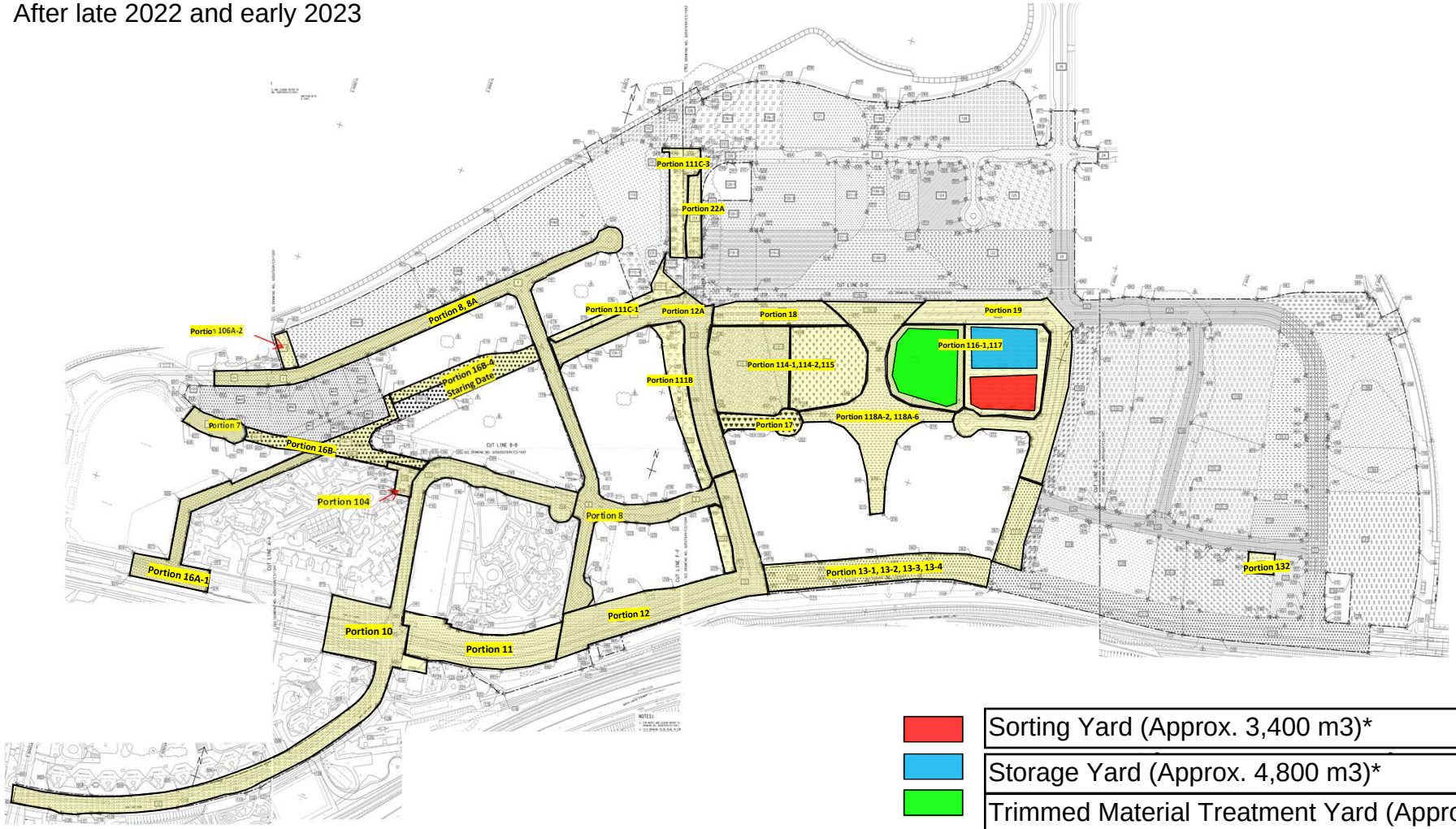
								Circular No. 19/2005, Environmental Management on Construction Site Code of Practice on the Package, Labelling and Storage of Chemical Wastes
4.3	General Refuse • General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to 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.	WM11	S7.4.1	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
5.3	GPS Implementation All dump trucks engaged on site will be equipped with Global Positioning	N.A.	S7.4.1	Monitor tracking of dump trucks and prevent any illegal dumping	Contractor	All construction sites	Construction stage	EP-519/2016 General Conditions 2.24 (vi-vii)

	System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials.							

Appendix E

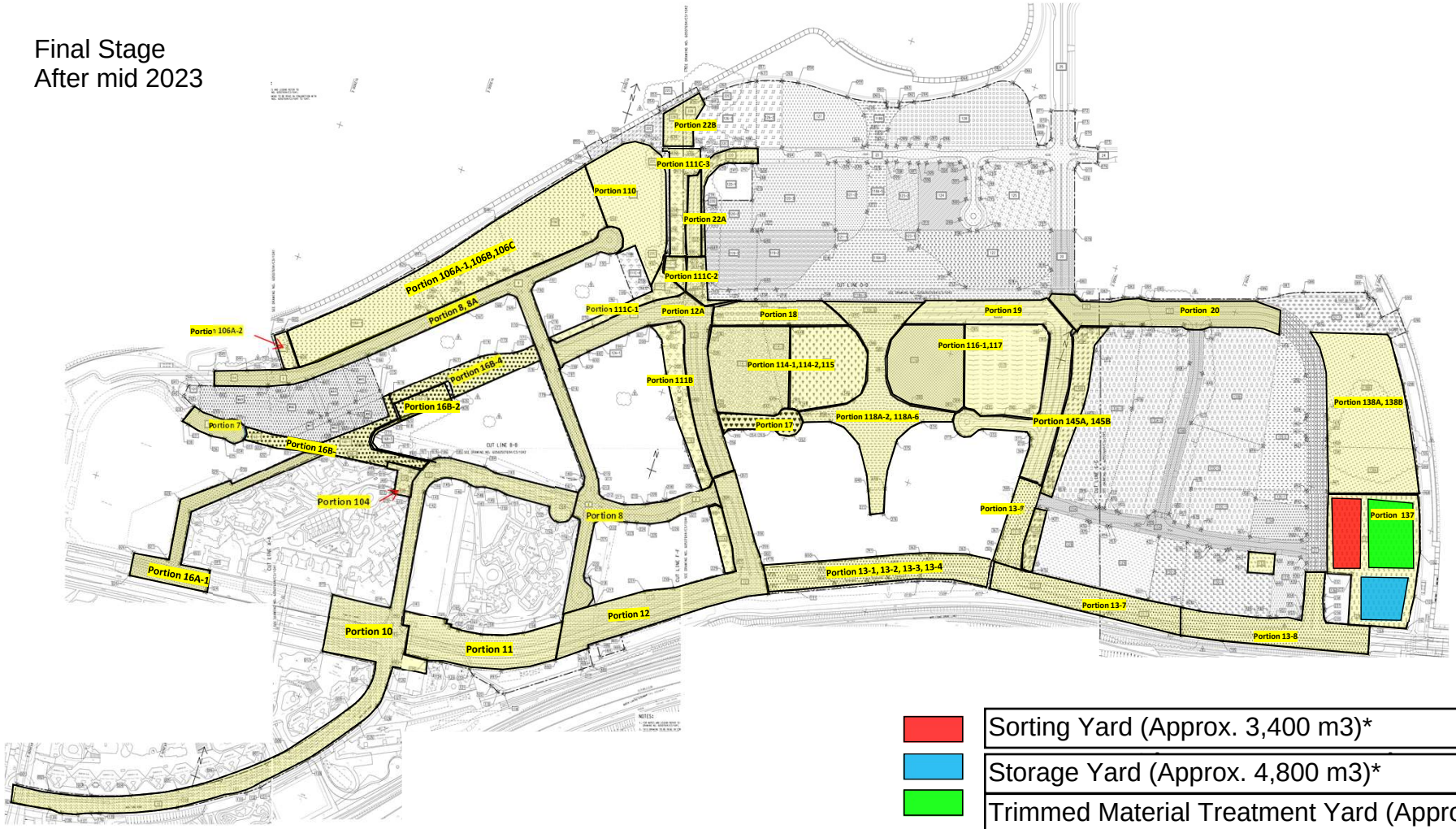
The Planned Sorting Facility Location

1st Stage
After late 2022 and early 2023



	Sorting Yard (Approx. 3,400 m3)*
	Storage Yard (Approx. 4,800 m3)*
	Trimmed Material Treatment Yard (Approx. 13,400 m3)*
	*Not to scale

Final Stage
After mid 2023



	Sorting Yard (Approx. 3,400 m3)*
	Storage Yard (Approx. 4,800 m3)*
	Trimmed Material Treatment Yard (Approx. 13,400 m3)*
	*Not to scale

Appendix F

Monthly Summary of Waste Flow Table and Summary Table for Use of Timber in Temporary Works

Name of Department: Civil Engineering Development Department

Contract No.: NL/2020/03

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January											
February											
March											
April											
May											
June											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
July											
August											
September											
October											
November											
December											
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Forecast of Total Quantities of C&D Materials to be Generated from the Contract											
a.Total Quantity Generated	b. Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse	
(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)	

Notes: (1) The performance target are given in PS Clause 115(14)

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

(4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3.

Appendix 1.34A

SUMMARY TABLE FOR USE OF TIMBER IN TEMPORARY WORKS

(PS CLAUSE 1.115(17))

Contract No.: _____

Contract Title: _____

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m^3)	Actual Quantities used (m^3)	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		Total Estimated Quantity of Timber Used			

Notes: (a) The *Contractor* shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.

(b) The summary table shall be submitted to the *Supervisor* monthly together with the Waste Flow Table for review and monitoring in accordance with PS clause 25.24(11).

Appendix G

Sample of CHIT and Daily Summary Record

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

- ☐ 堆填區 Landfills
- ☐ 篩選分類設施 Sorting Facilities
- ☐ 公眾填料接收設施 Public Fill Reception Facilities
- ☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶編號:
Account No.:

甲部份：由帳戶持有人保留
Part A: retained by Account-holder

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

- ☐ 堆填區 Landfills
- ☐ 篩選分類設施 Sorting Facilities
- ☐ 公眾填料接收設施 Public Fill Reception Facilities
- ☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

帳戶名稱:
Name of the Account-holder:

帳戶編號:
Account No.:

乙部份：由廢物運輸商保留
Part B: retained by Waste Hauler

香港法例第354章廢物處置條例
廢物處置(建築廢物處置收費)規例
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

車牌號碼:
Vehicle Registration Mark:

有效期至:
Valid Until:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶名稱:
Name of the Account-holder:

丙部份：由政府保留
Part C: retained by Government

E 199279

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the *Site
"每日運載記錄撮要" 記錄每日由*地盤所傾卸的拆建物料

(1) Contract no. & title 合約編號及名稱：________________

(2) Date of disposal 傾卸日期: ____________

(3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer 合約指定或建築師/工程師指示接收設施: (a)
(b)
Others 其它

(4) Approved alternative disposal grounds 另可接受的接收設施________________

CHIT/ DDF no. 棄置入帳票/ 拆建物料運載記錄票編號	Vehicle registration mark 車輛登記號碼	Approx. vol (e.g. Full/Three Quarter/Half/One quarter) 大約承載量（例如全、3/4、半、1/4）	C&D materials type (e.g. inert or non-inert) 建築廢料類類 (例如惰性或非惰性)	Disposal ground 接收設施	Signature & Name of the Contractor's Designated person before departure 於離開地盤前，承建商的指定人仕姓名及簽名	Departure time from *Site 離開地盤時間	Signature & name of the Architect/Engineer's supervisory staff before departure or other time as agreed between the Architect/Engineer's Representative and the Contractor[1] 於離開地盤前或其它經承建商與建築師/工程師代表同意的時間，建築師/工程師監管人員姓名及簽名	Actual disposal ground 真正接收設施	Arrival time at disposal ground 到達接收設施時間	Remarks 備註

← Part 1[2] 甲部 → ← Part 2[3] 乙部 →

Submitted by 呈交：

Signature 簽名：____________ [Name of Contractor's Designated Person 承建商的指定人仕姓名]

Date 日期: ____________

Received by 接收：____________ [Name and signature of the Architect/Engineer's staff] 建築師/工程師監管人員姓名及簽名

Post 職位：____________

Date & Time 日期及時間：____________

---

[1] For term contract, if there are no full time site supervisory staff, the Architect/Engineer's supervisory staff should spot check and then sign as appropriate in accordance with paragraph 25 of DEVB TC(W) 6/2010 定期合約，如沒有全職地盤監管人員，應根據 DEVB TC(W) 6/2010 的第 25 段進行定點檢查及簽署

[2] Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/ Engineer's Representative. 承建商填寫甲部兩份，副本由建築師/工程師代表持有

[3] Part 2 乙部- The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承建商填寫乙部及將整份運載記錄撮要於記錄上載在環境保護署網頁後 1 個工作天內呈交給建築師/工程師代表

*Delete "Site" and substitute "Sites" for term contracts.定期合約將" Site" 刪去及以"Sites"代替

Appendix H

Method Statement for Stockpiling and Transportation of Excavated Materials and Other Construction Wastes

Build King

Civil Engineering and Development Department

Contract No. NL/2020/03

Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East

Method Statement for Stockpiling and Transportation of Excavated of Excavated Materials and Other Construction Waste

Revision: 0

Date: 17 Sep 2021

1. Scope of Work

- Stockpiling
- Transportation of Excavated Materials
- Transportation of Other Construction Waste

2. Construction Sequence of Works

2.1 Stockpiling

- The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works.
- Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would be engaged for backfilling.
- The spoil will be stored in 2 m high maximum and the slope surface will be kept in 1:2.
- When amber rainstorm signal or higher is hoisted, protective measures would be provided on slope surface against rainwater such as covered with tarpaulin or plastic sheet, erecting the temporary shelters, additional of pumps to drive out rainwater, etc.

2.2 Transportation of Excavated Materials

- Excessive excavated material as well as surcharge will be transported to other sites for reuse as approved by the Project Manager; whilst the ET, IEC and EPD would be informed.
- The excavated material will be sprayed with water when it is dry. The aim is to control dust in work area.
- Dump truck loaded with excavated materials would be covered by tarpaulin sheeting or mechanical cover in order to prevent dust emission.
- For the transportation of excavated materials, BKCEL will implement and comply with the site management plan for implementation of trip ticket system, which will be established, reviewed and updated on monthly basis.

2.3 Transportation of Other Construction Waste

- <u>General refuse and C&D Materials</u>
  - ➢ Un-recyclable, non-inert C&D Materials, i.e. C&D Materials, floating refuse

and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

- The C&D materials will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

- Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

- The general refuse and the un-recyclable C&D Material will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. Its will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

- <u>Chemical Waste</u>
  - For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

  - Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

- All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

- The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

- Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:
  - be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
  - have a capacity of less than 450L 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.

- The storage area for chemical waste will:
  - be clearly labeled and used solely for the storage of chemical waste;
  - be enclosed on at least three sides;
  - have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
  - have adequate ventilation;
  - be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
  - be arranged so that incompatible materials are adequately separated.

- A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. The trip-ticket system will be strictly

implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Appendix I

PS Appendix 25.2 Standards - Weighing System at Recorder House within Stockpiling Sites

APPENDIX 25.2
STANDARDS
(Particular Specification Clause 1.114(6))

Weighing System at Recorder House within Stockpiling Sites

(1) The Weighing System installed at each of the Recorder House within the Stockpiling Sites is a system to collect information in respect of loads of surplus filling materials delivered to and removed from the Stockpiling Sites by the following:

(a) dump trucks by the *Contractor*, including those excavated within the contract boundary, and transporting between individual stockpiling sites;
(b) dump trucks by the *Contractor* or others for collecting fill material or removing fill from the stockpiling areas; and
(c) others as directed by the *Supervisor*.

(2) The *Contractor* shall proper record the following types of fill materials separately:

(a) Soft C&D materials deposited by other *Contractor*s;
(b) Hard C&D materials with size >200mm deposited by other *Contractor*s;
(c) Excavated marine deposit deposited by other *Contractor*;
(d) Soft C&D materials collected by the *Contractor*;
(e) Hard C&D materials with size >200mm collected by the *Contractor*;
(f) Treated marine deposit used for filling collected by the *Contractor*;
(g) Soft C&D materials deposited by the *Contractor*;
(h) Hard C&D materials with size >200mm deposited by the *Contractor*;
(i) Excavated marine deposit deposited by the *Contractor*;
(j) Treated marine deposit treated by the *Contractor*;
(k) Treated marine deposit collected by the *Contractor*;
(l) Soft C&D materials disposed of by the *Contractor*;
(m) Hard C&D materials with size >200mm disposed of by the *Contractor*;
(n) Treated marine deposit used for filling disposed of by the *Contractor*;

(3) The technical specifications of loadcells and weighing terminals of the existing Weighing Systems are shown in Part 2 of this Appendix.

(4) Within 4 weeks after the *starting date* as notified by the *Supervisor*, the *Contractor* shall submit detailed proposal for the checking, calibration, operation and maintenance procedures of his proposed Weighing Systems to the *Supervisor* for acceptance.

(5) In addition to the normal power supply, the *Contractor* shall provide, operate and

maintain standby diesel generators and uninterrupted power supplies to maintain continuous power supply to support all the computer hardware, software and other facilities of each Weighing System at all times. When one of the Weighing Systems is rendered not operational for whatsoever reason, the *Contractor* shall use the other Weighing Systems within the respective stockpiling sites to weigh all vehicles that require weighing in accordance with this contract. The *Contractor* shall also report to the *Supervisor* immediately about the unavailability of the Weighing Systems.

(6) The *Contractor* shall operate and maintain the Weighing Systems to measure the net weights of fill materials with this PS Clause as instructed by the *Supervisor*. The *Contractor* shall direct those vehicles which require measurement to the Weighing Systems for weighing. The *Contractor*'s staff shall input the following information using the weighbridge terminal to record each weighing operation:

(a) vehicle identification
(b) type of material
(c) destination of materials
(d) remarks (to be advised by the *Supervisor*'s staff)

The coding as stated in (a) and (b) above is subject to amendment from time to time. The *Contractor* shall modify the software programme as appropriate to amend the coding as instructed by the *Supervisor*. The *Contractor* shall allow all costs incurred in the Prices.

The net weight of the material as automatically calculated from the weights of vehicle measured at the in-weighbridge and the out-weighbridge, together with other information as inputted in accordance with this sub-clause, shall be printed immediately on the dot-matrix printer in a daily transaction list, or in other formats accepted by the *Supervisor*. The *Contractor* shall furnish the Engineer, at the end of each working day, a summary of transaction data stored on CD-ROM, DVD+/-R, or other electronic storage medium agreed with the *Supervisor*, in an ASCII text file format agreed with the *Supervisor*.

(7) The *Contractor* shall be responsible for the operation and maintenance of the Weighing Systems and shall deploy adequate experienced superintendent personnel, labour and Constructional Plant to ensure the Weighing Systems are operated properly. The *Contractor* is also responsible for directing the vehicles to the appropriate Weighing Systems for carrying out and completing the weighing operation in accordance with the contract requirements.

(8) Notwithstanding the *Contractor*'s responsibility with respect to management and operation of the Weighing Systems under this PS Clause, the *Supervisor* reserves

the right to use any of the Weighing Systems at any time for whatsoever reason he considers necessary.

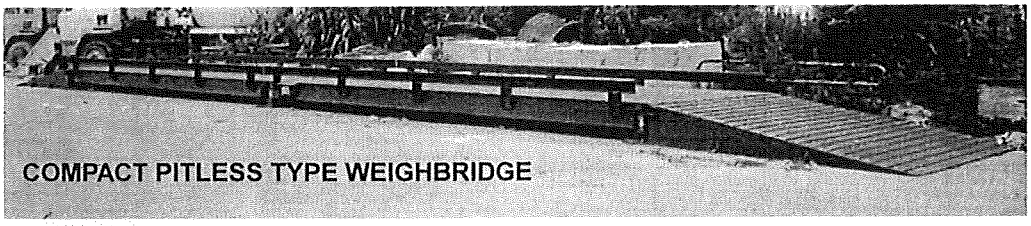
(9) All weighbridges of the Weighing Systems shall be calibrated on a three-month basis by an independent calibration firm proposed by the *Contractor* and accepted by the *Engineer*. The calibration shall be carried out from zero loading at an increment of 2 tonnes up to 50 tonnes. In addition, the *Contractor* shall arrange for weekly checking and routine repainting of the weighbridges in accordance with his proposal accepted by the *Supervisor*. The permitted tolerance in measured weight shall be within ± 0.1%.

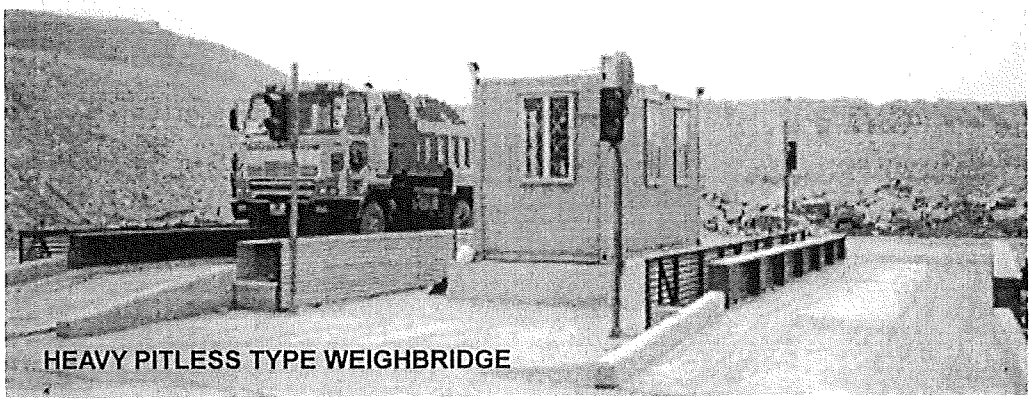
(10) The *Contractor* shall carry out weekly checking of the weighbridges. The *Contractor* shall provide a weight of not less than 12 tonnes made of concrete or other approved material for use as a standard weight in the weekly checking of the weighbridges. The initial calibration of the standard weights shall be carried out by an independent calibration firm proposed by the *Contractor* and accepted by the *Supervisor*. The weekly checking of the weighbridges shall be carried out by comparing the measured value, which shall be the difference between the laden weight of a vehicle loaded with the standard weight and the unladen of the same vehicle measured by the weighbridge, against the initial calibrated value of the standard weights. The accuracy of the weights printed on the daily transaction list shall be also checked. If the measured or printed values of the standard weight deviates from the calibrated value by more than ±1.5% (in terms of kilogram), the weighbridge shall be deemed as not operational. When not in use, the standard weight shall be stored properly in the Site and be protected from rain, heat, abrasion or other attacks.

(11) Unless otherwise instructed by the *Supervisor*, the *Contractor* shall hand over the Weighing System to the *Employer*. Prior to the handover, the *Contractor* shall demonstrate to the satisfaction of the *Supervisor* that the weighbridges, including all related equipment, hardware and software, are in proper condition and shall be responsible for all repairs, checking, calibration and adjustments if necessary.

Technical Specifications of Loadcell and Weighing Terminal of Weighing System

WWB3000 Weighbridge Systems





FEATURES

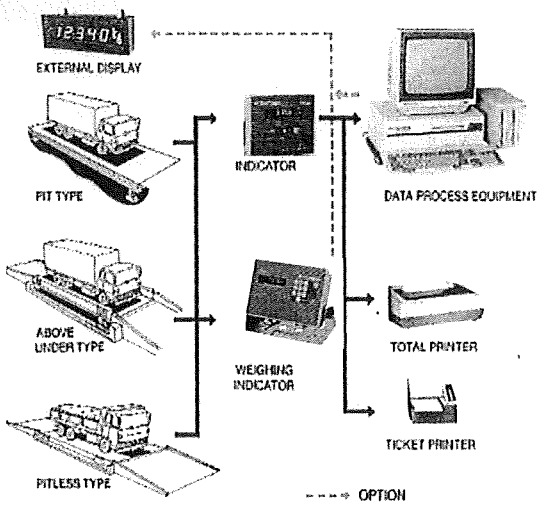
- HIGH ACCURACY
- FULL LOADCELL TYPE
- BCD & RS-232C INTERFACE
- COMPUTERIZED WEIGHT MANAGEMENT SYSTEMS
- LARGE EXTERNAL INDICATOR (OPTION)

SPECIFICATIONS (Unit : mm)

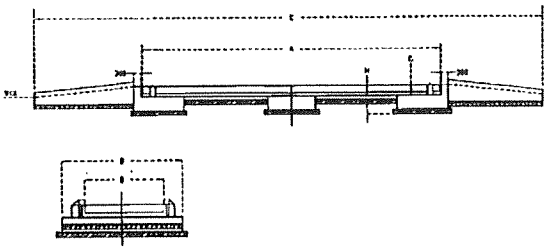
CAPA-CITY	MIN GRAD	L/C QTY.	A	B	C	D	G	H
30	10	4	8,000	3,000	16,620	4,000	450	1,250
50	10	4(6)	12,000	3,000	20,620	4,000	450	1,250
60	10	6	16,000	3,000	24,620	4,000	450	1,250
60	10	6(8)	18,000	3,000	26,620	4,000	450	1,250

* OVER 60 ton (OPTION)

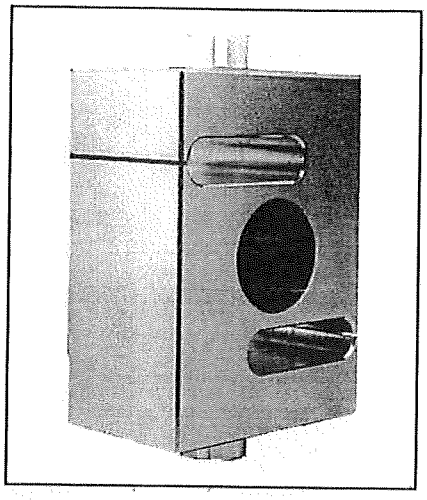
SYSTEM COMPOSITION



DIMENSIONS (Unit : mm)



ZY30 *COMPRESSION LOADCELL*



STANDARD CAPACITY:

30 ton

WIRING:

Yellow, Longer	*Sheild*
Green	*+ Excitation*
Yellow	*+ Sense*
White	*+ Signal*
Black	*- Excitation*
Blue	*- Sense*
Red	*- Signal*

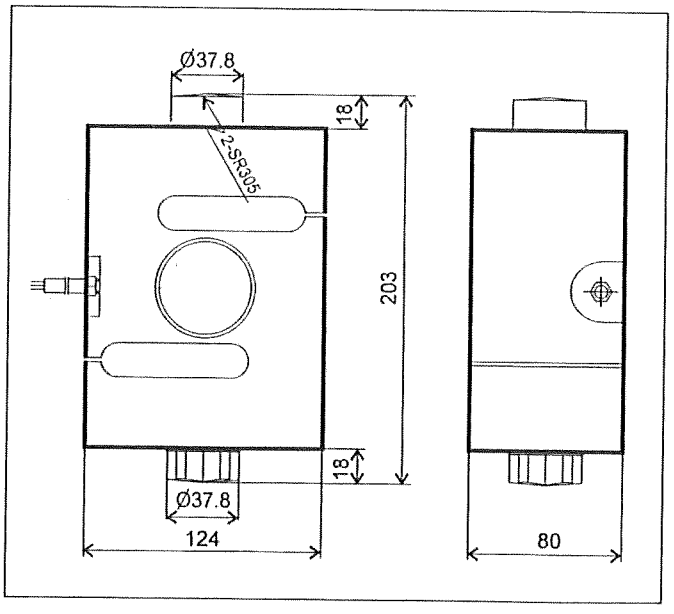
6 COLOUR SHIELD CABLE 30FT

- *Alloy tool steel electroless nickel*
- *Moisture protected*
- *Center-link loaded*
- *Temperature compensation, both zero and span*
- *Compatible with international standard fixings*
- *Full range of mounting accessories*

Specifications

Rated output	*2mV/V ± 0.002%*
Non-linearity	*± 0.03%*
Hysteresis	*± 0.03%*
Non-repeatability	*± 0.02%*
Creep in 20 minutes	*± 0.03%*
Temperature effect output	*< 0.002%*
Temperature effect zero	*< 0.002%*
Compensated temperature range	*-10°C~40°C*
Operating temperature range	*-40°C~80°C*
Zero balance	*± 2%*
Input resistance	*382 ± 4 Ω*
Output resistance	*350 ± 1 Ω*
Safe overload	*150%*
Ultimate overload	*300%*
Sideload rejection ratio	*500:1*
Excitation voltage	*6~15(DC/AC)*
Maximum excitation voltage	*20(DC/AC)*
Insulation resistance	*>2000MΩ*
Environmental protection	*IP67*

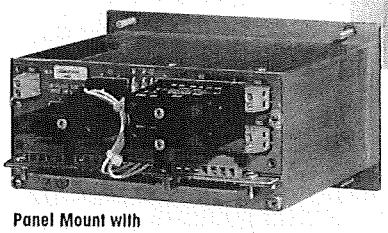
***All specifications are a maximum as a% (±) of full load, unless otherwise stated.*



Quality and Simplicity in a Rugged Industrial Package...
Excellent Price/Performance Ratio

Cost-Effective, Easy-to-Use, Basic Weight Terminal

Wall Mounted
Harsh Enclosure



Panel Mount with
Optional High Level Output

Designed for chemical, pharmaceutical, food and other process industries, Mettler Toledo's PANTHER Weighing Terminal provides basic weight indication, unit switching and data output. Standard capabilities include two setpoints or four target weight storage (for manual checkweighing applications.) Built-in setpoints can be used to back up automated control systems or for simple batching applications.

Offering a top value, the PANTHER terminal is simple to operate. It includes our exclusive TraxDSP vibration rejection and superior noise filtering system. You can adjust the amount of filtering to minimize response time, and get stable weights, even when your scale has a mixer or agitator mounted on it. The analog version of PANTHER terminal is suitable for use with up to 8 load cell scale installations... thus will easily handle oversize tanks.

PANTHER Enclosures

Two enclosure styles are available. A Harsh Environment stainless steel enclosure, that meets NEMA 4X (IP65) requirements, can be column, wall or desk mounted. The stand is adjustable to provide the best operator viewing angle. Minimum panel space is needed to mount the compact panel mount PANTHER terminal in enclosures, doors, or control panels. The keyboard display enclosure for the panel mount version meets NEMA 4X (IP65) requirements. The PANTHER terminal includes a 0.5" (12.7 mm) high, vacuum fluorescent display and a six-function keypad. A 16 bit analog output is available for either version, and three high level outputs are available for the Panel Mount version.

ENCOMPASS

Process Control Connectivity

ModConnect

The PANTHER may be integrated with your process controller through a variety of methods, including Allen-Bradley RIO, Modbus Plus® and PROFIBUS®. Alternatively, an analog output option provides 4-20 mA or 0-10 V analog output of weight information.

ISO 9001

4 - 20 mA
0 - 10 VDC
Analog Output

This product was developed, produced and tested in a Mettler Toledo facility that has been audited and registered according to international (ISO 9001) quality standards.

Features	Benefits
Analog Load Cell Version	Supports up to eight 350Ω analog load cells.
DigiTOL Load Cell Version	Compatible with Mettler Toledo XX96, XX97, UltraRes® and DigiTOL junction box products.
Setpoint or Checkweigh Operation	Select either standard weighing, simple batch process weighing or manual checkweighing.
LED Status Indicators	LEDs indicate setpoint status or target zone condition.
Memory	Stores two setpoints with preact – or four target weights, zero and tare values.
TraxDSP	Tunable digital filtering to suppress effect of vibration on weighing.
Universal Power Supply	Works with 100, 120, 220, 240 VAC power supplies.
Compact Design	Takes up less panel or desk space.
Hazardous Area Applications	Can interface with scale bases used in hazardous areas when used with appropriate barriers.
Data Output	Standard RS-232 demand, bidirectional or serial continuous output. Printer connection is standard.
Mettler Toledo Continuous Output	For connections to PLCs, DCS and SCADA devices.
Options	
Analog Output Option	0-10 V or 4-20 mA analog output.
Optional High Level Outputs	For switching between 28-230 VAC (panel mount only).
Discrete PLC Connectivity	Allen-Bradley RIO, PROFIBUS or Modbus Plus

International Approvals

The PANTHER meets UL, cUL and CE safety standards. It meets or exceeds requirements for Class III and IIIL devices. A certificate of conformance, #96-125A1 was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights & Measures.

Global Sales and Service

We have been our nation's major supplier of industrial scales since the century began. As part of Mettler Toledo Worldwide we also have global capabilities...with authorized sales and service offices throughout the US, Canada, and every major part of the world. See your nearest authorized distributor for details on PANTHER Terminals... or any other weighing application.

Appendix J

Details of the Load Cell System

Presentation & Demo of
Real-time Monitoring of Load Cell Data
using "Weight Display Camera AI Solution"
for
Build King Contract NL/2020/03

16 May 2022

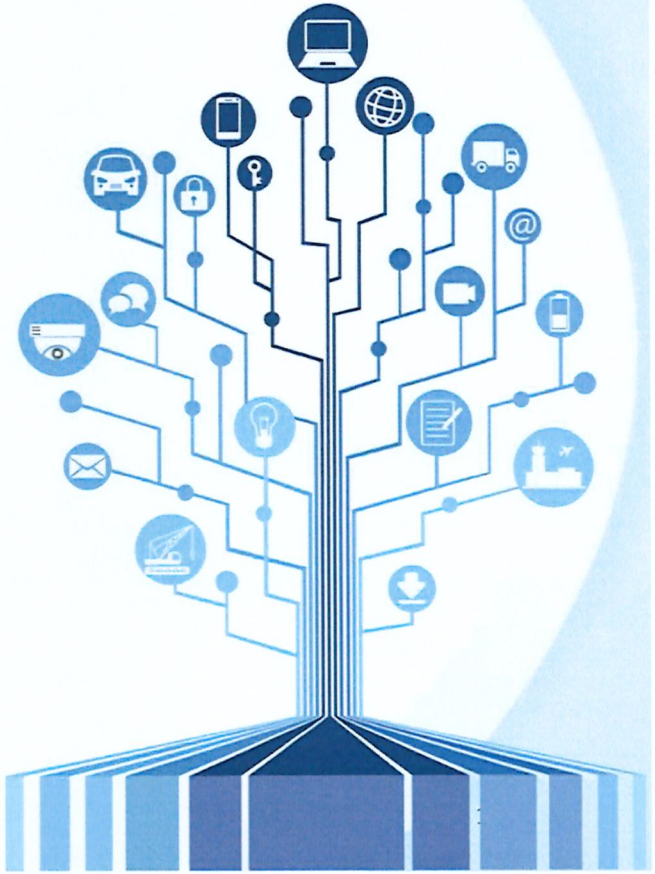
(Updated 17 May 2022 with Product Spec)

Presented by:

Terence Ma

DigiMobi Technology Limited

圓方電信科技有限公司



"GPS Load Cell" Contract Requirements

1) Contract Requirement of 25.25A (2):

> (2) All dump trucks the contract shall be fitted with both GPS and load cells so that the locations and loads of the dump trucks shall be monitored by the Smart Site Management System stated in PS1.70B.

2) Requirement of 25.25A (4):

> (4) The Contractor shall submit the proposal of the dump truck tracking system no later than one month from the commencement of the contract for the approval of EPD and the Project Manager. The submission shall include: the technical specification and accuracy of the GPS, load cells and the recording system in Smart Site Management System.

Overview of Weight Display Camera AI Solution

On-board Equipment

Existing onboard weight display at dump trucks
(NOT provided by DigiMobi)

Onboard Mini Camera

Weight Image

GPS

AI

4G

PTO Signal

Onboard Computer with AI
(Hardware: 7-inch Android Tablet with 4G & GPS)

DigiMobi's GPS Server

Real-time Data Export

Smart Site Management System (SSMS by Varadise)

Veh No,
Location
Lat/Long,
Weight Photo,
Weight Data,
PTO Signal
ON/Off etc

Website with Map & Photo

BuildKing

GPS FINDER Pro

Screenshot of Onboard Computer in the Dump Truck
- "Confirm" button for driver to double-confirm a stable weight

On-Board Computer Screen

Photo will be taken for Weight Display every 10 seconds when PTO Button is switched On
All weight display photo will be sent to server for record and double check by user

"Confirm" Button:
"Confirm" button for driver to confirm a stable weight figure for submission to the system

Screenshot of Weight Display Photo and Weight Data at the website of DigiMobi's GPS Server

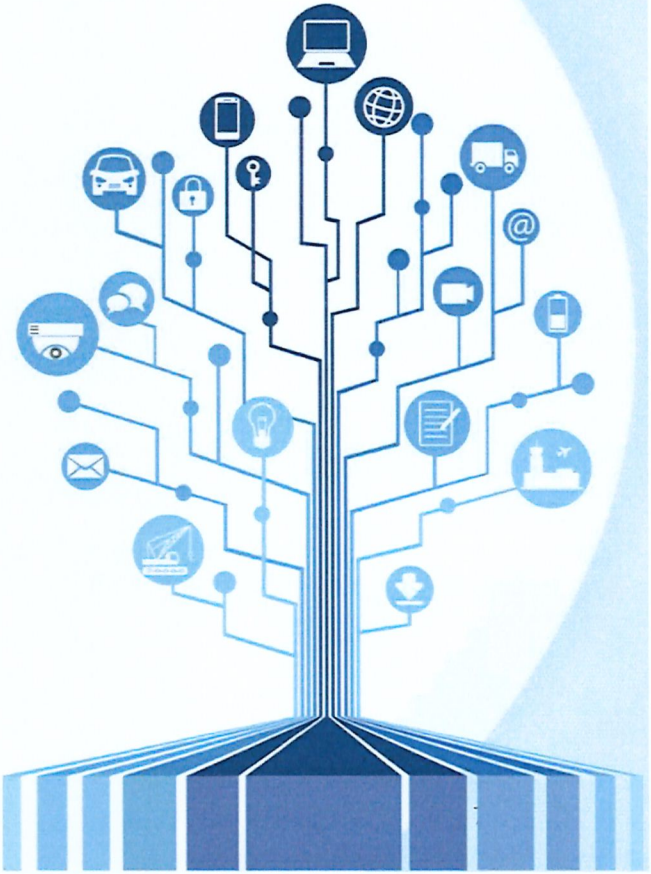
Quality Assurance measures to ensure the Accuracy of Weight Data

1) PTO Signal from the Dump Truck
   a) In order to carry out weighing, PTO Signal must be switched on first at the dump truck
   b) The PTO signal helps to ensure that weighing activity is in progress
   c) The Weight Display will display some "false" weight data even when weighing activity is not is progress and the solution uses PTO Signal to "ignore" such false weight data
   d) In addition, the PTO signal also helps monitor whether there is illegal dumping activity
2) "Confirm" Button for the driver
   a) There is a "Confirm" button for the driver to double confirm that the weight is correct and stable
   b) AND the driver CANNOT manually input a weight data
   c) DigiMobi's server can export only "confirmed" weight to Smart Site Management System
3) Weight Display Photo & Weight Data Log for Build King to counter check
   a) Weight Display photo is taken every 10 seconds when PTO Signal is on;
   b) Weight data is then logged every 10 seconds by the AI Program and sent to DigiMobi's Server no matter the driver press "Confirm" button or not
   c) The weight display photo and weight data log help Build King staff to counter check whether a weight is correctly reported by the driver or DigiMobi's AI Solution

Product Specifications

DigiMobi Technology Limited

圓方電信科技有限公司



Product Specifications of Onboard Computer

-Industrial-grade Vehicle-Use 7 inch Android Tablet

DATASHEET

7" Rugged Smart Android MDT

Hero-MDT-AT5 (V2)

Key Feature`

- Android 7.1 OS: faster and smoother interface
- More Powerful CPU, Quad core ARM Cortex-A17, 1.6GHz
- Better multi-tasking capability
- Powerful video recording: 2 ch 720p, 1ch1080p camera recording ability
- H.265 video decoding
- Ruggedized design for vehicle environment and operation
- 7-inch 1024*600 capacitive multi-point touch control screen
- 2 /3 Axis Mounting Holder for pan/tilt installation
- Specialized RFID module

Software	
OS	Android V7.1
Audio format	MPEG-3, WMA, etc.
Video format	MPEG-4, AVI, RMVB, etc.
Picture format	JPG, BMP, GIF, etc.
Text format	TXT
TTS voice	Support
Image hard decoding	H.264/H.265 decoding
Navigation	Support Android navigation software. Support pinch to zoom (capacitive screen)
SDK	Test APP and source code for programming guidance
Communication	
3G/4G	Support 3G and LTE modules optional. (PCI e mini card). WCDMA/HSDPA/HSUPA/HSPA+: Band 1, Band 8 GSM/GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz
DATA	GPRS: UL 85.6 kbit/s; DL 85.6 kbit/s EDGE: UL 236.8 kbit/s; DL 236.8 kbit/s WCDMA PS: UL 384 kbit/s; DL 384 kbit/s HSPA+: UL 5.76 Mbit/s; DL 21.6 Mbit/s
GSM Voice	support
Sensitivity	-110dBm
3G antenna gain	3.3 dB
GPS	
GPS/GNSS/BEIDOU module	SKG12BL (default) / Ublox M8 series for option
Receiver Type	L1 frequency band, C/A code, 22 tracking/66 Acquisition-channel
Sensitivity	-165dBm (tracking), -148dBm (Acquisition)
GPS antenna gain	The gain of active antenna should be no more than 25dB (18~20dB Typical). The maximum noise figure should be no more than 1.5dB and output impedance is at 50 Ohm.
Accuracy	3.0m CEP50 without SA(position),0.1m/s(velocity)
Acquisition Time	23s (cold start)

Product Specifications of USB Camera

RMONCAM 林柏视			
技术参数			
型　　号	S908（480P）	HD908（720P）	G200（1080P）
传 感 器	CMOS 1/4传感器	CMOS 1/4传感器	CMOS 1/2.7传感器
镜　　头	70/90/100/150/180度可选	70/90/100/150/180度可选	70/150/180度可选
分 辨 率	默认640*480	默认1280*720 支持640*480 320*240	默认1920*1080 支持640*480 1280*720
音　　频	模拟麦克风	数字麦克风	数字麦克风
压缩格式	MJPG（可选 YUY2）	MJPG	MJPG
工作电流	约100-150mA	约150-180mA	约190-220mA
接　　口	标准USB2.0 免驱		
线　　长	标配1.5米（1-5米可订制）		
帧　　率	30帧/秒		
调焦方式	手动调焦（顺时针或逆时针旋转镜头）		
成像范围	2cm至无穷远		
工作电压	USB5V		
工作寿命	约50000小时		
动态范围	65 db		
图像处理	自动曝光、自动增益、自动白平衡、伽玛校正		
图像控制	饱和度控制/锐度控制/亮度控制/对比度控制/伽玛控制/白平衡		
工作湿度	避免在过于潮湿的环境使用，适用湿度范围（85%RH以下）内使用		
工作温度	避免在过热或过冷环境使用，适用温度范围（-40～+70℃）内使用		
支持软件	支持录像大师、美图拍拍、微方、掌上看家、Q.Q聊天、SKEPY、MSN、证照之星 千牛主播、阿里钉钉、YY伴侣、斗鱼、花椒直播、快手直播等第三方视频软件		
支持系统	支持已集成了UVC Drive 的 Vista Linux Android XP Win7 Win8 Win10 MAC 等主流系统免驱、即插即用。（台式机、一体机、笔记本、平板、手机通用）		
适用于	远程教学、主播直播、人脸识别、视频会议、广告机、单片机、机器人、门禁刷卡拍照、行车记录、虹膜识别、工业机柜等等		

Company Background & Job Reference

DigiMobi Technology Limited
圓方電信科技有限公司

About Us: DigiMobi Technology Limited

「圓方電信科技有限公司」的背景

Company Background

- **10 Years+ of Experience on GPS & Vehicle CCTV**
  十多年經驗；專注GPS及車載CCTV
  → 10+ Years of Experience (Since 2008); GPS; Vehicle CCTV
- **>20,000 Installations of IoT Devices for Vehicles/Machines**
  已為超過2萬部車輛或機器安裝聯網裝置
  → 
  >20,000 Installations
- **Winner of HKIoT / HKICT Awards**
  曾獲多項知名大獎
  → HK IoT AWARDS 香港物聯網大獎 WINNER 2014 Gold Award; Silver Award 銀獎 Hong Kong ICT Awards 2015 香港資訊及通訊科技獎
- **Top Service Provider of Fleet Management Services in HK**
  全港規模最大的「車隊管理」營運商
  → GPS FINDER Pro; MOTION-EYE HD; TRACKER hk

Signature Projects & Job Reference

亮點項目、應用行業及現有知名客戶

Signature Projects (亮點項目)

Customer	Project Information
香港機場管理局 AIRPORT AUTHORITY HONG KONG	• Manage all 5,000 Vehicles/GSEs inside Airport Restricted Area • Biggest Private FMS Server in HK
Hongkong Post 香港郵政	• Permanent & Removable GPS Trackers for 600 Vehicles • Speed Monitoring
KERRY LOGISTICS 嘉里物流	• Driver Management & Access Control using RFID Card • 4G Live Video Service
HKTV mall	• Real-time Temperature Monitoring for Chilled/Frozen Food • Alert Management System

Job Reference by Industries (應用行業及現有知名客戶)

Industries	Existing Customers
Construction & Environmental Protection	香港寶嘉 Dragages HongKong, AR RENTALS, Paul Y, Build King, China Engineers CAT, EVERBEST, 佳發海港清理服務, Asia Waste Management
Government & Utilities	機電工程署 EMSD, 海事處 Marine Department, 煤氣 Towngas, 水務署 Water Supplies Department
Food, Retail, Hotel & Macau	惠康 wellcome, 奇華 Kee Wah Bakery, 超力 CHEWY, 英皇娛樂酒店 Grand Emperor Hotel, CITY OF DREAMS 新濠天地, 維記牛奶 THE KOWLOON DAIRY, Baleno, 澳門旅遊學院
Airport, Logistics & Transportation	HAECO, CASL, CITYBUS 城巴, 力霸水泵 SUPERPOWER, AURIGA, SHAS Hong Kong Airport Services Ltd, 永東直巴 ETERNAL EAST BUS, 新華冰房, CATHAY PACIFIC CATERING SERVICES, sats, SYNERGY 協豐, 潤記運輸, 華孚石油

Thank you !

For further information, please contact
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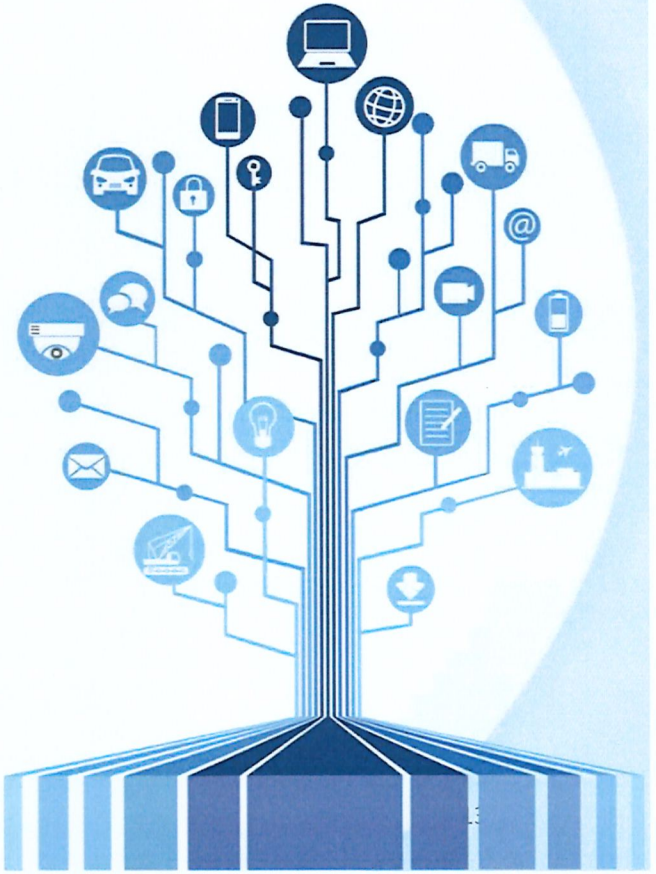
Email: terence.ma@digimobi.net



Annex 4

Tung Chung New Town Extension – Tai Ho Interchange (Contract No. NL/2020/07) (Contract 7)

Civil Engineering and Development Department
Contract No. NL/2020/07

Tung Chung New Town Extension – Tai Ho Interchange

Waste Management Plan

Revision D

Compiled By : Nash	Authorized for issue :
Name: Mr. Nash Wong Post : Environmental Officer Date : 16 February 2023	Name: Mr. Vincent Kwan Post : Deputy Site Agent Date : 16 February 2023

Revision History

Rev.	Description of Change	Effective Date
-	First Submission	29 Oct 2021
A	Second Submission	14 Dec 2021
B	Third Submission – response to EPD's comment	18 July 2022
C	Fourth Submission – response to EPD's comment	26 Sept 2022
D	Fifth submission – response to EPD's comment	16 Feb 2023

Contents

Appendices

Appendix A	Project Environmental Management Organization Chart for Waste Management
Appendix B	Tentative C&D Material Disposal Programme
Appendix C	Environmental Mitigation Implementation Schedule
Appendix D	Proforma of Monthly Summary of Waste Flow Table and Summary Table for Use of Timber in Temporary Works
Appendix E	Sample of CHIT and Daily Summary Record
Appendix F	Sample of Forecast of Total Quantities of C&D Material to be Disposed to NL/2020/03
Appendix G	PS Appendix 25.2 Standards - Weighing System at Recorder House within Stockpiling Sites
Appendix H	Method Statement for Stockpiling and Transportation of Excavated Material and Other Construction Wastes

ABBREVIATION LIST

Abbreviations	Description
BKCEL	Build King Civil Engineering Limited
C&D Material	Construction and Demolition Material
WMP	Waste Management Plan
CM	Construction Manager
SA	Site Agent
DSA	Deputy Site Agent
EO	Environmental Officer
ES	Environmental Officer
DSM	Deputy Safety Manager
SO	Safety Officer
SS	Safety Supervisor
GF	General Foreman
SR	Subcontractor Representatives
WR	Workers
WFT	Waste Flow Table
TTS	Trip Ticket System
DDF	Disposal Delivery Form
DRS	Daily Record Summary
PFC	Public Fill Committee
GPS	Global Positioning System
RTTM	Real Time Tracking and Monitoring
CPAP	Corrective & Preventive Action Report
NC	Non- compliance
NNC	Non- compliance
PM	Project Manager
SSMC	Site Safety Management Committee
SSC	Site Safety Committee
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring & Auditing
EP	Environmental Permit
EPD	Environmental Protection Department
CWTF	Chemical Waste Treatment Facilities
ETWB	The Environment, Transport and Works Bureau
TCW	Tung Chung West
ET	Environmental Team
IEC	Independent Environmental Checker
TM38	Tuen Mun Area 38 Fill
TKO137FB	Tseung Kwan O Area 137 Fill Bank
NENT	North East New Territories Landfill
CEDD	Civil Engineering and Development Department
RSS	Resident Site Staff

1. INTRODUCTION

1.1. Background

This plan will outline the Contractor WMP proposed by the Contractor for CEDD Contract (Contract No. NL/2020/07) - Tung Chung New Town Extension – Tai Ho Interchange. The main contractor BKCEL Civil Engineering Limited (BKCEL) will ensure that all his employees will implement the accepted version of this WMP as an integral part of their daily activities on site.

BKCEL will adopt and implement the environmental protection measures to reduce the environmental impacts arising from the execution of the Works. In particular, BKCEL will minimize the undesired effects such as on waste production and impact during the course of works.

1.2. Scope of Works

The works mainly comprise

- Construction of around 4km of roads, drainage, sewerage, watermains and utilities respectively;
- Construction of Pak Mong Subway Extension and Modification to Existing Pak Mong Subway;
- Construction of Bridge C connecting Roundabout P1 to Tai Ho Interchange;
- Modification works to Tai Ho Box Structure;
- Construction of North Lantau Highway overbridge Bridge A1 and A2;
- Construction of sliproads SR-A1, SR-A2, SR-A4 and SR-A5 to North Lantau Highway;
- Construction of sliproads SR-A3 to Cheung Tung Road; and
- Construction of Retaining Structures and Earthworks.

1.3. Purposes of the Waste Management Plan

This WMP provides necessary technical information, guidance and instructions to designated personnel who are responsible for the management of Construction and Demolition Material (C&D Material). This WMP includes the recommended mitigation measures on waste management that are contained in the EIA report and EM&A manual.

The aims of this WMP are:

- To identify and classify the types of C&D Material generated in the execution of the works;
- To identify the potential for reuse, recycling minimization and disposal of C&D Material from the proposed construction activities; and
- To outline the implementation, monitoring and audit programmed to ensure that the wastes arising from the construction activities are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner which complies with the contract

requirements, EP Condition and the relevant Ordinance and Regulations in the Government of Hong Kong SAR.

"C&D Material" refers to surplus Material arising from any land excavation or formation, civil/building construction, road works, building renovation or demolition activities. It includes various types of the reusable Material, building debris, rubble, earth, concrete, timber and mixed site clearance Material. When sorted properly Material suitable for land reclamation and site formation (known as public fill) should be reused at public filling area whereas the remaining C&D Material are to be disposed of at landfills.

This WMP will also describe the waste management arrangements for other wastes (such as chemical waste, general refuse) that will be generated during the construction activities.

1.4. Waste Management Requirements and Guidelines

During the contract period, BKCEL will comply with the following legislations, code of practices, guidelines, practical notes and technical circulars.

- **Statutory requirements**
  - Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations;
  - Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
  - Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation (Cap. 132);
  - Land (Miscellaneous Provisions) Ordinance) (Cap. 28);
  - Dumping at Sea Ordinance (Cap. 466)
  - Dangerous Goods Ordinance (Cap. 295) ; and
  - Environmental Impact Assessment Ordinance (Cap. 499)

- **Codes of Practice Circulars and Guidelines**

  BKCEL will meet all relevant requirements by consulting the following codes of practice, technical circulars and guidelines:

  a. Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005 - Environmental Management on Construction Sites;

  b. Environment, Transport and Works Bureau Technical Circular No. 33/2002 - Management of Construction and Demolition Material Including Rock;

  c. Development Bureau Technical Circular (Works) No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Material;

  d. Environment, Transport and Works Bureau Technical Circular (Works) No. 24/2004 - Specifications Facilitating the Use of Concrete Paving Units Made of Recycled Aggregates;

  e. Works Bureau Technical Circular No. 12/2002 - Specifications Facilitating the Use of Recycled Aggregates;

f. Development Bureau Technical Circular (Works) No. 8/2010 - Enhanced Specification for Site Cleanliness and Tidiness;
g. Works Bureau Technical Circular No. 19/2001 - Metallic Site Hoardings and Signboards;
h. Works Bureau Technical Circular No. 12/2000 - Fill Management;
i. Works Bureau Technical Circular No. 04/1998A - Use of Public Fill in Reclamation and Earth Filling Projects;
j. Works Bureau Technical Circular No. 04/1998 - Use of Public Fill in Reclamation and Earth Filling Projects;
k. Works Bureau Technical Circular No. 16/1996 - Wet Soil in Public Dumps;
l. Works Bureau Technical Circular No. 02/1993B - Public Filling Facilities;
m. Works Bureau Technical Circular No. 02/1993 - Public Dumps;
n. Works Bureau Technical Circular No. 32/1992 - The Use of Tropical Hardwood on Construction Sites;
o. A Guide to the Registration of Chemical Waste Producers;
p. A Guide to the Chemical Waste Control Scheme;
q. Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes;
r. Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste – (Cap 354, Section 35) and,
s. Environmental Guidelines for Planning in Hong Kong (2014), Hong Kong Planning Standards and Guidelines, Hong Kong Government (2021).

BKCEL will observe all applicable statutory requirements, legislation and associated regulations, and/or code of practices with regard to the waste to be generated in the construction activities. BKCEL will also apply for all necessary permits and licenses under these ordinances / regulations

1.5. License Requirements

Where appropriate, BKCEL will apply for all permits and licenses required under the following legislation for the handling and disposal of waste arising from the Project:

a. Chemical Waste Producer Registration under the Waste Disposal (Chemical Waste) (General) Regulation; and,
b. License to Collect and Transport Chemical Waste under Waste Disposal Ordinance
c. Public Dumping License under the Land (Miscellaneous Provisions) Ordinance.
d. Billing Account no.: 7041997 for Disposal of Construction Waste under Waste Disposal (Charges for Disposal of Construction Waste) Regulation
e. Environmental Permit (EP-519/2016)

A licensed chemical waste collector will be appointed for the disposal of chemical waste. Upon classification of any types of chemical waste as dangerous goods under the Dangerous Goods Ordinance, the handling of these wastes will comply with all the requirements of the ordinance and its regulations.

2. ORGANISATION AND STRUCTURE

This Section provides an outline of the roles and responsibilities of the major site staff involved with the management of C&D Material arising from the Project.

2.1. Organization and Responsibility

The Construction Manager / Deputy Construction Manager will have the overall responsibility to ensure that the requirements of the WMP are properly implemented. The Deputy Site Agent will act as the Waste Manager for the Contract. The Construction Team Leader acts as Deputy Waste Manager and Team Leader of the Contractor's Environmental Team for overall control of waste management practices to ensure compliance with the contract requirements. The Environmental Officer and Environmental Supervisor will communicate and coordinate with ET on waste management for environmental monitoring and audit. The responsibilities of key site staff for the WMP are listed as follows: (see ***Appendix A*** of Project Environmental Organization Chart).

Construction Manager CM and Safety Director (Chairman)

The CM and Safety Director will maintain overall control of all aspects of the construction activities and will oversee the implementation of the WMP. They are also responsible for ensuring that there are adequate resources available for the implementation of the WMP. They will also chair the ad hoc meeting(s) with the Supervising Officer's Representatives to discuss the WMP.

Site Agent SA / Deputy Site Agent DSA (Deputy Chairman)

The SA/DSA will be responsible for management and control of the construction activities in relation to waste management and mitigation measures. He will be responsible for assigning other team members to assist him for supervision and enforcement of the on-site waste management practices. The SA/DSA will be responsible for:

- Identification and classification of all possible wastes arising from the construction activities
- Analysis of effectiveness, efficiency and reliability of waste reduction programme
- Obtaining all necessary licenses and permits for the handling and disposal of wastes
- Planning for on-site segregation, sorting and storage of wastes
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract
- Carry out quarterly internal auditing for the implementation of WMP
- Provide resources to the implementation and control of the WMP

Environmental Officer, EO/ Safety Manager, SM/ Deputy Safety Manager, DSM

- Identify legal requirements
- Ensure site comply with legal requirements
- Prepare, implement and update the WMP
- Update the Waste Flow Table and Use of Timber Record

- Verify waste management activities and related results to comply with planned arrangements
- Arrange and provide the environmental training including the site specific induction training and toolbox talks
- Organize environmental promotional activities
- Liaise on all matters relating to complaint, enquiry and non-compliance
- Carry out environmental system audits
- Report to the SA/DSA

Environmental Supervisor, ES; Safety Officer, SO and Safety Supervisor, SS (Team Member)

- Identify statutory requirements, contract requirements and corporation requirements
- Identify material that can be recycled, re-use and returned
- Arrange re-use, recycle and return work
- Monitor sub-contractors and workers to implement according to WMP
- Conduct waste management briefing to all site staff and workers
- Carry out quarterly internal auditing for the implementation of WMP

Construction Team Leader (Team Member)

- Assist SA/DSA to identification and classification of all possible wastes arising from the construction activities
- Analysis of effectiveness, efficiency and reliability of waste reduction programme
- Carry out immediate corrective action to rectify any non-compliance of environmental requirements of the WMP
- Planning for on-site segregation, sorting and storage of wastes
- Ensure that the on-site waste management practices are in compliance with all legislations and requirements of the Contract
- Assist SA/DSA to provide resources to the implementation and control of the WMP

General Foreman, GF (Team Member)

- Prepare location plans for storage of building Material to avoid or minimize construction Material damage on site
- Ensure WMP is implemented and maintained
- Instruct relevant parties to solve management problems
- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out monthly review for the implementation of WMP

Foremen, FN /First Aider (Team Member)

- Assist General Foreman to prepare location plans for storage of building Material to avoid or minimize relevant Material damage on site
- Arrange sorting facilities for waste Material re-use and recycling
- Arrange waste Material storage areas and disposal of waste Material according to trip-ticket System
- Ensure that daily site cleanliness and tidiness are implemented

- Instruct and monitor sub-contractors and workers to implement according to WMP
- Carry out weekly review for site cleanliness and tidiness

Subcontractor Representatives, SR (Team Member)

- Ensure that construction waste are properly sorted out and disposed
- Ensure that construction waste are properly reused and recycled
- Coordinate with foremen to rectify and take follow-up actions for identified waste management issues
- Provide adequate resources for the implementation of WMP
- Direct and supervise workers to implement according to WMP

Workers, WR

- Follow the instructions given by General Foreman, Foremen or Subcontractor Representatives to carry out waste management issue on site
- Reduce construction waste generation on site if possible
- Ensure that construction waste are properly sorted, re-used, recycled or returned on site
- Maintain good housekeeping of the workplaces after daily work activities

3. IDENTIFICATION AND CLASSIFICATION OF WASTE GENERATED FROM THE CONSTRUCTION ACTIVITIES

3.1. Waste Arising from the Construction Activities

Major activities that will generate waste from this Project include site clearance, excavation, formwork construction for concreting, etc.; which can be divided into distinct categories based on their composition as follows:

- Excavated Material from foundation work and underground services works;
- C&D Material from demolition, structural, architectural and external works;
- Chemical waste from maintenance of plant and equipment; and
- General refuse from construction works.
- Chemical waste from construction works
- Recyclable Waste from construction works

A summary of the estimated quantities of C&D Material to be generated from the construction and demolition work under the Project and the tentative C&D Material disposal programme is attached in ***Appendix B***.

3.1.1. Excavated Material

The excavated material will be disposed to the designated fill bank facility at TM38. According the site progress, excavated material can be temporary stored in a designated area and would be engaged for backfilling.

3.1.2. Construction & Demolition Material (C&D Material)

Unless otherwise stated, all surplus C&D Material shall be stored in the designated stockpiling sites Portion 135 or 137 in the site of NL/2020/03, or other location proposed by the Contractor and accepted by the Project Manager within the contract boundary of the contract.

C&D Material include inert public fill Material such as bricks, rubble, concrete and non-inert C&D Material such as wood, steel, vegetation, floating refuse, office and work force waste etc.

The majority of C&D Material will arise during site clearance, demolition and excavation works.

3.1.3. General Refuse

The workforce will likely generate general refuse comprising food scraps, waste paper, empty containers, etc.

3.1.4. Chemical Waste

The maintenance and servicing of construction plant and equipment generates chemical waste, for instance, cleaning fluids, solvents, and lubrication oil and used batteries. The maintenance of vehicles also uses common chemicals, oil, lubricants and paints for this purpose. A licensed chemical waste collector would be employed for collection of chemical waste.

3.1.5. Recyclable Waste

Control measures would be devised to ensure that the recyclable Material are delivered to a proper recycling outlet for processing, and to avoid such Material being considered as C&D Material for the purposes of the Contract. All recyclable material that is generated during the course of the Contract will be collected by registered contractors and transported to an approved facility. 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: http://www.epd.gov.hk/epd/english/environmentinhk/waste/guide_ref/guide_ref_dwc.html

3.2. Designated Waste Disposal Facilities and Disposal Criteria

A summary regarding waste classification and designated waste disposal facilities / outlet is provided in Table 3.1. The designated waste disposal facilities, the locations, the possible disposal routes and the relevant criteria as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) are also summarized in Table 3.1. The handling / management of each waste type are detailed in Section 4.

Table 3.1 Designated Waste Disposal Facilities / Outlets and locations

Type of Waste	Designated Waste Disposal Facility/Outlet	Designated Location	Possible Disposal Routing	Criteria to be adopted
Inert C&D Material (excluding slurry and bentonite)	Fill Bank	Tuen Mun Area 38 Fill Bank (TM38FB)	North Lantau Expressway, TM-CKL, Lung Mun Road,	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles
Inert C&D Material (for slurry and bentonite)	Fill Bank	Tseung Kwan O Area 137 Fill Bank (TKO137FB)	North Lantau Expressway, Tsing Ma Bridge, Cheung Tsing Tunnel, Ching Cheung Road, Lung Cheung	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle

			Road, Kwun Tong Road, Tseung Kwan O Road, Tseung Kwan O Tunnel, Wan Po Road	must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles
C&D Material (Non-inert portion [excluding contaminated Material] and not recyclable)	Landfill	North East New Territories (NENT) Landfill	North Lantau Expressway, Tsing Ma Bridge, Tsing Yi North Coastal Road, Castle Peak Road, Shing Mun Tunnel, Tai Po Road, Tolo Highway, Fanling Highway, Sha Tau Kok Road, Wo Keng Shan Road	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicles
Chemical Waste	Dunwell Industrial (Holdings) Ltd.	8 Wand Lee Street, Yuen Long Industrial Estate, Yuen Long, NT, Hong Kong.	North Lantau Expressway, Tsing Ma Bridge, Ting Kau Bridge, Tai Lam Tunnel, Route 3, Castle Peak Road, Wang Lee Street	Admission tickets shall be granted and adopted for disposal
Other Waste Disposal/ Recycling Facilities	Islands Community Green Station	No. 1 Chung Mun Road, Tung Chung, Lautau, Hong Kong	Ying Hei Road, Yi Tung Road, Yu Tung Road, Chung Mun Road	Photo record shall be taken and receipt or certificate of each event shall be obtained from the recycling facility

BKCEL will also comply with the following requirement when delivery of construction waste to the landfills:

(1) Any over-sized inert C&D Material will be broken down to less than 250mm in size so as to facilities its re-use by reclamation or earth-filling.
(2) BKCEL will implement proper measures to ensure that the dump trucks delivering C&D Material are not overloaded. The measures include the checking of load cell before leaving of construction site.
(3) Mixed C&D Material should be sorted at source to reduce the inert content to less than 30% by weight as far as practicable before they are delivery to landfills.
(4) The C&D Material delivered for landfill disposal shall contain no free water and the liquid content shall not exceed 70% by weight.

When delivery of construction waste to the landfills, the moisture content of C&D Material: shall not be greater than 25% of its dry density. The Contractor shall carry out testing of the moisture content on site in accordance with the method accepted by the *Project Manager*. Should the moisture content of the C&D Material need to be reduced, the Contractor shall carry out appropriate treatment as accepted by the *Project Manager* prior to making delivery to these public fill reception facilities.

4. PROPOSAL FOR WASTE MANAGEMENT

4.1. Waste Management Hierarchy

BKCEL will implement appropriate waste management practices according to the nature and category of wastes arising. Waste management options will be selected according to the widely accepted hierarchy shown by Table 4.1 below.

Table 4.1 Waste Management Hierarchy

Avoidance and minimization	Avoid and minimize waste through changing or improving practices and designs.	↑ Highest priority
Reuse of Material (with limited reprocessing)	Reuse construction waste with only limited reprocessing such as uncontaminated soil, wooden planks, metals and other Material in other construction works or process.	
Recovery and Recycling (may require reprocessing)	Undertaking on site or off site recycling.	Lowest priority ↓
Treatment	Offsite destruction and detoxification etc, of wastes into less harmful substances.	
Disposal	Release of wastes to designated areas properly so as to render them harmless.	

The hierarchy will be used to evaluate waste management options for the minimization of waste generation. By the implementation of this hierarchy, the overall construction cost will be reduced by avoiding the over-ordering of construction Material and the handling and disposing of unnecessary waste.

4.2. Design and Planning of Construction Works

Prior to commencement of works, BKCEL will carefully consider the construction methodology, demolition procedures and programme to assess the waste generation during works and study the available opportunity to reduce waste arising. Good work planning will, not only result in a better estimation of Material required for the works, but also contribute to the performance of the works in the first instance so as to avoid abortive activity.

Prior to the commencement of works, the location and necessary facilities for construction material storage, sorting and temporary waste collection will be planned and implemented. The opportunity for the reuse and recycling of the waste material on site and off site will be carefully studied.

4.3. Waste Minimization Measures and Good Site Practice

Good management and site practice can prevent the over generation of waste. Waste reduction is best achieved at the planning and design stage as well as by ensuring the implementation of good site practice. The good site management to be adopted will include: -

a. 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;

b. Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;

c. Provision of sufficient waste disposal points and regular collection for disposal;

d. Using the correct amount of raw Material at the correct time and the recording of Material flow to minimize over ordering. The construction Material will be stocked carefully to prevent damage or contamination. During the works, only exact quantity of Material will be collected and if necessary, any surplus will be returned to stock after consideration of its use;

e. Maximizing the utilization of Material and the avoidance of unnecessary cutting such that off-cuts will be used when short lengths or a small quantity of Material are required;

f. A preference for reusable non-timber formwork such as steel formwork or plastic facing;

g. Sorting of all excavated / demolition Material to recover the inert portion (e.g. soil and broken rock) for reuse on site whenever possible or disposal to designed outlets (e.g. public filling areas). Recover all metal, cardboard and paper on site and properly stored in dry and clean conditions temporarily for later collection by recycling contractors;

h. Segregation and storage of constituents of C&D Material in appropriate containers, skips or stockpiles to enhance the opportunity for reuse and recycling of Material or their proper disposal. Sufficient protective measures provided in the storage area for sorting to avoid damage or contamination;

i. Equipment and material packaging (i.e. paper and cardboard) shall be recovered, properly stockpiled in dry and covered condition to prevent cross contamination by other C&D Material.

j. Collection of aluminum cans, paper waste and plastic bottles by site staff, and provision of separately labeled bins to segregate these wastes from other general refuse arising from the work force;

k. Provision of a designated waste working team to collect the refuse on site regularly;

l. Removal of all other un-reusable C&D Material off site as soon as practicable in order to optimize the use of the on-site storage space;

m. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The Foreman will ensure only dump trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&D

Material transported off site. The trip-tickets, with valid stamp from an agreed dumping / filling location, will be collected upon return and appropriately filed in the site records;

n. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimize fugitive dust emission;

o. Unused chemicals or those with remaining functional capacity will be retained for reuse. The chemicals will be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facilities (CWTF);

p. The setting up of special control measures to regulate storage, labeling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTF;

q. Imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;

r. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;

s. The amount of waste reused, recycled or disposed will be recorded regularly.

Mitigation measures according to the EIA will be implemented on site. The details are summarized in **Appendix C**.

4.4. Handling of C&D Material

Storage, collection and transportation of the C&D Material will be carefully planned and implemented to minimize any adverse impact upon the environment. The generated C&D Material will be sorted on site and C&D Material for recycling as appropriate in accordance with ETWB TCW No. 19/2005, or subsequent disposal at approved strategic landfills. Wherever practicable, SA/DSA will arrange the segregation of these wastes on site in order to maximize the recovery of reusable and recyclable Material. Separate areas will be designated for segregation and storage where site-specific conditions allow.

The segregated types of C&D Material will be stored in separate covered storage areas to avoid possible cross contamination and loss due to windblown and fugitive dust. If the C&D Material are to be temporarily stored in piles on site, they will either be covered with a tarpaulin or watered regularly to prevent the emission of fugitive dust. SA/DSA will ensure that C&D Material are removed from their origin and processed at designated points in a timely manner.

The period of surcharging within any portion of site shall be deemed to commence from the time that the surcharge material has been brought to the designated height of the surcharge over the full extent of that portion. The Contractor shall critically review of the scheduling of the

surcharge operations to avoid, or otherwise, minimize generation of residual C&D Material requiring disposal during and at the end of the land formation.

Recyclable Material such as steel mesh, reinforcement bars, window frames, railing, banisters, and wooden planks will be separated from other C&D Material. These Material will be either reused on site or collected by an external licensed waste recycling agent. If an external recycling agent is required, details of the nominated company will be submitted to the Project Manager.

4.4.1. Waste Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert Material and a unique access checkpoint with security control. The SA/DSA will manage the waste sorting facilities and promptly remove all the sorted and processed Material arising from or in connection with the works from the site to minimize the extent of temporary stockpiling on the site. The categories of C&D Material to be sorted within the waste sorting facilities include:

- Inert Material consisting of earth, building debris, rock fragments, concrete bricks, tiles, masonry and mortar etc;
- Metals;
- Paper/Cardboards; and,
- Timber.
- Waste from Landscaping Works

On-site sorting amongst Tung Chung New Town Extension contracts

From starting date to December 2022

- carry out internal matching of C&D Material demand and supply amongst Tung Chung New Town Extension contracts

From January 2023

- delivery the C&D Material to an on-site C&D material sorting and stockpiling facility operated by Contract No. NL/2020/03 in Portion 137 or other Portion as agreed by the Project Manager. A monthly C&D material disposal estimate will be provided, the sample of the estimation programme is given at **Appendix F**.

Following the sorting of these wastes, they will be sent separately for reuse and recycling, processing or disposed of as described in the following sections.

Other than large waste sorting facilities, BKCEL will provide refuse and recycling bins respectively to collect different types of refuse generated by the site office and the workforce. These will include bins to collect general refuse such as food waste and recycling bins to collect waste paper separately, plastic bottles and aluminum cans. These bins will be provided in common areas where the wastes are commonly generated such as site offices, workshops, canteen and other site accommodation areas for the workers.

(I) Inert C&D Material

Following waste sorting, the remaining inert C&D Material will be managed as follows:

Excavated Material

In order to minimize the amount of excess excavated material, the priority for the management options of excess excavated material will be as followings: -

a. *Suitable excavated material will be stored for backfilling purposes;*
b. *surplus C&D Material shall be stored in the designated stockpiling sites Portion 135 or 137 in the site of NL/2020/03, or other location proposed by the Contractor and accepted by the Project Manager within the contract boundary of the contract.*

Concrete Waste

The surplus concrete after each concrete pour will be used for some minor pre-cast elements where practicable. Dry concrete waste, including broken concrete from demolition works, will be sorted out from the other wastes for reuse in site temporary road construction.

(II) Non-Inert C&D Material

Timber Waste

As far as possible, BKCEL will avoid, reduce and minimize the use of timber in temporary works construction. Where the timber is used for this purpose or for one process / activity with an estimated quantity exceeding $5m^3$, BKCEL will submit a method statement to the Project Manager for agreement prior to the commencement of the works.

Metal Wastes

BKCEL will avoid and reduce metal waste during the design, planning and construction process. Cut metal or steel bar will be considered for re-use in temporary or minor works on site. When metal waste has arisen on site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling contractors.

General Refuse and C&D Material

Un-recyclable, non-inert C&D Material, i.e. C&D Material, floating refuse and general refuse, which mainly consists of food waste, aluminum cans and waste paper, will be generated from construction activities, workers and the site office.

The C&D Material will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable Material.

The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

The general refuse and the un-recyclable C&D Material will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

Method Statement for Stockpiling and Transportation of Excavated Material and Other Construction Wastes refer to the **Appendix H.**

4.4.2. Chemical Waste

For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

Storage of Chemical Waste

Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:

a. be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;

b. have a capacity of less than 450L unless the specifications have been approved by the EPD; and,

c. display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

The storage area for chemical waste will:

a. be clearly labeled and used solely for the storage of chemical waste;
b. be enclosed on at least three sides;
c. have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
d. have adequate ventilation;
e. be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
f. be arranged so that incompatible Material are adequately separated.

Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Waste dry battery (road flash light) and Waste Oil will be transported to Dunwell Industrial (Holdings) Limited for handling purpose. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection.

Please refer to Section 5.2 for the recording system of C&D Material and waste. A sample of the Monthly Waste Flow Table and Record of Timber Usage is given at **Appendix D.**

4.4.3. Hazardous Material

All hazardous Material generated from the demolition works shall be sorted and handled properly. For the grits and any other depositions collected from the contract, Admission Ticket shall be applied to deliver such special waste to designated landfill site.

BKCEL will conduct a risk analysis and produce a method statement specifying the safe method of use and all associated precautions to be implemented.

BKCEL will ensure that material safety data sheets are available and hazard identification labels will be properly affixed to all storage containers.

All workers be involved in the use, handling of, or exposure to hazardous substances, then the relevant information, training and proper personal protective equipment shall be provided accordingly.

The quantities of hazardous substances on the Site shall be kept to a minimum as far as is possible and practicable.

Strictly follow the guidelines provided by the material suppliers or the relevant Material Safety Data Sheet for use and storage of the hazardous material.

4.4.4. Excavated Trim Material

All excavated trim material generated from the works will be treated on site by cement solidification or stabilization, the treated trim material will be re-used on site rather than off-site disposal.

4.5. Promotion and Training on Waste Management

4.5.1 Environmental Training

The EO and ES are responsible for carrying out the environmental training on waste management and chemical waste handling. They will analyze the problem and the detailed need of waste management training for the employees, consult with their departmental managers, and seek advice from the senior management.

The environmental training plan shall be reviewed quarterly by the EO in consultation with the Site Agent to identify and review training needs of the construction activities and to introduce new training program.

Site Specific Induction Training

The site Specific Environmental Induction Training provided by the EO covering but not limited to environmental and waste management including the implementation of waste management plan, handling of special waste and trip ticket system will be conducted for all site staff and workers employed for the Works or in connection with the Contract. Refresher training for the aforesaid area will be provided by the EO in every six months.

The training content should also cover the subjects such as organization structure, duties and responsibilities, measures, targets, in-house rules and regulations.

Tool box talk

Workers will receive environmental toolbox talks conducted by the respective front line Project Managers, EO/ES. The toolbox talks will focus on different trade and activities and enhance environmental awareness amongst operatives.

4.5.2 Environmental Promotion

Environmental information

- Display and update appropriate Environmental Signs/Posters at the site entrances and relative works area.
- Environmental news, agenda and minutes of Site Safety Environmental Committee Meeting, emergency, environmental promotion activities will display on site safety bulletin board
- Daily Morning Briefing is an individual workforce gathering in the morning assembly prior to work start to be conducted by the Project Manager or gangers. Daily morning briefing will deliver environmental messages, environmental hazards identified and environmental pollution precaution measures to workforce.

Environmental Award

The "Safety and Environmental Star – Worker Award" would be held to promote safety and environmental awareness of individual worker. The performance of the worker on waste management would also be reviewed. The assessment criteria will be based on observation by EO/ES, area foremen report and recommendation from their direct employer and written assessment of safety and environmental knowledge.

5. TRIP TICKET SYSTEM AND RECORDING

5.1. Trip Ticket System (TTS)

For the transportation of public fill and C&D Material, BKCEL will implement and comply with the requirements of the Trip-Ticket System (TTS) stipulated in Development Bureau Technical Circular (Works) No. 6/2010. A standalone Site Management Plan for implementation of TTS will be established which should be reviewed and updated on monthly basis.

The manpower resources for TTS

(1) The General Foreman (with at least two-year experience in site management) fully responsible for implementing and overseeing the operation of the TTS; and

(2) The Foreman to manage each exit from the Site for the purpose of checking every truck carrying C&D Material leaving the Site so as to ensure that the truck driver bears a duly completed signed and stamped Disposal Delivery Form (DDF).

General Procedure of the TTS

The procedures for implementation of the TTS are as follows:-

(1) BKCEL will establish site procedures to ensure that each truckload of C&D Material leaving the Site will bear a duly completed CHIT / Disposal Delivery Form (DDF). BKCEL will also establish a mechanism to ensure timely retrieval of the CHIT / DDF and/or receipt from the disposal grounds. The person(s) who man the exit(s) shall record the CHIT/ DDF no., the vehicle registration mark and the departure time of every truck carrying C&D Material leaving the Site.

(2) The CHIT shall be used for disposal of C&D Material at a prescribed facility as defined under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) (hereinafter referred to as "prescribed facility") and the Particular Specification, Sample of the CHIT is given in Appendix E.

(3) Where the inert C&D Material is delivered to other sites for reuse as approved by the Project Manager, a special designed ticket (i.e. similar to the Chit) will be deployed and the mechanism and procedure is also similar to the Chit system. The ET and IEC will be notified for the C&D Material delivery.

The procedures of the TTS (for prescribed facility - NENT)

(1) For each truckload of C&D Material leaving the Site, all truck drivers must bear a duly completed CHIT.

(2) A daily record of disposal of C&D Material shall be maintained from the Site including CHIT numbers, vehicle registration marks, drivers' particulars, approximate volume, C&D Material type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground. The appointed designated person(s) shall complete Part I of the Daily Record Summary (DRS) in duplicate and inform the Engineer's staff before departure of the vehicle.

(3) The Engineer's staff shall sign Part I of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Project Manager and BKCEL.

(4) The truck shall proceed to the disposal ground as stipulated in the Contract. If the C&D Material accord with the acceptance criteria, disposal of the Material will be permitted and the facility operator will give the Contractor's truck driver a Transaction Record Slip and stamp the CHIT. When the disposal of waste is not permitted (rejected by facility operator due to overloading or non-compliance with relevant acceptance criteria, closure of facility etc.), the truck will go back to the construction site and the Contractor will sort out an appropriate mitigation measure.

(5) The information recorded in the DRS shall be checked against available information including site records/register and data from EPD's website [https://www.epd.gov.hk/epd/misc/cdm/scheme.htm].

(6) Site Engineer shall complete Part 2 of the DRS form for submission to the Project Manager within 1 working day after the records are posted at the EPD web-site.

(7) Where an irregularity is observed or where requested by the Project Manager under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), BKCEL shall submit to the Project Manager within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped CHIT and/or the Transaction Record Slip (where relevant) to confirm proper completion of the delivery trips in question, or within 3 working days after the Project Manager has requested for such evidence, whichever is later. A fax copy of the CHIT or Transaction Record Slip is acceptable, unless otherwise directed by the Engineer.

Informing the Truck Drivers

BKCEL will write to all truck drivers whom he has engaged for removal of C&D Material from the Site and draw their attention to the following particular points:

a. Each truck carrying C&D Material leaving the Site for a disposal ground must bear a duly completed and stamped DDF, irrespective of the location and nature of the disposal ground.

b. The C&D Material must be disposed of at the disposal grounds as stipulated in the DDF.

c. What constitutes an improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping License from the holder of the offending trucks.

d. Truck drivers must bear a valid Dumping License which he can apply from the Civil Engineering and Development Department (CEDD).

e. The Contractor will inform the truck drivers that all dump trucks engaged on site shall be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping & landfilling of C&D Material.

A sample of the "CHIT" and Daily Summary Table (DRS) is given at **Appendix E**.

5.2. Waste Recording System

BKCEL will record the quantities of C&D Material generated each month, using the monthly summary "Waste Flow Table" (WFT). BKCEL shall complete the monthly summary WFT. The

summary table on the use of timber for Temporary Work Construction and the monthly summary WFT would submit to the Project Manager not later than the 15th day of each month.

The following records will be kept by BKCEL for inspection and reporting as necessary by the Environmental Team or the Project Manager:

- Record of the amount of excavated soil disposed of in the stockpiling area
- Record of the amount of excavated marine deposit
- Record of the amount of treated marine deposit
- Waste disposal permits or licenses
- Record of trip tickets for C&D Material disposed off-site
- Record of trip tickets for chemical waste disposed off-site
- Record of non-compliance of the WMP
- Record of corrective action taken to rectify any non-compliance
- Record of the admission tickets usage.

BKCEL will provide, operate and maintain a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Site:

- The video cameras used in the system will be of high resolution, lowlight and colour type
- Power back up shall be provided to cater for accidental breakdown of the power supply to the system
- Videos captured by the system will be recorded continuously without break except with the agreement of the SA/DSA, or in month during which where is no disposal of C&D Material off the Site for the entire month
- Videos will be captured in a format acceptable to the Project Manager
- The registration mark of each vehicle leaving the site will be recorded
- The loading condition of dump trucks including empty trucks will be captured
- Securely protect the videos cameras from being damaged
- Provide the software and hardware for capturing the vehicle registration mark, and the time and date for the SA/DSA's immediate taking and viewing of photograph of every truck leaving the Site and viewing the recorded videos
- Keep the videos record for at least 60 days and the photographs until such time as instructed by the Project Manager
- Post sufficient notices at conspicuous positions to notify the workers, drivers and staff about the purpose of the video recording system in accordance with data protection principles set out in the Personal Data (Privacy) Ordinance (Cap. 486).

5.3. GPS

According to the Environmental Permit EP-519/2016 General Conditions 2.24 (vi-vii), all dump trucks engaged on site will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D Material. There will be

record and analysis of data collected by GPS or equivalent automatic system relating to travel routings and parking locations of dump trucks engaged on site.

The GPS installed on dump trucks will transmit self-monitoring data direct from the truck to the control center through GPRS mobile communication network.

The RTTM system allows the Contractor and the users to carry out round-the-clock monitoring of the movement of dump trucks by accessing to the designated website. This will ensure that any irregularities can be immediately identified and rectified without delay.

The RTTM system employs hot standby configuration. Two identical servers are used to handle and store data reported from GPS. Application software, such as web user interface, is provided by a standalone web server. The web user interface enables users to view the data record and analyze the data records.

The system is connected to the internet via two separate broadband networks. Each network is protected by network firewall. The firewall prevents unauthorized access to the system and route connection requests to the appropriate servers.

Refer to PS Clause 25.25A(1), dump trucks transporting C&D Material shall not access “Tung Chung Road west of Shek Mun Kap” in any case. It can be monitored by the GPS system.

In the event of any irregularities or non-compliance, the server will generate e-mail to inform the relevant parties (e.g. PM, ET, IEC and the Contractor). Alert system will be provided on the user interface of Smart Site Management System through GPS. Emails will be automatically sent to relevant parties including ET, IEC and the Project Manager, the contractor and surveillance team, for and loaded dump truck accessing the prohibited zones on Tung Chung Road west of Shek Mun Kap with display of the plate number. Upon reception of the notification email, EO/ES will carry out investigation and submit investigation reports on the event.

Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the data including the travel routings, parking locations on a daily basis. The corresponding historical GPS vehicle location data shall be maintained for at least 3 months after any C&D material disposal trips for retrieval if need. Restricted areas (e.g. Tung Chung Road west of Shek Mun Kap) can be set by the RTTM system and signal (by email) will send to the EO, ES or the default users immediately once any irregularities / non-compliance are triggered. The EO/ES will also link up the GPS data with the Trip Ticket System by merging the corresponding chit number, vehicle number etc.

5.4. Illegal Dumping and Landfilling of C&D Material

Surveillance Team of the ET will conduct regular site inspections to identify and report immediately to the ET, IEC, the Project Manager and EPD through email on suspected illegal dumping and landfilling of C&D Material outside the designated disposal locations as stipulated in the relevant EP conditions.

The site inspection will be done weekly in the blackspot of illegal dumping within Tung Chung, such as village area. Also, the team will monitor the data on GPS server to check any alert email.

5.5. Weighing System at Recorder House

The Weighing System installed at each of the Recorder House within the Stockpiling Sites is a system to collect information in respect of loads of surplus filling Material delivered to and removed from the Stockpiling Sites by the following:

(a) dump trucks by the Contractor, including those excavated within the contract boundary, and transporting between individual stockpiling sites;

(b) dump trucks by the Contractor or others for collecting fill material or removing fill from the stockpiling areas; and

(c) others as directed by the Project Manager.

The Weighing System will comply with the requirement stated in PS Appendix 25.2, attached in ***Appendix G***.

6. EVENT CONTINGENCY PLAN FOR NON-COMPLIANCE AND COMPLAINT

6.1. Handling Procedure for Non-compliance and Complaint

A Contingency Group will be set up to respond to non-compliance on waste management and other environmental issues.

In the Event of Non-Compliance:

1. If any non-compliance is observed during site inspection by RSS or CEDD, the EO/ES will raise a Corrective & Preventive Action Report (CPAR) to SA/DSA;
2. The PM will notify and liaise with the SA/DSA of non-compliance to obtain proposals and a response to the CPAR;
3. The EO will notify SA/DSA if the non-compliance is an exceedance of the stipulated requirements. In such cases, a copy of the CPAR will be issued to the *Project Manager* as a Notification of Non-compliance (NNC);
4. After receipt of the NNC, the SA/DSA will propose corrective actions for the non-compliance in line with the BKCEL's CPAR and implement the proposed corrective actions once they have been agreed by the *Project Manager*;
5. If the implementation of the corrective actions is satisfactory, the non-compliance record (CPAR) will be closed accordingly;
6. The SA/DSA/EO will propose preventive actions within 3 working days if it has not been already included within the BKCEL's response after the closure of the non-compliance records; and
7. The SA/DSA/EO will record CPARs accordingly in the CPAR log sheet.
8. Environmental Team, Independent Environmental Checker and Project Manager should be notified immediately in case of the event of non-compliance.

Follow-up actions to be taken by the Contractor and Dump Truck Drivers for Committing Suspected Offences relating to Illegal Dumping and Landfilling of C&D Material

1. The dump truck drivers will be asked to explain for the suspected offences relating to illegal dumping and landfilling of C&D Material. An investigation report will then be prepared by the EO and submit to AECOM.
2. The Contractor will discuss with AECOM for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

In the Event of Complaint:

1. Once a complaint is received, it must be logged, defined and categorised as soon as possible, before referring to the appropriate party.

2. Where a return postal address, fax number and / or email address of the complainant is provided, the Contractor shall issue an interim reply to acknowledge receipt and notify the complainant of the referral of their complaint to other relevant parties where appropriate;

3. The starting point for complaint investigation is to collect all relevant information. Based on the details of the complaint received, the Contractor should collect the required information from the relevant parties, including details related to the construction activities and site conditions that may have a bearing on the complaint, as well as the mitigation measures currently implemented on site.

4. Based on the findings of the complaint investigation, relevant action(s) would depend on the findings of the complaint investigation and might include the followings:

   - Corrective actions on mitigation measures implemented by the Contractor(s).
   - Recommendations for additional mitigation measures in consultation with the ET, IEC and PM.
   - Additional site visits and environmental monitoring to verify the updated situation and the effectiveness of the additional mitigation measures / corrective actions, if required.

   If mitigation measures are identified as required during in the investigation by the ET, the Contractor should promptly carry out the mitigation works. PM should ensure that the measures have been carried out by the Contractor

5. For every environmental complaint that is confirmed to be valid and due to the project's activities, the ET shall compile an environmental complaint investigation report containing all the relevant information and responses from the relevant parties.

6. If the complaint is referred from EPD, an interim report on the status of the complaint investigation and follow up actions shall be submitted to EPD by the ET. The final complaint investigation report shall be certified by the ET and verified by the IEC before submission to EPD by the ET for EPD's record.

7. Upon final acceptance of the environmental complaint investigation report, Contractor, PM or CEDD would provide a written response to the complainant. Also, Contractor would update the record with details of the complaint investigation, follow up actions and other relevant information of the complaint in the complaint log-book.

7. AUDITING PROPOSAL

General Foreman and EO/ES will conrefuse weekly site inspections to ensure this WMP is properly followed. In addition to internal audit will be performed to review the effectiveness on the implementation of this WMP:-

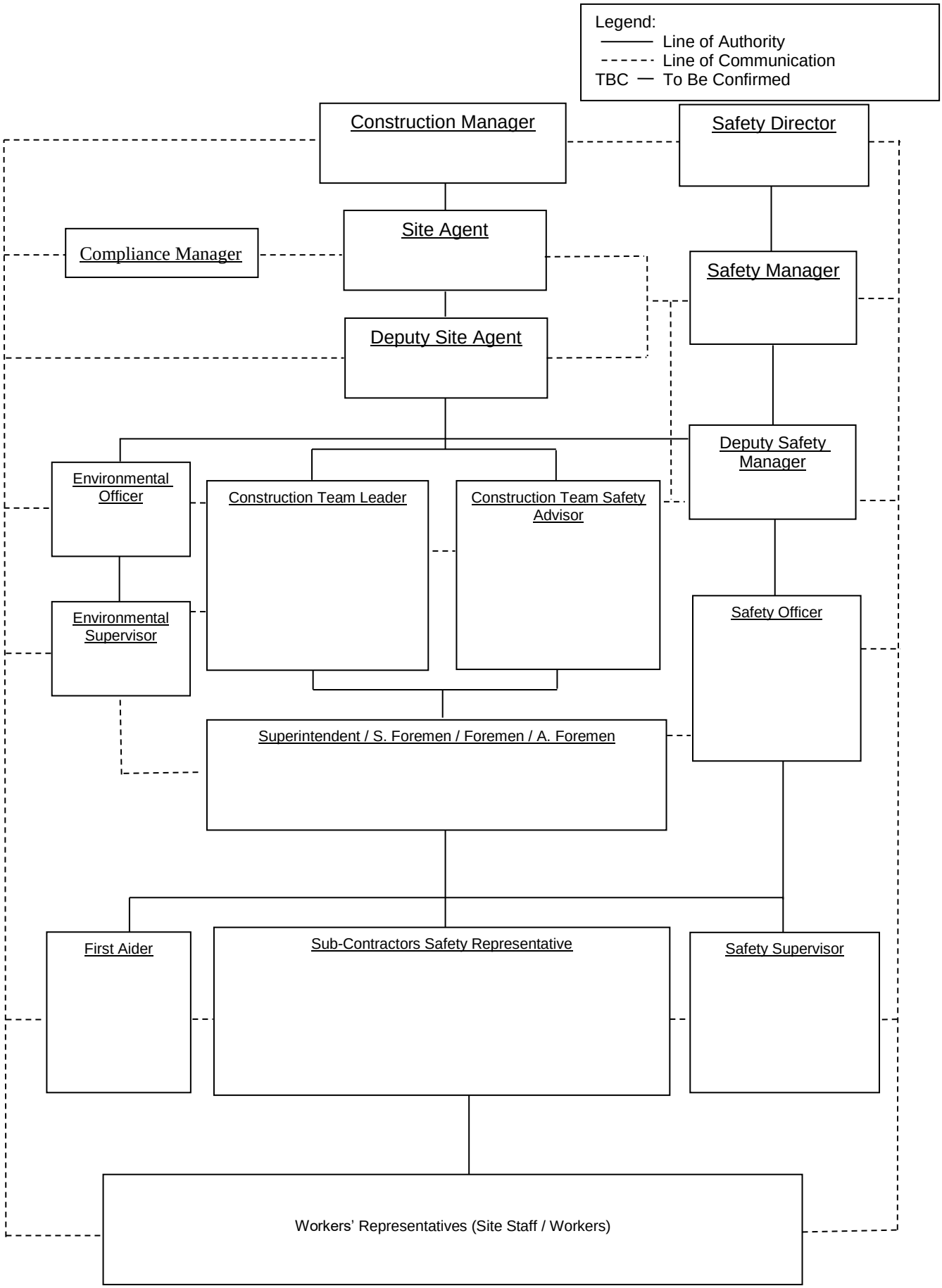
- Internal Environmental audit will be performed in line with the WMP by BKCEL's Audit Team from Head Office.
- Audits will be planned by Environmental Officer to determine when and where to audits which are scheduled on the basis of the status and importance of the activity
- Audit comprises of document review, site inspection and discussion with responsible person, so as to address all key elements of the WMP and implementation of procedures and maintenance of records
- Environmental and Safety Officer will monitor the status of completion of the follow-up action programme after internal auditing
- Result of audits will be taken into account for management review for reviewing the implementation status and the effectiveness of the audit system

The waste (generated from construction activities) handling procedures documented in this stand-alone WMP will be incorporated into the Environmental Management Plan and the effectiveness of waste management and implementation of trip ticket system will be discussed and reviewed during the SSEMC and SSEC meetings on monthly basis.

Appendix A

Project Environmental Management Organization Chart for Waste Management

Site Safety & Environmental Organization Chart



*= Safety Supervisor Certificate Holder

Late updated: 6 July 2022

Rev 8

Appendix B

Tentative C&D Material Disposal Programme

NL/2020/07 - Tung Chung New Town Extension - Tai Ho Interchange

Monthly C&D Disposal Estimate

With reference to clause PS.114(3A)

Estimation according to the works programme

Name of Employer: CEDD									Contract No.: NL/2020/07				
Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Rock	Soil	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
2021													
Oct	0.00	0	0	0	0	0	0	0	0	0	0	0	0
Nov	0.00	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0.00	0	0	0	0	0	0	0	0	0	0	0	0
Total	0.00	0	0	0	0	0	0	0	0	0	0	0	0
2022													
Jan	0.05	0	0	0	0	0.015	0	0	0	0	0	0	0.03
Feb	0.05	0	0	0	0	0.015	0	0.015	0	0	0	0	0.015
Mar	0.05	0	0	0	0	0.015	0	0.015	0	0	0	0	0.015
Apr	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
May	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0.001	0.0150
Jun	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0.001	0.015
Jul	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0	0.015
Aug	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0	0.015
Sep	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0.001	0.015
Oct	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0.001	0.015
Nov	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0	0.015
Dec	0.09	0	0	0	0	0.015	0	0.06	0	0	0	0	0.015
Total	0.92	0	0	0	0	0.18	0	0.54	0	0	0	0.004	0.195
2023													
Jan	0.17	0	0	0	0	0.015	0	0.12	0	0	0	0	0.03
Feb	0.30	0	0.15	0	0	0.015	0	0.12	0	0	0	0	0.015
Mar	0.58	0	0.15	0	0	0.015	0.15	0.25	0	0	0	0	0.015
Apr	0.58	0	0.15	0	0	0.015	0.15	0.25	0	0	0	0	0.015
May	0.59	0.01	0.15	0	0	0.015	0.15	0.25	0	0	0	0.001	0.0150
Jun	0.59	0.01	0.15	0	0	0.015	0.15	0.25	0	0	0	0.001	0.015
Jul	0.44	0.01	0	0	0	0.015	0.15	0.25	0	0	0	0	0.015
Aug	0.43	0	0	0	0	0.015	0.15	0.25	0	0	0	0	0.015
Sep	0.43	0	0	0	0	0.015	0.15	0.25	0	0	0	0.001	0.015
Oct	0.43	0	0	0	0	0.015	0.15	0.25	0	0	0	0.001	0.015
Nov	0.43	0	0	0	0	0.015	0.15	0.25	0	0	0	0	0.015
Dec	0.28	0	0	0	0	0.015	0	0.25	0	0	0	0	0.015
Total	5.25	0.03	0.75	0	0	0.18	1.35	2.74	0	0	0	0.004	0.195
2024													
Jan	0.57	0	0	0	0	0.015	0.15	0.25	0	0	0	0	0.15
Feb	0.38	0	0	0	0	0.015	0.15	0.2	0	0	0	0	0.015
Mar	0.38	0	0	0	0	0.015	0.15	0.2	0	0	0	0	0.015
Apr	0.38	0	0	0	0	0.015	0.15	0.2	0	0	0	0	0.015
May	0.33	0	0	0	0	0.015	0.15	0.15	0	0	0	0.001	0.0150
Jun	0.33	0	0	0	0	0.015	0.15	0.15	0	0	0	0.001	0.015
Jul	0.33	0	0	0	0	0.015	0.15	0.15	0	0	0	0	0.015
Aug	0.33	0	0	0	0	0.015	0.15	0.15	0	0	0	0	0.015
Sep	0.33	0	0	0	0	0.015	0.15	0.15	0	0	0	0.001	0.015
Oct	0.18	0	0	0	0	0.015	0	0.15	0	0	0	0.001	0.015
Nov	0.18	0	0	0	0	0.015	0	0.15	0	0	0	0	0.015
Dec	0.18	0	0	0	0	0.015	0	0.15	0	0	0	0	0.015
Total	3.90	0	0	0	0	0.18	1.35	2.05	0	0	0	0.004	0.315
2025													
Jan	0.20	0	0	0	0	0.015	0	0.03	0	0	0	0	0.15
Feb	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Mar	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Apr	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
May	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.0150
Jun	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Jul	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Aug	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Sep	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Oct	0.06	0	0	0	0	0.015	0	0.03	0	0	0	0	0.015
Nov	0.03	0	0	0	0	0.015	0	0	0	0	0	0	0.015
Dec	0.03	0	0	0	0	0.015	0	0	0	0	0	0	0.015
Total	0.80	0	0	0	0	0.18	0	0.3	0	0	0	0	0.315

Appendix C

Environmental Mitigation Implementation Schedule

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
	Waste Management (Construction Waste)							
S4.3	S7.4.1	WM1	Good Site Practices 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; • imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 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 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S4.3	S7.4.1	WM2	<u>Waste Reduction Measures</u> 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 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.); • provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	Reduce waste generation	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S4.3 S4.4	S7.4.1	WM3	<u>Storage of Waste</u> The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; and • Depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions;	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S4.3 S4.4 S5.1	S7.4.1	WM4	<u>Collection and Transportation of Waste</u> The following recommendation 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.	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S3.1.2 S4.4 S5.4	S7.4.1	WM5	<u>Excavated and C&D Materials</u> 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: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • 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 to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW; The recommended C&D materials handling should include:	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 • Project Administrative Handbook for Civil Engineering Works, 2012 Edition

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			• On-site sorting of C&D materials • Reuse of C&D materials • Use of Standard Formwork and Planning of Construction Materials purchasing					
S4.3	S7.4.1	WM6	Provision of Wheel Wash Facilities Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.	Minimize waste impacts from trucks transportation	Contractor	All construction sites	Construction Stage	N/A
S3.2 S4.1	S7.4.1	WM7	Excavated Contaminated Soil As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater.	Remediate contaminated soil	Contractor	All construction sites where applicable	Construction stage	• Practice Guide for Investigation and Remediation of Contaminated Land
Not applicable to this contract	S7.4.1	WM8	Excavated Marine Sediments 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.	Handle excavated sediment	Contractor	All construction sites where applicable	Construction stage	• ETWB-TCW 34/2002

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			• Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.					
Not applicable to this contract	S7.4.1	WM9	<u>Dumping of excavated sediment</u> • Keep and produce logs and other records to demonstrate compliance and ensure journeys are consistent with designated locations • Comply with the conditions in the dumping permit. • 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. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.	Handle excavated sediment	Contractor	All construction sites where applicable	Construction stage	• ETWB-TCW 34/2002

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

WMP SECTION NO.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S3.1.4 S4.4.2	S7.4.1	WM10	Chemical Waste 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S3.1.3	S7.4.1	WM11	General Refuse • 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S5.3	S7.4.1	WM12	Global Positioning System (GPS) • All dump trucks engaged on site shall be equipped with GPS for real time tracking and monitoring of their travel routings and parking locations. • Dump trucks transporting C&D Material shall not access "Tung Chung Road and Tung Chung" in any case.	Prohibit illegal dumping and landfilling of C&D materials.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

Appendix D

Proforma

Monthly Summary of Waste Flow Table

and

Summary Table for Use of Timber in Temporary Works

NL/2020/07 - Tung Chung New Town Extension - Tai Ho Interchange
Monthly Summary Waste Flow Table

Name of Employer: CEDD									Contract No.: NL/2020/07				
Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Rock	Soil	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
Jan													
Feb													
Mar													
Apr													
May													
Jun													
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
Total													

Notes:

1) Density of waste materials:

Bentonite, broken concrete, building debris, mixed rock & soil , soil, slurry	=	2.0
General Refuse	=	1.0
Waste Oil	=	1.0

SUMMARY TABLE FOR USE OF TIMBER IN TEMPORARY WORKS

Contract No.: NL/2020/07

Contract Title: Tung Chung New Town Extension – Tai Ho Interchange

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m3)	Actual Quantities used (m3)	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		Total Estimated Quantity of Timber Used			

Notes: (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.

(b) The summary table shall be submitted to the Supervisor monthly together with the Waste Flow Table for review and monitoring in accordance with PS clause 25.22(4).

Appendix E

Sample of CHIT and Daily Summary Record

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities
☐ 公眾填料接收設施 Public Fill Reception Facilities
☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶編號:
Account No.:

甲部份：由帳戶戶主保留
Part A: retained by Account-holder

入帳票編號:
Chit No.:

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities
☐ 公眾填料接收設施 Public Fill Reception Facilities
☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

使用日期:
Date of Use:

簽發人:
Issued by:

帳戶名稱:
Name of the Account-holder:

帳戶編號:
Account No.:

乙部份：由廢物運輸商保留
Part B: retained by Waste Hauler

香港法例第354章廢物處置條例
廢物處置(建築廢物處置收費)規例
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

車牌號碼:
Vehicle Registration Mark:

有效期至:
Valid Until:

建築廢物產生地點:
Construction Waste Generated Site:

帳戶名稱:
Name of the Account-holder:

丙部份：由政府保留
Part C: retained by Government

E 199279

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the *Site
"每日運載記錄摘要" 記錄每日由*地盤所傾卸的拆建物料

(1) Contract no. & title 合約編號及名稱 :______________________________

(2) Date of disposal 傾卸日期: ______________________

(3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer 合約指定或建築師/工程師指示接收設施: (a)
(b)
Others 其它

(4) Approved alternative disposal grounds 另可接受的接收設施______________________________

CHIT/ DDF no. 載運入帳票/ 拆建物料運載記錄票編號	Vehicle registration mark 車輛登記號碼	Approx. vol (e.g. Full/Three Quarter/Half/One quarter) 大約承載量 (例如全、3/4、半、1/4)	C&D materials type (e.g. inert or non-inert) 建築廢料種類 (例如惰性或非惰性)	Disposal ground 接收設施	Signature & Name of the Contractor's Designated person before departure 於離開地盤前，承建商的指定人仕姓名及簽名	Departure time from *Site 離開地盤時間	Signature & name of the Architect/Engineer's supervisory staff before departure or other time as agreed between the Architect/Engineer's Representative and the Contractor[1] 於離開地盤前或其它經承建商與建築師/工程師代表同意的時間，建築師/工程師監管人員姓名及簽名	Actual disposal ground 真正接收設施	Arrival time at disposal ground 抵達接收設施時間	Remarks 備註:

← Part 1[2] 甲部 → ← Part 2[3] 乙部 →

Submitted by 呈交 : ______________________ *[Name of Contractor's Designated Person 承建商的指定人仕姓名*

Signature 簽名 : ______________________

Date 日期: ______________________

Received by 接收 : ______________________ *[Name and signature of the Architect/Engineer's staff] 建築師/工程師監管人員姓名及簽名*

Post 職位 : ______________________

Date & Time 日期及時間 : ______________________

---

[1] For term contract, if there are no full time site supervisory staff, the Architect/Engineer's supervisory staff should spot check and then sign as appropriate in accordance with paragraph 25 of DEVB TC(W) 6/2010 定期合約，如沒有全職地盤監管人員，應根據 DEVB TC(W) 6/2010 的第 25 段進行定點檢查及簽署

[2] Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/ Engineer's Representative. 承建商填寫甲部兩份，副本由建築師/工程師代表持有

[3] Part 2 乙部- The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承建商填寫乙部及將整份運載記錄摘要於記錄上載在環境保護署網頁後 1 個工作天內呈交給建築師/工程師代表

*Delete "Site" and substitute "Sites" for term contracts.定期合約將" Site" 刪去及以"Sites"代替

Appendix F

Sample of Forecast of Total Quantities of C&D Materials to be Disposed to NL/2020/03

Name of Department: CEDD

Contract No.: NL/2020/07

Month	Sample of Forecast of Total Quantities of C&D Materials to be Disposed to NL/2020/03			
	Total Quantity Generated	Rock	Broken Concrete	Soil
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
January				
February				
March				
April				
May				
June				
Sub-total	0.000	0.000	0.000	0.000
July				
August				
September				
October				
November				
December				
Total	0.000	0.000	0.000	0.000

Appendix G

PS Appendix 25.2 Standards - Weighing System at Recorder House within Stockpiling Sites

APPENDIX 25.2
STANDARDS
(Particular Specification Clause 1.114(6) and 25.25)

Weighing System at Recorder House within Stockpiling Sites

(1) The Weighing System installed at each of the Recorder House within the Stockpiling Sites is a system to collect information in respect of loads of surplus filling materials delivered to and removed from the Stockpiling Sites by the following:

(a) dump trucks by the *Contractor*, including those excavated within the contract boundary, and transporting between individual stockpiling sites;
(b) dump trucks by the *Contractor* or others for collecting fill material or removing fill from the stockpiling areas; and
(c) others as directed by the *Supervisor*.

(2) The *Contractor* shall proper record the following types of fill materials separately:

(a) Soft C&D materials collected by the *Contractor*;
(b) Hard C&D materials with size >200mm collected by the *Contractor*;
(c) Treated marine deposit used for filling collected by the *Contractor*;
(d) Soft C&D materials deposited by the *Contractor*;
(e) Hard C&D materials with size >200mm deposited by the *Contractor*;
(f) Excavated marine deposit generated by the *Contractor*;
(g) Treated marine deposit treated by the *Contractor*;
(h) Treated marine deposit re-used by the *Contractor*;
(i) Soft C&D materials disposed of by the *Contractor*;
(j) Hard C&D materials with size >200mm disposed of by the *Contractor*;
(k) Treated marine deposit used disposed of by the *Contractor*;

(3) The technical specifications of loadcells and weighing terminals of the existing Weighing Systems are shown in Part 2 of this Appendix.

(4) Within 4 weeks after the *starting date* as notified by the *Supervisor*, the *Contractor* shall submit detailed proposal for the checking, calibration, operation and maintenance procedures of his proposed Weighing Systems to the *Supervisor* or acceptance.

(5) In addition to the normal power supply, the *Contractor* shall provide, operate and maintain standby diesel generators and uninterrupted power supplies to maintain continuous power supply to support all the computer hardware, software and other facilities of each Weighing System at all times. When one of the Weighing Systems is rendered not operational for whatsoever reason, the *Contractor* shall use the other Weighing Systems within the respective stockpiling sites to weigh all vehicles that require weighing in accordance with this contract. The *Contractor* shall also report to the *Supervisor* immediately about the unavailability of the Weighing Systems.

(6) The *Contractor* shall operate and maintain the Weighing Systems to measure the net weights of fill materials with this PS Clause as instructed by the *Supervisor*. The *Contractor* shall direct those vehicles which require measurement to the Weighing Systems for weighing. The *Contractor*'s staff shall input the following information using the weighbridge terminal to record each weighing operation:

(a) vehicle identification
(b) type of material
(c) destination of materials
(d) remarks (to be advised by the *Supervisor*'s staff)

The coding as stated in (a) and (b) above is subject to amendment from time to time. The *Contractor* shall modify the software programme as appropriate to amend the coding as instructed by the *Supervisor*. The *Contractor* shall allow all costs incurred in the Prices.

The net weight of the material as automatically calculated from the weights of vehicle measured at the in-weighbridge and the out-weighbridge, together with other information as inputted in accordance with this sub-clause, shall be printed immediately on the dot-matrix printer in a daily transaction list, or in other formats accepted by the *Supervisor*. The *Contractor* shall furnish the Engineer, at the end of each working day, a summary of transaction data stored on CD-ROM, DVD+/-R, or other electronic storage medium agreed with the *Supervisor*, in an ASCII text file format agreed with the *Supervisor*.

(7) The *Contractor* shall be responsible for the operation and maintenance of the Weighing Systems and shall deploy adequate experienced superintendent personnel, labour and Constructional Plant to ensure the Weighing Systems are operated properly. The *Contractor* is also responsible for directing the vehicles to the appropriate Weighing Systems for carrying out and completing the weighing operation in accordance with the contract requirements.

(8) Notwithstanding the *Contractor*'s responsibility with respect to management and operation of the Weighing Systems under this PS Clause, the *Supervisor* reserves the right to use any of the Weighing Systems at any time for whatsoever reason he considers necessary.

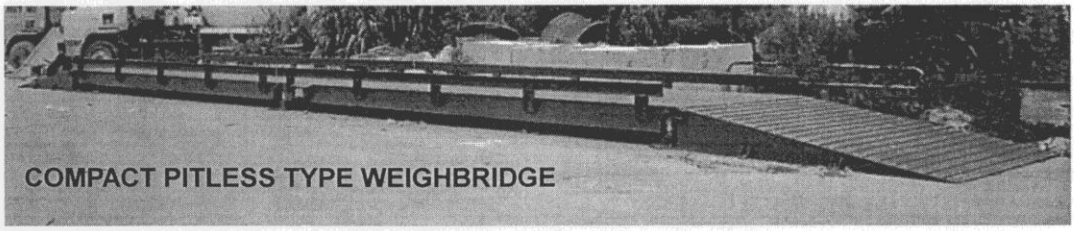
(9) All weighbridges of the Weighing Systems shall be calibrated on a three-month basis by an independent calibration firm proposed by the *Contractor* and accepted by the *Engineer*. The calibration shall be carried out from zero loading at an increment of 2 tonnes up to 50 tonnes. In addition, the *Contractor* shall arrange for weekly checking and routine repainting of the weighbridges in accordance with his proposal accepted by the *Supervisor*. The permitted tolerance in measured weight shall be within ± 0.1%.

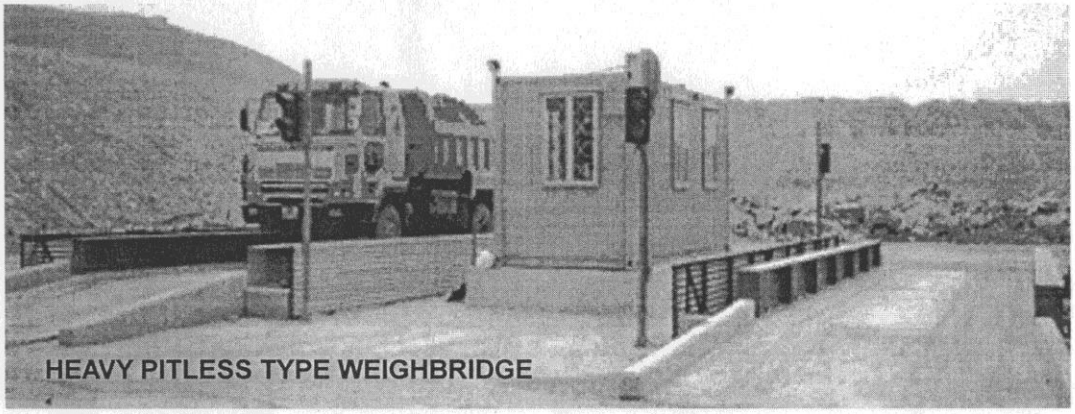
(10) The *Contractor* shall carry out weekly checking of the weighbridges. The *Contractor* shall provide a weight of not less than 12 tonnes made of concrete or other approved material for use as a standard weight in the weekly checking of the weighbridges. The initial calibration of the standard weights shall be carried out by an independent calibration firm proposed by the *Contractor* and accepted by the *Supervisor*. The weekly checking of the weighbridges shall be carried out by comparing the measured value, which shall be the difference between the laden weight of a vehicle loaded with the standard weight and the unladen of the same vehicle measured by the weighbridge, against the initial calibrated value of the standard weights. The accuracy of the weights printed on the daily transaction list shall be also checked. If the measured or printed values of the standard weight deviates from the calibrated value by more than ±1.5% (in terms of kilogram), the weighbridge shall be deemed as not operational. When not in use, the standard weight shall be stored properly in the Site and be protected from rain, heat, abrasion or other attacks.

(11) Unless otherwise instructed by the *Supervisor*, the *Contractor* shall hand over the Weighing System to the *Employer*. Prior to the handover, the *Contractor* shall demonstrate to the satisfaction of the *Supervisor* that the weighbridges, including all related equipment, hardware and software, are in proper condition and shall be responsible for all repairs, checking, calibration and adjustments if necessary.

Technical Specifications of Loadcell and Weighing Terminal of Weighing System

WWB3000 Weighbridge Systems





FEATURES

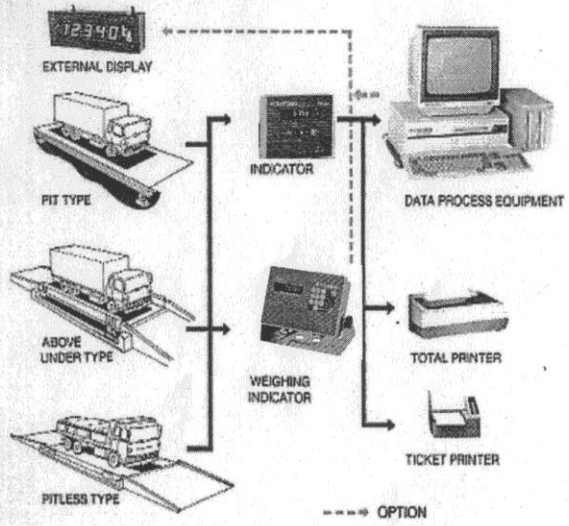
- HIGH ACCURACY
- FULL LOADCELL TYPE
- BCD & RS-232C INTERFACE
- COMPUTERIZED WEIGHT MANAGEMENT SYSTEMS
- LARGE EXTERNAL INDICATOR (OPTION)

SPECIFICATIONS (Unit : mm)

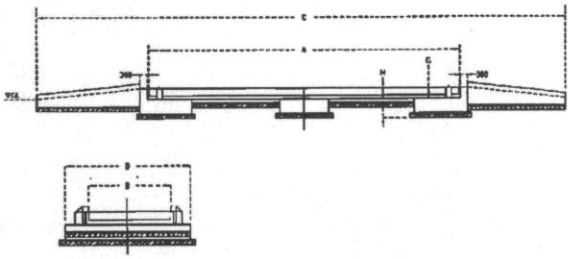
CAPA-CITY	MIN GRAD	L/C QTY.	A	B	C	D	G	H
30	10	4	8,000	3,000	16,620	4,000	450	1,250
50	10	4(6)	12,000	3,000	20,620	4,000	450	1,250
60	10	6	16,000	3,000	24,620	4,000	450	1,250
60	10	6(8)	18,000	3,000	26,620	4,000	450	1,250

* OVER 60 ton (OPTION)

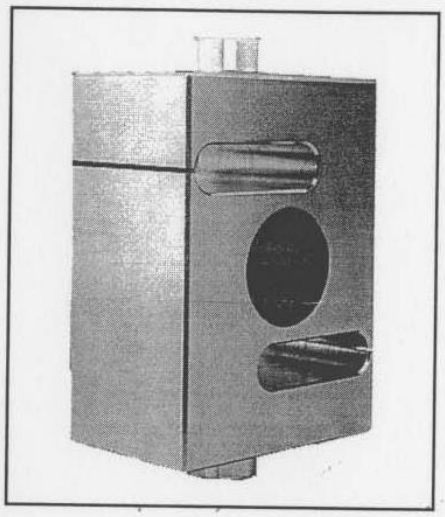
SYSTEM COMPOSITION



DIMENSIONS (Unit : mm)



ZY30 *COMPRESSION LOADCELL*



STANDARD CAPACITY:

30 ton

WIRING:

Yellow, Longer	*Sheild*
Green	*+ Excitation*
Yellow	*+ Sense*
White	*+ Signal*
Black	*- Excitation*
Blue	*- Sense*
Red	*- Signal*

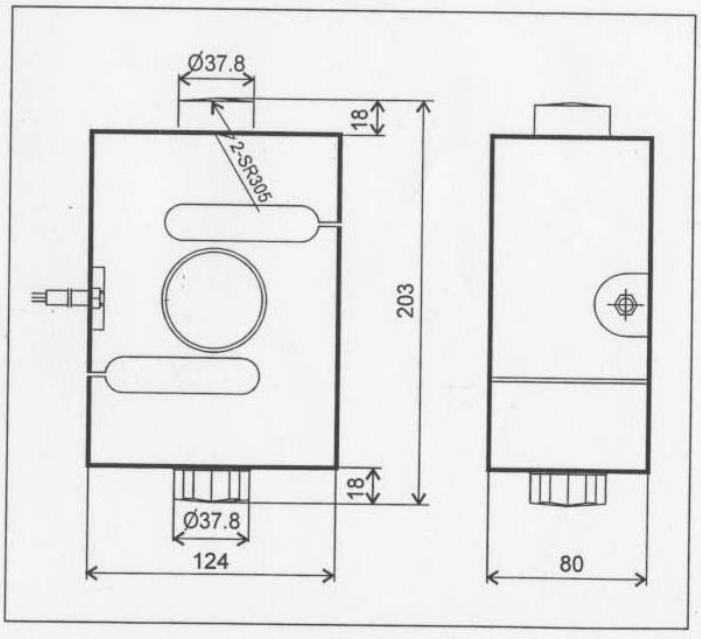
6 COLOUR SHIELD CABLE 30FT

- *Alloy tool steel electroless nickel*
- *Moisture protected*
- *Center-link loaded*
- *Temperature compensation, both zero and span*
- *Compatible with international standard fixings*
- *Full range of mounting accessories*

Specifications

Rated output	*2mV/V ± 0.002%*
Non-linearity	*± 0.03%*
Hysteresis	*± 0.03%*
Non-repeatability	*± 0.02%*
Creep in 20 minutes	*± 0.03%*
Temperature effect output	*< 0.002%*
Temperature effect zero	*< 0.002%*
Compensated temperature range	*-10°C~40°C*
Operating temperature range	*-40°C~80°C*
Zero balance	*± 2%*
Input resistance	*382 ± 4 Ω*
Output resistance	*350 ± 1 Ω*
Safe overload	*150%*
Ultimate overload	*300%*
Sideload rejection ratio	*500:1*
Excitation voltage	*6~15(DC/AC)*
Maximum excitation voltage	*20(DC/AC)*
Insulation resistance	*>2000MΩ*
Environmental protection	*IP67*

***All specifications are a maximum as a% (±) of full load, unless otherwise stated.*



Appendix H

Method Statement for Stockpiling and Transportation of Excavated Materials and Other Construction Wastes

Civil Engineering and Development Department

Contract No. NL/2020/07

Tung Chung New Town Extension – Tai Ho Interchange

Method Statement for Stockpiling and Transportation of Excavated of Excavated Materials and Other Construction Waste

Revision: 0

Date: 17 Sep 2021

1. Scope of Work

- Stockpiling
- Transportation of Excavated Materials
- Transportation of Other Construction Waste

2. Construction Sequence of Works

2.1 Stockpiling

- The excavated material generated from excavation will consist of soil and rock materials which will, as far as practicable, be reused on-site for the backfilling works.
- Excavated material will also be generated from foundation work, underground services works and even any temporary works for excavation. Any surplus excavated material will be temporary stored in a designated area and would be engaged for backfilling.
- The spoil will be stored in 2 m high maximum and the slope surface will be kept in 1:2.
- When amber rainstorm signal or higher is hoisted, protective measures would be provided on slope surface against rainwater such as covered with tarpaulin or plastic sheet, erecting the temporary shelters, additional of pumps to drive out rainwater, etc.

2.2 Transportation of Excavated Materials

- Excessive excavated material as well as surcharge will be transported to other sites for reuse as approved by the Project Manager; whilst the ET, IEC and EPD would be informed.
- The excavated material will be sprayed with water when it is dry. The aim is to control dust in work area.
- Dump truck loaded with excavated materials would be covered by tarpaulin sheeting or mechanical cover in order to prevent dust emission.
- For the transportation of excavated materials, BKCEL will implement and comply with the site management plan for implementation of trip ticket system, which will be established, reviewed and updated on monthly basis.

2.3 Transportation of Other Construction Waste

- <u>General refuse and C&D Materials</u>
  - Un-recyclable, non-inert C&D Materials, i.e. C&D Materials, floating refuse and general refuse, which mainly consists of food waste, aluminum cans

and waste paper, will be generated from construction activities, workers and the site office.

- The C&D materials will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.

- Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.

- The general refuse and the un-recyclable C&D Material will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. Its will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.

- <u>Chemical Waste</u>
  - For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.

  - Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

  - All chemical wastes generated on site will be stored and labeled in

accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.

- The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.

- Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:
  - be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
  - have a capacity of less than 450L 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.

- The storage area for chemical waste will:
  - be clearly labeled and used solely for the storage of chemical waste;
  - be enclosed on at least three sides;
  - have an impermeable floor and be bunded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
  - have adequate ventilation;
  - be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
  - be arranged so that incompatible materials are adequately separated.

- A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. Details refer to Waste Management Plan section 3.1.4 and 3.2.