Waste Management Plan

for Tung Chung New Town Extension (West)

(EP No. EP-519/2016)

February 2022

土木工程拓展署
Civil Engineering and Development Department

MOTT MACDONALD

Environmental Permit No. EP- 519/2016

Tung Chung New Town Extension (West)

Environmental Team Leader Certification

Reference Document /Plan

Document to be Certified:	Waste Management Plan
Date of Document:	February 2022
Date received by ETL:	25 February 2022

Reference EP Condition

Environmental Permit Condition:	2.24
The Permit Holder shall, no later than three 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.	

ETL Certification

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

Daniel Sum
Environmental Team Leader Date: 28 February 2022

Your Ref.

By Post

Our Ref. 198377-0460

Date 28 February 2022

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. Gary YUNG / Ms. Carol LAM

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 (West) (TCW) dated February 2022 and certified by the Environmental Team Leader of TCW on 28 February 2022. 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 6848 5737 (iec.tcnte@gmail.com or lauky@binnies.com).

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

MANUEL CHUA
INDEPENDENT ENVIRONMENTAL CHECKER

cc: ET Leader / TCW – Mott (Attn: Mr. Daniel SUM) [by Email: daniel.sum@mottmac.com]
PM / TCW – Arup (Attn: Mr. Jackson WONG) [by Email: jackson.wong@tcw.c5c6.hk]

Binnies Hong Kong Limited
43/F, AIA Kowloon Tower, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong
賓尼斯工程顧問有限公司
香港九龍觀塘巧明街 100 號友邦九龍大樓 43 樓
+852 2601 1000 +852 2601 3988 binnieshk@binnies.com

1. Project Description

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 works in TCW. Waste Management Plan for TCE can be found at dedicated project website: http://env.tcnte.hk/ep-submissions.html.

2. Scope of Works for Tung Chung New Town Extension

The Tung Chung New Town Extension project (the Project) comprises the following elements:

(i) reclamation of the seabed by a non-dredged method at TCE to form a total of about 130 hectares of land;
(ii) construction of about 4.9 kilometers of seawalls, with an eco-shoreline, three drainage box culvert outfalls, three circulation drains and a seawater intake at TCE;
(iii) provision of infrastructure for Tung Chung Area 58, including construction of a single two-lane road with a footpath and the associated utility works;
(iv) site formation works at TCW;
(v) construction of the River Park including a visitor centre at TCW;
(vi) construction of proposed open space;
(vii) construction of sustainable urban drainage systems at TCW;
(viii) construction of roads, footpaths, cycle tracks and the associated junction / road improvement works;
(ix) engineering infrastructure works covering drainage, sewerage, waterworks (including a fresh water service reservoir, a salt water service reservoir and a salt water pumping station), common utility tunnels and landscaping works; and
(x) implementation of environmental mitigation measures and environmental monitoring and audit programme for the works.

3. Implementation Programme

The Contract No NL/2020/05 – Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung (i.e. Contract 5) at TCW has been awarded in May 2021 and is scheduled for completion in 2025. The main contractor for Contract No. NL/2020/05 is Build King – Richwell Civil Joint Venture (BKRCJV).

The Contract No NL/2020/06 – Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1 (i.e. Contract 6) at TCW has been awarded in May 2021 and is scheduled for completion in 2025. The main contractor for Contract No. NL/2020/06 is China Railway Group Limited (CREC).

The detailed design for the first phase of site formation and infrastructure works at TCE and TCW (First Phase development) has been completed, while the detailed design for the remaining phase of site formation and infrastructures works is in progress.

4. Submission under EP

In view that only the site formation and infrastructure works at Ma Wan Chung (i.e. Contract 5) and Tung Chung Valley, Phase 1 (Contract 6) at TCW have commenced, this submission is prepared based on the latest information of Contract 5 and Contract 6. The submission shall be updated before commencement of construction of the respective contracts for the site formation and infrastructure works at TCW according to the relevant requirements contained in the EM&A Manual, EIA Report and EP.

The Waste Management Plan for Contract 5 is provided in **Attachment I** below.

The Waste Management Plan for Contract 6 is provided in **Attachment II** below.

Attachment I

Waste Management Plan for

Contract No. NL/2020/05

Tung Chung New Town Extension –

Site Formation and Infrastructure Works at Ma Wan Chung

Build King – Richwell Civil Joint Venture

Waste Management Plan

For

Contract No. NL/2020/05

Tung Chung New Town Extension –

Site Formation and Infrastructure Works

at Ma Wan Chung

Rev. 07

Prepared by:

Calvin Chan
Environmental Officer

Approved by:

Ricky Hon
Site Agent

Date: 23rd February 2022

REVISION HISTORY

Revision	Revised Date	Section	Description of Change
00	17/05/2021	NA	First Submission
01	10/06/2021		Addressed ET & IEC comments
02	30/06/2021		Addressed ET & IEC comments
03	01/09/2021		- 1.2 "The Works do not involve any land formation nor surcharge operation." Is added - 1.18 "…. on a regular basis…." - 4.3 bullet points r. & s. are added - Appendix 6 "Implementation Schedule of Major Waste Management Measures" was updated - Appendix 7 "Method Statement for stockpiling and transportation of excavated materials and other construction wastes" was added
04	10/11/2021	5.3	GPS
		Table 3.2	"Alternative Disposal Ground (Other Project)" added
05	20/12/2021	5.3	GPS
		5.4	Illegal Dumping and Landfilling of C&D Materials
		Appendix 6	"WM4" of Appendix 6 (Implementation Schedule) was updated and revised
06	25/01/2022		- 5.1 Revised - 5.3 Revised - Appendix 1 cover and org. chart updated - Appendix 5 Revised - Appendix 6 Revised - 4.3 Updated
07	23/02/2022		- 5.3 Revised - Appendix 1 of the Appendix List - Appendix 1 Covering Title - Appendix 6

CONTENT

APPENDIX

Appendix 1	-	Project Environmental Organisation Chart of Build King – Richwell Civil Joint Venture (BKRJV) for Waste Management
Appendix 2	-	C&DM Disposal Programme (Estimation for the whole project period)
Appendix 3	-	Monthly Summary of Waste Flow Table and Summary Table for Use of Timber in Temporary Works
Appendix 4	-	Sample of CHIT & Daily Summary Record
Appendix 5	-	Mitigation Measures
Appendix 6	-	Implementation Schedule of Major Waste Management Measures
Appendix 7		Method Statement for stockpiling and transportation of excavated materials and other construction wastes

1. INTRODUCTION

1.1. Background

This Waste Management Plan ("WMP") details the C&D material disposal arrangement and procedures to be employed by **Build King – Richwell Civil Joint Venture (BKRCJV)** to control and manage C&D waste disposal activity arise during the construction of the Contract No. NL/2020/05 Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung**.**

1.2 Scope of Works

The works mainly comprise:

(i) Site clearance (including, but not limited to, the demolition of the existing building structures);
(ii) Site formation works for Area 23 with associated geotechnical works;
(iii) Widening of Tung Chung Road North with associated geotechnical works;
(iv) Construction of carpark at Ma Wan Chung, and associated road works and geotechnical works;
(v) Carry out road improvement works and drainage works at Chung Yan Road;
(vi) Construction of open space at Tung Chung Area 29A and the coastal pedestrian access;
(vii) Renovation works of existing site offices and promenade improvement works;
(viii) Yard Waste Disposal and Treatment;
(ix) Ground investigation, geotechnical and building instrumentation monitoring works;
(x) Associated civil, geotechnical, structural, building services systems, electrical and mechanical engineering and landscaping works; and
(xi) Implementation of environmental mitigation measures, environmental monitoring and audit programme for the works mentioned above.

The Works do not involve any land formation nor surcharge operation.

1.3 Purpose 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 Waste Management Plan are: -

- To ensure that all construction site personnel will avoid and / or minimise the on-site generation of Construction and Demolition (C&D) material;
- To identify various types of wastes;
- To reuse and recycle the C&D and excavated materials, and to keep the construction site clean and tidy, and
- To propose proper methods of collecting, transportation and disposal of C&D wastes generated from the Project.

1.4 Waste Management Requirements and Guidelines

BKRC JV will comply with the following legislations, code of practices, guidelines, practical notes and technical circulars during construction period.

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. 132BK);
- Land (Miscellaneous Provisions) Ordinance) (Cap. 28);
- Dumping at Sea Ordinance (Cap. 466); and
- Dangerous Goods Ordinance (Cap.295)

Codes of Practice, Circulars and Guidelines

BKRCJV 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. Project Administration Handbook for Civil Engineering Works", 2020 Edition, CEDD, Chapter 4 Section 4.1.3 – 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. Project Administration Handbook for Civil Engineering Works", 2020 Edition, CEDD, Chapter 4 Section 4.13 & Appendix 4.14 – 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. Chapter 9 "Environment" of Hong Kong Planning and Standards Guidelines, Hong Kong Government.
t. Guidelines on Yard Waste Reduction and Treatment

BKRCJV 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. BKRCJV will also apply for all necessary permits and licenses under these ordinances / regulations.

1.5 License Requirements

Where appropriate, BKRCJV 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. Organization for Site Management

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 Site 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 acts as Deputy Waste Manager and Team Leader of the 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 1 of Project Environmental Organization Chart).

Project Manager PM / Construction Manager CM (Chairman)

The PM / 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 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

Environmental Officer, EO

- Overview in relation to waste management and Report to the SA
- Direct ES and GF as appropriate in supervising and enforcing the on-site mitigation measures
- Ensure all disposal records be promptly available for record or/and action as necessary
- 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 2.

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.

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.

The handling / management of each waste type are detailed in Section 4.

3.1.5 Yard Waste

Yard Waste including (a) Grass clippings, leaves, bushes, shrubs and twigs; (b) Tree trunks and branches; (c) Tree stumps shall be sorted on site for the purpose of recycling and should not be considered as waste for disposal except for the parts of plant carrying contaminants, chemical residues, diseases or pests. Yard waste without contaminants, chemical residues, diseases or pests shall be disposed of at site for reuse or recycling, accepted local recycled wood/wood-plastic-composite manufacturer(s) / EPD's Organic Resource Recovery Facility (ORRC).

A Temporary Yard Waste Disposal Workshop will be set up to cut and shredded into wood chips in order to meet the collection requirement of recycling outlets. A 3-Bin Composting System will also be set up to collect, sort and chip yard waste appropriate for composting.

Yard Waste Handling and Disposal Plan will be submitted separately.

3.2 Designated Waste Disposal Facilities and Disposal Criteria

The designation of disposal facilities as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) and Particular Specification clause 25.25S(1) are listed below:

C&DM	Inert	Non-Inert	Chemical Waste	Yard Waste
Disposal Facilities	Alternative Disposal Ground (Other Project)/ Tuen Mun Area 38 Fill Bank	North East New Territories (NENT) Landfill	Chemical Waste Treatment Facility located at Tsing Yi	accepted local recycled wood / wood-plastic-composite manufacturers(s) / EPD's Organic Resource Recovery Facility (ORRC) / depots / EPD's Animal Waste Composting Plant (AWCP) /facilities

BKRCJV will also comply with the following requirement when delivery of construction waste to the Public Filling Facility or 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) BKRCJV 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. PROPOSAL FOR WASTE MANAGEMENT

4.1 Waste Management Hierarchy

BKRCJV 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, BKRCJV 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 labelled 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, labelling, 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.
r. Maximizing the use of excavated material for backfilling within site including but not limited to pile caps, formation, retaining wall, slope, etc, as far as practicable.
s. Maximizing the use of excavated material to other sites and will be transported to alternative disposal ground for reuse.

Mitigation measures according to the EIA will be implemented on site. The details are summarized in Appendix 5. The implementation schedule of major waste management measures is shown in Appendix 6. Method Statement for stockpiling and transportation of excavated materials and other construction wastes is shown in Appendix 7

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.

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/ Supervisor*.

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, BKRCJV 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 aluminium 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

Excavated Material

Following waste sorting, the remaining inert C&DM will be managed as follows:
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/ Supervisor*; whilst the ET, IEC and EPD would 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&DMs

Timber Waste

As far as possible, BKRCJV 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, BKRCJV will submit a method statement to the *Project Manager/ Supervisor* 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

BKRCJV 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, aluminium 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 labelled 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.

Yard Waste

Yard Waste including (a) Grass clippings, leaves, bushes, shrubs and twigs; (b) Tree trunks and branches; (c) Tree stumps shall be sorted on site for the purpose of recycling and should not be considered as waste for disposal except for the parts of plant carrying contaminants, chemical residues, diseases or pests.

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 labelled in accordance with the Code of Practice on the Packaging, Labelling 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, labelled 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, Labelling 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 labelled 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 Approved Facility 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 3.

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.

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

BKRCJV 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 analyse 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 Foreman, 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 General Foreman/ Foreman 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&DM, BKRCJV 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) / EO 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 Trip Ticket (CHIT).

General Procedure of the TTS

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

(1) BKRCJV 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). BKRCJV 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 4.

(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 Landfill)

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 JV'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 BKRCJV.

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 [https://www.epd.gov.hk/epd/misc/cdm/scheme.htm#j].

f) EO/ES shall complete Part 2 of the DRS form for submission to the *Project Manager / Supervisor* 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 / Supervisor* under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), BKRCJV shall submit to the *Project Manager / Supervisor* 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 / Supervisor* 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 *Project Manager / Supervisor*.

Informing the Truck Drivers

BKRCJV 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 CHIT.

(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 and landfilling of C&D materials.

A agreed sample of the “CHIT” and Daily Summary Table (DRS) is given at Appendix 4.

5.2 Waste Recording System

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

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

- 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.

BKRCJV 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 *Project Manager / Supervisor*
- 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 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.

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.

Real-time Vehicle Location with Cluster, signal refresh in every 30 second, time, license plate number, Electronic scale for every trip of trucks carrying C&D materials for disposal from site will be recorded. It enables relevant parties (PM, ET, IEC and the Contractor) to view the exact location of the fleet from the Website/ Application at any time, and monitor driver activity and routing. Track Reply with Graph and detail track report history for the routing of every delivery will be downloaded and recorded, and retrievable for inspection.

Geofences will be set for the designated disposal locations, i.e. NENT Landfill and TM38 Fill Bank, and other locations approved by the Project Manager / Supervisor. Geofences are designated areas that can be defined on a map. They can either be a certain radius around a single point or any shape that create from several points. When trucks enter/ trigger the Geo-fencing Zone, GPS data such as travelling routes, travelling time for every delivery, etc. via the Automatic Notification System will be recorded. An alert email will be sent to ET, IEC, the Project Manager / Supervisor, the contractor and surveillance team at the end of each working day if the dump truck does not reach designated disposal locations after leaving the project site. Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the GPS data such as travel routings, parking locations, etc. on a daily basis. The corresponding historical GPS vehicle location data will 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, etc. for the purpose of cross-checking and analyzing the time used for the delivery, traffic routing, weight different for any irregularities and suspected illegal dumping situation. It ensures that the trucks are disposing of the C&D material to the designated disposal locations after leaving the site. Also, ET, IEC, the Project Manager / Supervisor, the contractor and surveillance team can track the real-time position of the trucks on the web-based application.

To ensure that all C&D materials are disposed of at the designated disposal locations, at the end of each working day, in case that any dump truck does NOT reach the designated disposal locations after leaving the project site, the GPS monitoring system will automatically generate alert through email to the relevant parties (e.g. ET, IEC, Project Manager, contractor, surveillance team, etc.) for follow up on any suspected irregularity and illegal dumping situation. The information of automatic notification includes relevant details, such as vehicle licence plate, event time, vehicle location, etc. Prohibited Zone on Tung Chung Road (section of Tung Chung Road south of Shek Mun Kap Road and all roads in south Lantau) or other areas designated as prohibited zones in Tung Chung can be set by the real time tracking and monitoring (RTTM) system, and signal (by email) will be sent to the ET, IEC, Project Manager, contractor, surveillance team or other default users immediately once any irregularities / non-compliance are triggered. The notification emails records of the C&D materials disposal by trucks are to be checked by EO/ ES to confirm whether all the dump trucks travel to the designated disposal locations after leaving the construction site.

5.4 Illegal Dumping and Landfilling of C&D Materials

Surveillance Team, appointed under EP Condition 2.6, will conduct regular site inspections to identify and report immediately to IEC, the *Project Manager / Supervisor* and the Director of Environmental Protection through email on suspected illegal dumping and landfilling of C&D materials within the Project site throughout the construction phase.

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 the *Project Manager / Supervisor* 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 *Project Manager / Supervisor* 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 the *Project Manager / Supervisor*;
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 (ET), Independent Environmental Checker (IEC) and *Project Manager / Supervisor* 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 *Project Manager / Supervisor* 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 *Project Manager / Supervisor* 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 the *Project Manager / Supervisor*. 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 *Project Manager / Supervisor* 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 (ET), Independent Environmental Checker (IEC) and *Project Manager / Supervisor* 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 the *Project Manager / Supervisor* within 2 working days.
2. The Contractor will discuss with the *Project Manager / Supervisor* for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.0 AUDITING PROPOSAL

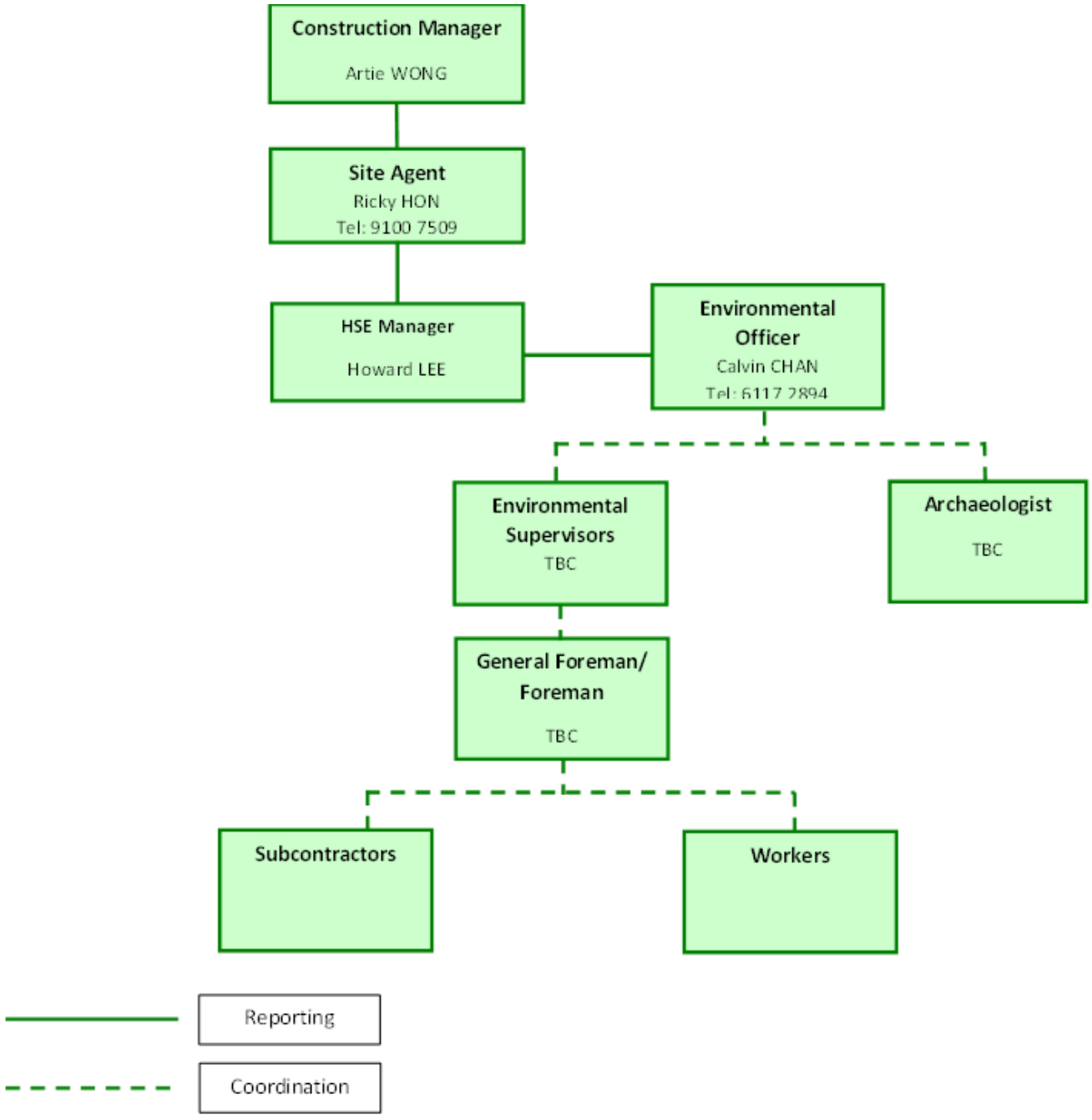
General Foreman and EO/ES will conduct weekly site inspections to ensure this WMP is properly followed. In addition to internal audit will be performed to review the effectiveness on the implementation of this WMP:-

- Internal audits will be performed in line with the WMP by an experienced senior staff.
- 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 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 1

PROJECT ENVIRONMENTAL ORGANISATION CHART OF BUILD KING – RICHWELL CIVIL JOINT VENTURE (BKRJV) FOR WASTE MANAGEMENT



Noted: to be update when necessary

APPENDIX 2

C&DM DISPOSAL PROGRAMME (ESTIMATION FOR THE WHOLE PROJECT PERIOD)

Forecast of Total Quantities of C&D Materials to be Generated from the Contract *									
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)
87.257	3.000	24.275	11.000	31.400	17.582	0.000	0.000	0.000	0.000	10.000

Notes:
(1) The performance targets are given in PS clause 25.24
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Sites
(3) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials
(4) The summary table shall be submitted to the *Project Manager*/ *Supervisor* monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24

APPENDIX 3

MONTHLY SUMMARY OF WASTE FLOW TABLE AND SUMMARY TABLE FOR USE OF TIMBER IN TEMPORARY WORKS

Name of Department: ArchSD/CEDD/DSD/EMSD/HyD/WSD Contract No.: _____

Monthly Summary Waste Flow Table for ____ (year)

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 3)	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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total											

Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

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:
(1) 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.
(2) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24.

APPENDIX 4

SAMPLE OF CHIT AND DAILY SUMMARY RECORD


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

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:

帳戶名稱:
Name of the Account-holder:

有效期至:
Valid Until:

帳戶編號:
Account No.:

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

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

Sample

E 199279

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the Site
[With reference from PS Appendix H6 , Clause 25.25s (6) (A) (ii)]
"每日運載記錄撮要" 記錄每日由地盤所傾卸的拆建物料

Build King – Richwell Civil Joint Venture

(1) Contract no. & Title: 合約編號及名稱 : NL/2020/05 Tung Chung New Town Extension - Site Formation and Infrastructure Works at Ma Wan Chung

(2) Date of disposal 傾卸日期: _____

(3) Disposal ground(s) designated in the Contract or directed by the *Project Manager/ Supervisor* 合約指定項目經理 / 監管人員指示接收設施:

(a) Tuen Mun Area 38 Fill Bank
(b) North East New Territories Landfill
Other 其它 _____

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

CHIT/ DDF no. 載運人帳票/拆建物料運載記錄單編號	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 *Project Manager/ Supervisor*'s supervisory staff before departure or other time as agreed between the *Project Manager/ Supervisor*'s delegate and the Contractor[1] 於離開地盤前或其它經承建商與項目經理 / 監管人員代表同意的時間, 項目經理 / 監管人員代表姓名及簽名		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:
							Name 姓名	To sign as to indicate spot checked dump trucks at exit 經已在出口抽查泥頭車，項目經理 / 監管人員代表簽名			

Part 1[甲部] Part 2[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 *Project Manager / Supervisor*'s delegate] 項目經理 / 監管人員代表姓名及簽名

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 *Project Manager/ Supervisor*'s Representative承建商填寫甲部兩份, 副本由項目經理 / 監管人員代表持有

[2] Part 2 乙部 – The Contractor shall complete Part 2 and submit the whole Summary to the *Project Manager/ Supervisor*'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個工作天內呈交給項目經理 / 監管人員代表

Rev.: 07

Title: **Waste Management Plan**
Contract No. NL/2020/05 Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung

Build King – Richwell Civil Joint Venture

Build King – Richwell Civil Joint Venture

APPENDIX 5

MITIGATION MEASURES

Mitigation Measures in 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 C&D material 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.

Excavated Contaminated Soil

1.15 Land Contamination issue is subject to site investigation conducted prior to construction. Guidelines/ Recommendations stipulated in land contamination guidelines/manual and other land contamination plans/ reports are required to be implemented prior to the construction phase to minimize any potential exposure to contaminated soils or groundwater.

Chemical Waste

1.16 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.

1.17 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

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

APPENDIX 6

IMPLEMENTATION SCHEDULE OF MAJOR WASTE MANAGEMENT MEASURES

Environmental Mitigation Implementation Schedule - Tung Chung New Town Extension

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		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. • Recyclable materials such as steel mesh, reinforcement bars, window frames, railing, banisters, and wooden planks will be separated from other C&DM and either be reused on site or re-sale for recycle. • Dry concrete waste, including broken concrete from demolition works, will be sorted out from the other wastes for reuse in site temporary road construction, as far as practicable.	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
		2.1 4.5.1 App. 5 - 1.5 & 1.6 4.3 App. 5 - 1.6 App. 5 - 1.2 App. 5 - 1.2 4.4 4.4.1						

Environmental Mitigation Implementation Schedule - Tung Chung New Town Extension

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	WM2	4.4 4.4 App. 5 - 1.11 4.4.1 4.5.1	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	4.4 App. 5 - 1.5, 1.17 & 1.18	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

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	WM4	4.4 App. 5 - 1.6 1.5 3.2 5.3	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. • all dump trucks engaged on site will be equipped with Global Positioning System (GPS) for monitoring of travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials • Geo-fencing Zone, GPS data such as Travelling routes, Travelling time for every delivery via the Automatic Notification System will be recorded. • GPS data with the Trip Ticket System of 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 will be consolidated. • real-time position of the trucks can be tracked on the web-based application • The GPS monitoring system will automatically generate alert through email to the relevant parties (e.g. ET, IEC, Project Manager, contractor, surveillance team, etc.) if dump truck does not reach designated disposal locations after leaving the project site at the end of each working day for follow up on any suspected irregularity and illegal dumping situation.	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance

Environmental Mitigation Implementation Schedule - Tung Chung New Town Extension

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	WM5	App. 5 - 1.8 App. 5 - 1.10 & 1.11 App. 5 - 1.8 5.1 4.3	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: • On-site sorting of C&D materials • Reuse of C&D materials • Use of Standard Formwork and Planning of Construction Materials purchasing • Maximizing the use of excavated material to other sites and will be transported to alternative disposal ground for reuse.	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
S7.4.1	WM6	App. 5 - 1.14	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

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	WM7	4.4 & App. 5 - 1.15	Excavated Contaminated Soil Guidelines/ Recommendations in land contamination assessment guidelines/ manual and land contamination plans/ reports are required to be implemented prior to the construction phase to minimise any potential explosure to contaminated soils or groundwater.	Remediate contaminated soil	Contractor	All construction sites where applicable	Prior to the Construction stage	Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management
S7.4.1	WM10	3.1.4, 4.4.2, App. 5 - 1.16 & 1.17	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
S7.4.1	WM11	4.4.1 & App. 5 - 1.18 App. 5 - 1.18 4.4.1 & App. 5 - 1.18	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

APPENDIX 7

METHOD STATEMENT FOR STOCKPILING AND TRANSPORTATION OF EXCAVATED MATERIALS AND OTHER CONSTRUCTION WASTES

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

1. Scope of Work

In accordance with Section 4.3 of the EM&A Manual, a method statement for stockpiling and transportation of excavated materials and other construction wastes should be included in the Waste Management Plan (WMP) and shall be approved before the commencement of construction work. This method statement describes the followings:

- 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, rock and concrete debris materials which will , as far as practicable, be reused on-site for the backfilling works.
- Excavated material will be generated from site formation work, slope excavation work, foundation work, underground services works and any temporary works for excavation. Any surplus excavated material will be temporarily 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 as far as possible.
- 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 shelter, additional of pumps to drain out rainwater, etc.

2.2 Transportation of Excavated Materials

- Excessive excavated material will be transported to other sites (alternative disposal ground) for reuse as approved by the *Project Manager/ Supervisor*; whilst the ET, IEC and EPD would be informed.
- The excavated material will be wet or covered by tarpaulin sheeting when it is dry in order to control dust suppression in work area.
- Truck(s) loaded with excavated materials would be covered with mechanical cover before leaving the site in order to prevent dust emission.
- For the transportation of excavated materials, BKRCJV 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 Trip-Ticket System (SMPTTS) will be established which should be reviewed and updated on monthly basis.

2.3 Transportation of Other Construction Waste

General refuse and C&DM

- Non-recyclable, non-inert C&DM and general refuse, which mainly consists of food waste , aluminum cans, waste paper, and demolition waste 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, as far as possible, for subsequent recycling as far as practicable. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste recycled will be recorded, controlled and monitored through the maintenance of WFT.
- The general refuse and the non-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 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, chemical Waste Producer registration will be made.
- Chemical wastes are likely to be generated during maintenance of plant and equipment, painting work 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 personal protective equipment.

- 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, i.e. Chemical Waste Treatment Facility located at Tsing Yi. 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.

Attachment II

Waste Management Plan for

Contract No. NL/2020/06

Tung Chung New Town Extension –

Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

Civil Engineering and Development Department
The Government of the Hong Kong Special Administrative Region

WASTE MANAGEMENT PLAN

G	23/02/22	Simon Mak	Gregory Lo
Rev	**Date**	**Prepared By** Environmental Officer	**Approved By** Project Manager

Contents

List of Appendices

Abbreviations List

C&D	Construction & Demolition
CEDD	Civil Engineering and Development Department
CM	Construction Manager
CHIT	Disposal Delivery Form
DSD	Drainage Services Department
DRS	Daily Record Summary
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring & Audit
EO	Environmental Officer
EPD	Environmental Protection Department
EP	Environmental Permit
ES	Environmental Supervisor
PFRF	Public Fill Reception Facility
PM	Project Manager (CREC)
PMR	Project Manager (ARUP)
SA	Site Agent
TTS	Trip Ticket System
WAC	Waste Acceptance Criteria
WFT	Waste Flow Table
WMP	Waste Management Plan

1. PROJECT DESCRIPTION

This Waste Management Plan (WMP) is developed China Railway Group Limited (known as CREC) in the execution of the following works. Environmental Permit (EP-519/2016) of this Project has been issued by Environmental Protection Department and the Waste Management Plan is to be prepared under EP Condition 2.24.

The works to be executed under the contract involve site formation and infrastructure works at Tung Chung Valley under Tung Chung New Town Extension (Contract No.: NL/2020/06). The date of commencement of construction work scheduled on 11 October 2021 and the works as described below:

(a) Site clearance (including, but not limited to, the demolition of the existing building structures);

(b) Site formation works for Area 42 and Area 46 with associated geotechnical works;

(c) Improvement works for Chung Mun Road and Shek Mun Kap Road with associated infrastructural and geotechnical works;

(d) Provision of infrastructural works at Yu Tung Road;

(e) Construction of Road L29 and Road L30 with associated infrastructural and geotechnical works;

(f) Provision of attenuation & treatment ponds;

(g) Provision of a Common Utility Trough and box culvert along Road L29;

(h) Provision of Pumping Stations;

(i) Construction of a proposed River Park with Visitor Centre, footbridge across river and other associated facilities;

(j) Provision of roadside Sustainable Urban Drainage Systems (SUDS) features;

(k) River de-channelization works;

(l) Construction of noise barriers;

(m) Woodland Compensation;

(n) Associated landscaping works;

(o) Tree felling, transplanting and compensatory planting works;

(p) Ground investigation, geotechnical and building instrumentation monitoring works; and

(q) Other works which are shown on the Drawings or specified in the Specifications.

No land formation works and surcharge operations are included in this project.

1.1 Purpose of the Plan

This Waste Management Plan (WMP) aims to describe the arrangements for avoidance, minimisation, handling, reuse, recovery and recycling, storage, transportation, collection, treatment and disposal of different categories of waste to be generated from the construction activities of this project with mitigation measures.

The main objectives of the WMP include:

(a) Providing reference to the waste management requirements, both statutory and non-statutory;
(b) Clarifying the responsibilities of each party on waste management and the personnel within CREC's management;
(c) Establishing the waste management procedures for avoidance, minimisation, material reuse/recovery/recycling, collection, transportation, storage and disposal of wastes generated from the activities.

1.2 Waste Management Policy

To demonstrate CREC's commitment on the continual improvement of our waste management performance, an Integrated Management Policy includes the waste management has been established. It aims to communicate CREC's waste management mission, vision and beliefs to the staff and public, it also provides a framework in guiding the project team the basic requirements to be achieved in waste management.

The policy will be reviewed by relevant parties periodically and will be displayed on notice board for the workforce.

The Environmental Policy Statement is listed below:

中國中鐵股份有限公司
CHINA RAILWAY GROUP LIMITED

Environmental Management Policy

CHINA RAILWAY GROUP LTD. (the Company) is conscious of the need and states intention to strive, through self-management, to ensure that the Client's contractual and statutory requirements under any contract is satisfactorily fulfilled in terms of environmental aspects on a planned and systematic manner. The Company intends to commit to meeting client requirements and increasing client satisfaction through maintaining the environment of continual development and improvement of its products, services, and effectively communicating the policy to the relevant parties working for or on behalf of the Company.

The Company commits to continually improve its environmental performance and, ultimately, to minimize or even prevent any environmental impacts of its operations, activities, products, and services. The Company will identify materials, processes, products and wastes that cause or may cause pollution, and will implement measures to avoid, reduce or control pollution where technically and economically viable. Also, the Company will comply with applicable environmental laws, regulations, codes of practice, and other requirements which relate to the environmental aspects to which the company subscribes. To achieve and maintain compliance, the Company will develop and maintain management systems for identifying relevant requirements and for monitoring performance of related activities.

The management and process objectives are used as appropriate to the nature of work in order to monitor the effectiveness of the Environmental Management System and express the commitment to continual improvement.

To achieve these objectives, the Company establishes and operates a formal Environmental Management System that fully complies with the requirements of ISO 14001: 2015 as described in this Manual.

Every single individual working for or on behalf of the Company should understand and follow this System.

This Management System covers the following:

- **Construction of civil engineering works (site formation, roads and drainage, waterworks)**
- **Design and construction of civil engineering works (roads)**
- **Design and construction of bored piling and H-piling works**
- **Construction of landslip preventive and remedial works to slopes and retaining walls**

2. REGULATIONS AND GUIDELINES

2.1 General

Various types of wastes would be generated during the course of the Project (Contract No.: NL/2020/06) and each waste types requires different approach for management and disposal as stipulated in the waste legislation and guidelines. The relevant statutory and non-statutory requirements regarding waste management are summarised in the sections below.

2.2 Statutory Requirements

The following legislation relates to the handling, treatment and disposal of wastes in Hong Kong, and would be observed with regard to all wastes generated and requiring disposal, where applicable:

- The Waste Disposal Ordinance (Cap 354)
- The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C)
- The Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354N)
- The Land (Miscellaneous Provisions) Ordinance (Cap 28)
- The Public Health and Municipal Services Ordinance (Cap 132BK) - Public Cleansing and Prevention of Nuisances (Urban Council) and (Regional Council) By-Laws
- Summary Offences Ordinance (Cap 228)
- Dumping at Sea Ordinance (Cap 466)
- Other relevant regulations

2.2.1 The Waste Disposal Ordinance (WDO)

The Waste Disposal Ordinance (WDO) prohibits the unauthorised disposal of waste. Construction waste is not directly defined in the WDO, but is considered to fall within the category of "trade waste." Under the WDO, wastes can only be disposed of at sites licensed by EPD.

2.2.2 The Waste Disposal (Chemical Waste) (General) Regulation

Under the Waste Disposal (Chemical Waste) (General) Regulation all producers of chemical wastes (including asbestos) must register with EPD and treat their wastes either utilising on-site plant licensed by EPD, or arranging for a licensed collector to take the wastes to a licensed facility. The regulation also prescribes the storage facilities to be provided on site, including labeling and warning signs, and requires the preparation of written procedures and training to deal with emergencies such as spillages, leakages, or accidents arising from the storage of chemical wastes.

2.2.3 The Waste Disposal (Charges for Disposal of Construction Waste) Regulation

The current policy related to the dumping of C&D material is documented in the Works Branch Technical Circular No. 2/93, 'Public Dumps'. Construction and demolition materials that are wholly inert, namely public fill, should not be disposed of to landfill, but taken to public filling areas, which usually form part of reclamation schemes.

Under the WDO and the Charging Regulation, wastes can only be disposed of at designated waste disposal facilities licensed by EPD. For construction work with a value of more than HK$1M, the main contractor is required to establish a billing account at EPD before transporting the construction waste to the designated waste disposal facilities (e.g. landfill, public fill etc.). The vessels for delivering construction waste to public fill reception facility

would need prior approval from EPD. Breach of these regulations can lead to a fine and/or imprisonment.

2.2.4 The Land (Miscellaneous Provisions) Ordinance

The Land (Miscellaneous Provisions) Ordinance requires that dumping licences be obtained by individuals or companies who deliver public fill to public filling areas. The Civil Engineering & Development Department (CEDD) issues the licences under delegated powers from the Director of Lands.

2.2.5 The Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances (Urban Council) And (Regional Council) By-Laws

The Public Cleansing and Prevention of Nuisances By-Laws provide further controls on the illegal tipping of wastes on unauthorised (unlicensed) sites.

2.2.6 Related Licence and Permits

CREC would obtain all necessary permits and licenses under these ordinances including, but not limited to:

- Registration as a Chemical Waste Producer under the Waste Disposal Ordinance (Cap 354C);
- Public Dumping License under the Land (Miscellaneous Provisions) Ordinance (Cap 28);
- Registration as a Waste Producer under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354N).

2.3 Non-Statutory Regulations

The following guidelines related to waste management and disposal would be adhered to during construction of the Project:

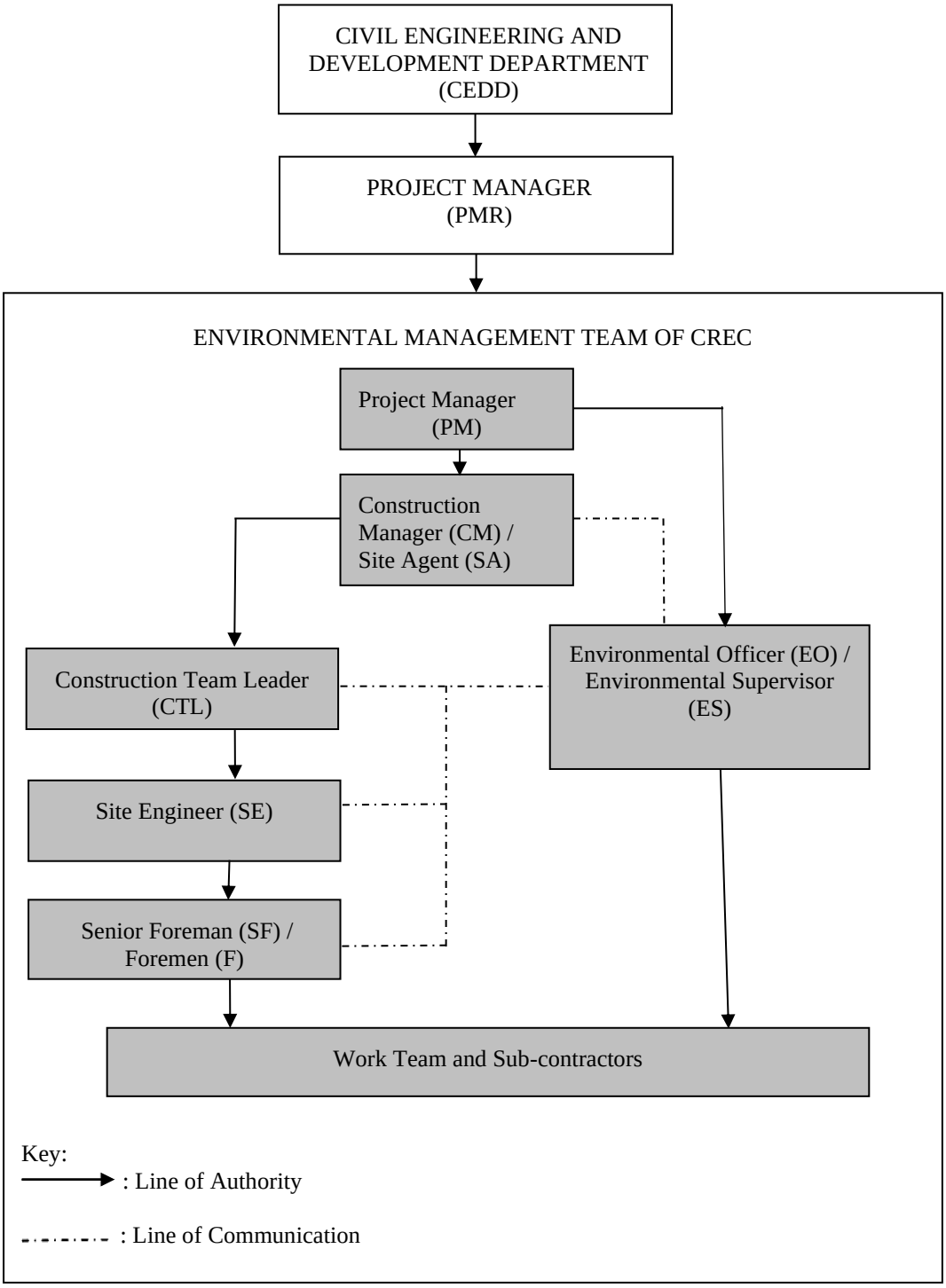
- Waste Disposal Plan for Hong Kong (1989), Planning, Environmental and Lands Branch Government Secretariat;
- Environmental Guidelines for Planning in Hong Kong. Hong Kong Planning Standards and Guidelines (1990);
- New Disposal Arrangements for Construction Waste, EPD and CEDD (1992);
- Code of Practice on the Packaging, Labelling and storage of Chemical Wastes EPD (1992);
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste, EPD;
- Works Branch Technical Circular No. 12/2000, Fill Management, Works Bureau, HKSAR Government;
- Works Branch Technical Circular No. 29/2000, Waste Management Plan, Works Bureau, HKSAR Government;
- Environment, Transport and Works Bureau Technical Circular (Works) (PAH Chapter 4 Section 4.1.3), Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau, HKSAR Government;
- Works Branch Technical Circular (PAH Chapter 4 Section 4.13 & Appendix 4.14), the Use of Tropical Hard Wood on Construction Site, Works Branch, Hong Kong Government;
- Works Branch Technical Circular No. 2/93, Public Dumps, Works Branch, Hong Kong Government;
- Works Branch Technical Circular No. 16/96, Wet Soil in Public Dumps, Works Branch, Hong Kong Government;

- Works Bureau Technical Circular NO. 4/98 and No.4/98A, Use of Public Fill in Reclamation and Earth Filling Projects, Works Bureau, HKSAR Government;
- Works Bureau Technical Circular No. 5/98, On-site sorting of Construction Waste on Demolition Site, Works Bureau, HKSAR Government;
- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat, 5 November 1998;
- Works Bureau Technical Circular No. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness, Works Bureau, HKSAR Government;
- Works Bureau Technical Circular No. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers, Works Bureau, HKSAR Government;
- A Guide to the Registration of Chemical Waste Producers; and
- A Guide to the Chemical Waste Control Scheme.
- Works Bureau Technical Circular No. 6/2010, Trip-ticket System for Disposal of Construction and Demolition Materials.
- Environmental, Transport and Works Bureau Technical Circular (Works) No. 19/2005, Environmental Management on Construction Sites
- Hong Kong Planning Standards and Guidelines (2020)

3. PROJECT ORGANISATION

The Project Environmental Management Organisation Chart depicting the functional inter-relationship of personnel is shown in **Figure 3.1**. The purpose of this is to clearly indicate the managerial control, the reporting structure and the interface relationship between all parties involved in the Trip Ticket System (TTS) issue prior to issue of the disposal record to the Project Manager (PMR).

Figure 3.1: Organisation Structure for Environmental Management Team of CREC



Duties and Responsibilities

The environmental roles and responsibilities are summarised in the following table:

Title	Responsibilities
Project Manager (PM) / Construction Manager (CM) / Site Agent (SA) / Construction Team Leader (CTL) / Site Engineer (SE)	• Responsible for ensuring commitment to environmental performance is fulfilled and assigning adequate resources and facilities to provide an effective implementation of waste management on site; • Attend the Site Safety & Environmental Committee (SSEC) Meeting if required; • With the assistance of the Environmental Officer, oversee the implementation and performance of the WMP; • Responsible for all site operations, staff supervision, control, coordination & planning, external liaison as well as implementing and monitoring necessary corrective actions; • Carry out immediate action to rectify any non-compliance of this WMP as well as handle any complaints received; and • Ultimately responsible for the company's environmental performance on site.
Environmental Officer (EO) or the Assigned Person	• Overall coordination, monitoring and overseeing the performance and implementation of the WMP for the Contract and directly reports to the PM/CM/SA; • Review and revised the Waste Management Plan and ensure works to be executed in accordance with the plan; • Monitor and control the works including those of subcontractors to ensure compliance with specified requirements; • Assist in handling any complaints received and suggest remedial action; • Update the monthly summary of Waste Flow Table (WFT); • Update the monthly summary of Use of Timber; • Record regarding the handling of chemical wastes; • Record regarding the disposal of all construction and demolition waste to public filling area and landfills; • Co-ordinate with Environmental Team to ensure waste management issues are properly handled; and • Attend the Site Safety & Environmental Committee (SSEC) Meeting.
Environmental Supervisor (ES)	• Responsible for the implementation of this Waste Management Plan with the assistance of the Senior Foreman / Foreman; • Assist the EO to rectify any non-conformances being identified; • Responsible for collecting chit records to update the Daily Record Summary (DRS);

	• Attend environmental meetings whenever necessary; • Assist with EO on any environmental matter; • Carry out ad-hoc environmental inspections to identify deficiencies on site; and • Attend the Site Safety & Environmental Committee (SSEC) Meeting.
Site Engineer (SE)	• Coordinate with the EO regarding the implementation of all appropriate waste mitigation measure; and • Report to the PM/CM/SA/EO regarding any non-compliance of waste management plan.
Senior Foreman (SF) / Foreman (F)	• Responsible for implementing and overseeing the operation of the TTS Implementing and overseeing the operation of the TTS including but not limited to fill in and sign Part 1 of the Daily Record Summary (DRS) properly before departure of the truck; • To man each exit from the site to ensure each dump truck carrying C&D materials bears duly completed, signed/stamped DDF; • Assisting in the daily implementation of the Waste Management Plan including to ensure all waste is sorted, segregated, recycled or reused when applicable; • Ensuring waste is avoided and/or minimised as much as practically possible; • Signed the CHIT after ensuring the trucks leaving the site are all compliance the requirement; and • Ensuring the Waste Management Plan is followed and all appropriate paperwork to be collected and signed off.
Workers	• To carry out the waste management practice; • Sorting of different types of wastes; • Collection of wastes from each working site to the temporary storage area / fill banks / landfills; • General site cleaning; • Attend waste management training organized by the EO; and • To follow the Waste Management Plan.
Sub-contractors	• Follow and implement this Waste Management Plan measure on site; • Report non-compliance to CREC; • Keep the site cleaning; • Attend Site Safety & Environmental Committee (SSEC) meeting; and • Follow the corrective and/or preventive action suggested by CREC.

4. IDENTIFY THE WASTE ARISING FROM THE PROJECT

The following types of waste would be generated from the works on site.

- Non-Inert C&D waste (Including, waste wooden boards, non-recyclable plastic, empty container and packaging) & General refuse;
- Inert C&D Waste (including, broken concrete, asphalt, bricks, sand, aggregate);
- Yard Waste (Tree Trunks and Branch)
- Chemical waste;
- Recyclable waste (Metallic waste, recyclable plastic, cardboard and paper packaging)

4.1 Analysis of Waste Generation

Different types and quantities of waste will be generated throughout the construction activities and daily operation of the construction site. The major construction activities and the associated waste generating operations are identified as follows:

- Excavated materials (Inert C&D Waste)
- Site clearance, preparation establishment (Inert C&D Waste & Yard Waste)
- Scrap metals from piling construction and demolition (Metal)
- Timber from temporary work construction (Non-inert C&D Waste, and General Refuse)
- Debris from demolition (Inert C&D Waste)

Slurry/bentonite, hazardous waste and excavated sediments are not expected to generated through the project.

Table 4.1 Proposed Types of Waste and Disposal Outlet

Type of Waste		Generated from Project (m^3/kg/Tonnes/L)	Activities will generate	Re-used / recycle on site/on other Projects	Target recycling rate	Disposal (m^3/kg/Tonnes/L)	Proposed Disposal Outlet
Inert C&D Waste		80500T	Site formation works / Excavation works	20500 T	25.5%	60000 T	Alternative Disposal Ground (Other Project) / Tuen Mun Area 38 Fill Bank
Non-inert C&D Waste		315 T	Site formation works	0	0%	315 T	NENT Landfill
Non-inert - General Refuse		185 T	Employee's daily life	0	0%	185 T	NENT Landfill
Yard Waste		270T	Tree felling and pruning	0.27T	0.1%	269.73 T	Shredding Facility of the EPD/NENT Landfill
Chemical waste		400L	Machine maintenance, renovation work.	200L	50%	200L	Licensed Collector (ECO Space Limited/CWTC)
Recyclable waste	Metal	1000T	H-pile, sheet-pile, Rebar	600 T	60%	400 T	Baguio Waste Management & Recycling Limited Phone: 34436315 Email: waste@baguio.com.hk
	Plastic	300 kg	Waste water Barrier/plastic railing, plastic bottle	180 kg	60%	120 kg	Baguio Waste Management & Recycling Limited Phone: 34436315 Email: waste@baguio.com.hk
	Paper / Cardboard	500kg	Packaging, Site office	300kg	60%	200 kg	Baguio Waste Management & Recycling Limited Phone: 34436315 Email: waste@baguio.com.hk
	Glass	50kg	Waste glass, bottle	30kg	60%	20 kg	Baguio Waste Management & Recycling Limited Phone: 34436315 Email: waste@baguio.com.hk

Table 4.2 Generation schedule of both inert and non-inert C&D waste

Type of fill	2021	2022	2023	2024	2025	Total
Inert C&D - Disposal (m^3)	0	0	50000	10000	0	60000
Inert C&D - Re-used / recycle site/on other Projects (m^3)	1000	10000	8000	1500	0	20500
Non-Inert C&D -Disposal (Ton)	30	140	70	70	5	315
Non-Inert General Refuse -Disposal (Ton)	20	60	50	50	5	185

5. RECYCLING RATE TARGET

The following performance targets shall be achieved:

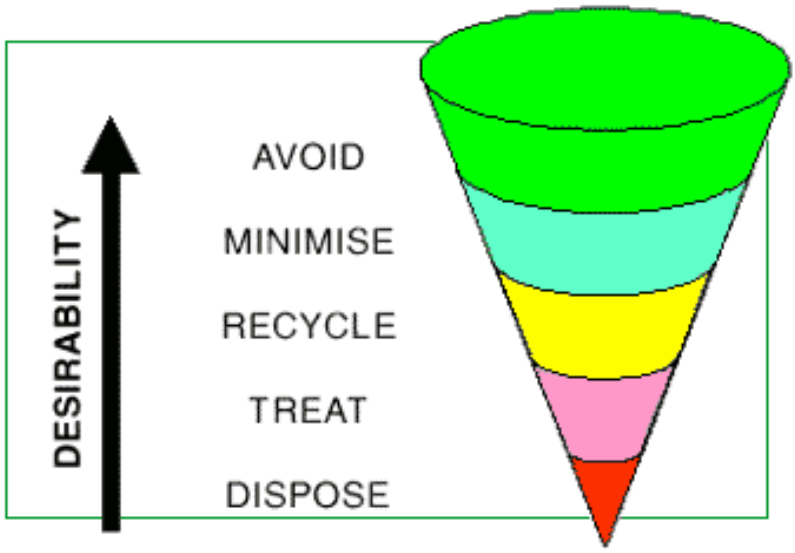
- 60% recovery of metallic waste;
- 60% recovery of non-contaminated paper and cardboard;

6. SITE SPECIFIC WASTE MANAGEMENT

6.1 Waste Policy Principles

Key to waste management is to reduce the amount of waste generated from the work site. The hierarchy of waste management is illustrated below. It attempts to evaluate waste management practices and selects the best practical option since conceptually it makes sense to avoid producing a waste rather than developing extensive treatment schemes.

Good planning and site management practices also help minimising over ordering or misuse of construction materials. Thereafter, encourage reuse and recycling of construction waste. The overall objective is to reduce and minimise the amount of wastes generated, hence reducing the costs of waste handling and disposal.



http://www.epd.gov.hk/epd/misc/cdm/management_intro.htm

In the context of waste reduction, environmentally responsible purchasing would involve the introduction of practices that discourage unnecessary purchases and encourage the purchase of products with reduced packaging, increased durability and materials with high recycled content, such as, recycled paper, steel and other raw construction materials.

Waste minimisation is best achieved through careful planning, design and supervision. Good management practices would reduce and prevent large amount of waste generated. Raw materials would be managed from the first instance before they are ordered and delivered to the site. Good estimation and planning would minimise the amount of raw materials wasted. The generation of waste would be controlled at source.

6.2 Waste Management Hierarchy

The waste management hierarchy will be applied and development of mitigation measures for waste which aims at evaluating the desirability of waste management methods and includes the followings in descending preference:

- Avoidance and reduction of waste generation;
- Reuse of materials as far as practicable;
- Recovery and recycling of residual materials where possible; and
- Treatment and disposal according to relevant laws, guidelines and good practices.

The waste management measures are presented in the next section and the implementation schedule is shown in Appendix D. The site layout plan of the waste management facilities is shown in Appendix E.

6.3 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 CREC's 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
- CREC 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 PMR for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.

6.4 Waste Reduction

Specific measures will be implemented to reduce the generation of waste materials, and thus minimise the amount of waste disposal to landfills. The measures will include:

- All dumped material should be sorted on site and approach, discuss and agree with CREC of interfacing contracts for disposal of inert construction waste for reuse, recovery and recycling;
- Recover all metallic waste for recycling;
- Recover all cardboard and paper packaging, and properly stockpile them in dry and covered condition to prevent cross contamination;
- Use of the materials (such as formworks and hoardings) in the construction would be calculated before purchasing in order to minimise waste generation;
- Use of metal formworks and hoardings, and they would be recycled after demolition on site as far as it can before disposal.

Good management and control of construction site activities / processes can minimise the generation of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Maximising the use of reusable steel formwork to reduce the amount of C&D material;
- Prior to disposal of C&D waste, it is recommended that wood, steel and other metals

shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc);
- Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials;
- Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated;
- Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and
- Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.

Measures to be implemented on site office to encourage waste avoidance/ minimisation include:

- Reducing the number of photos copies to a minimum and by copying on both sides of paper for internal documents and external documents where appropriate;
- Preventing over-ordering of office equipment and consumables;
- Procuring green office equipment and consumables in terms of energy efficiency, recycled content and durability, etc; and
- Deploying sufficient recycle bins in site offices to facilitate collection of recyclables including wasted aluminium cans, plastics bottles and papers.
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

6.5 On-Site Sorting and Temporary C&D Waste Disposal Area

Waste facilities will be provided on site to facilitate on-site sorting, collection and temporary storage of waste materials, they include:

- Designated area for temporary storage of Inert C&D Material;
- Designated area for temporary storage of C&D Material;
- Recycling cages for collection of waste metal, plastic and paper;
- Recycling bins for collection of waste papers, cans and plastic bottles; and
- Designated storage area for chemical waste.

6.6 Handling of C&D Materials

The storage, collection and transport of the C&D materials will be carefully planned and implemented to minimise any adverse impact upon the environment. The method statement for stockpiling and transportation of excavated materials and other construction wastes is shown in **Appendix F**. The C&D materials generated will be sorted on site into public fill and C&D waste for recycling as appropriate in accordance with Works Bureau Technical Circular No. 5/98 for on-site sorting of Construction Waste on Demolition Site, Works Bureau, HKSAR Government, or subsequent disposal at approved strategic landfills and public filling areas. Wherever practicable, the SF/F will arrange the segregation of these wastes on site in order to maximise 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. The SF/F will ensure that C&D materials are removed from their origin and processed at designated points in a timely manner.

Materials of recyclable value, such as steel mesh, reinforcement bars, window frames, railing, banisters, wooden planks, etc., will be separated from other C&D materials. These materials will either be reused by CREC on site or be sold and 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 PMR.

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;
- Disposal of waste should be done at licensed waste disposal facilities

6.6.1 On Site 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 SE/SF/Foreman will manage the on-site sorting facilities and promptly remove all the sorted and processed materials arising from or in connection with the works from the site to minimise the extent of temporary stockpiling on the site. The categories of C&D materials to be sorted within the on-site sorting facilities include:

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

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 on-site sorting facilities, CREC will provide separate refuse and recycling bins 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 wastepaper separately, plastic bottles and aluminium 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.

6.6.2 Inert C&D Materials

The remaining inert C&D materials, following site sorting, will be managed as follows:

Excess Excavated Material

In order to minimise the amount of excess excavated material to be delivered to public fill facilities, the priority for the management options of excess excavated material will be as followings: -

- Suitable excavated material will be stored for backfilling purposes;
- 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;
- 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;
- Excess excavated material will be transported to other projects for reuse as approved by the PMR;
- The ET and IEC will be informed of other projects/sites for reuse of excess inert C&D materials approved by PMR; and
- Only the amount of excavated material remaining after reused for backfilling purposes will be transported to the public fill facilities.

Inert C&D materials which are to be disposed to public filling outlets will be broken down to a size less than 250mm as according to Dumping Licence conditions prior to disposal. Wet soil with free water or a liquid content of over 70% and other materials such as marine mud, pond mud, household refuse, plastic, metal, industrial and chemical waste matter etc. will not be loaded into the dump truck. This will be controlled by the SF/F during the earthwork operations and further verified at the exit checkpoint by SF/F before the trip ticket is issued for each truck.

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.

All the remaining inert C&D materials will be transported to public fill as specified. The trip ticket system will ensure there is no illegal dumping of the above-mentioned materials.

6.6.3 Non-Inert C&D Materials

Timber Waste

CREC will avoid, reduce and minimise 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, CREC will submit method statement to the PMR for agreement prior to the commencement of the works.

Description, justification and the estimated quantity for every work process/ activity requiring the use of timber for temporary works construction will be documented in form of summary table in **Appendix C** which will be updated and submitted monthly to the PMR by the EO together with the monthly summary Waste Flow Table (WFT) for the purpose of ongoing monitoring and review. When timber waste has arisen on site, it will be sorted and collected daily by an assigned work team and will be stored in a designated storage area for subsequent use or collection by recycling contractors.

Metal Wastes

CREC 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.

Plastic Wastes

CREC will also avoid and reduce plastic waste during the design, planning and construction process. It will be considered for re-use in temporary or minor works on site. When plastic waste, including water barrier, road lantern, safety helmet, has been 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 Waste

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

The C&D waste will be temporarily stored and containers or skips with openable doors will be provided for temporary waste storage to prevent odour, pest and windblown litter. The containers or skips will be located at a demarcated area


Reuse of Water Filled Barrier

Recycled paper will be used for the Project. Usage of recycled paper will be further reduced by printing all documents, submissions and letters on both sides. Use of soft copy document instead of hard copy document is also encouraged. Printing of colour document is discouraged except it is absolutely necessary. Sacks for wastepaper and baskets for reusable papers will be provided in the Site office. The used paper shall also be collected by recycler for recycling. Further waste management will be implemented, if necessary.

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 labelled 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 waste will be collected and disposed of on a regular basis to minimise the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste haulier to strategic landfill. 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.

6.7 Excavated Contaminated Soil

Land contamination issue is subject to site investigation conducted prior to construction. Guidelines/Recommendations stipulated in land contamination guidelines/manual and other land contamination plans/reports are required to be implemented prior to the construction phase to minimize any potential exposure to contaminated soils or groundwater.

6.8 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, 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 labelled in accordance with the *Code of Practice on the Packaging, Labelling 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, labelled 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.

6.8.1 Handling of Chemical Waste

Handling of chemicals will be conducted in accordance with the *Factories and Industrial Undertakings Ordnance*, and the following measures should be adopted:

- No smoking is allowed in or near areas where chemicals are used or stored;
- Where necessary, chemicals should be used in accordance with the instructions given in MSDS. These documents are to be kept by the Safety Officer. All workers can request to access these documents;
- Where necessary, personal protective equipment and clothing, such as gloves and goggles should be worn while dispensing or using chemicals.

6.8.2 Storage of Chemical Waste

Chemical waste will be stored at designated storage areas in accordance with the *Code of Practice on the Packaging, Labelling 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.

Chemical Waste Store

The storage area for chemical waste will:

- be clearly labelled 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);
- be arranged so that incompatible materials are adequately separated; and
- be located away from watercourse (Tung Chung Stream).

6.8.3 Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to the Chemical Waste Treatment Centre (CWTC) in Tsing Yi or others authorised by EPD. 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.

6.9 Hazardous Materials Including Asbestos Handling and Disposal

CREC will identify and report to the *Supervisor's* Representative the presence of hazardous materials on Site. If CREC encounters any hazardous materials including asbestos, he will employ Specialist Contractor to the approval of the *Supervisor's* Representative and other relevant Government departments to dispose of the hazardous materials. CREC will submit to the *Supervisor's* Representative and other relevant Government departments method of disposal, location for disposal etc. for approval. CREC will seek agreement with Environmental Protection Department the location of disposing the hazardous material and will keep the Supervisor's Representative informed of such agreement.

Should buildings be found with potential Asbestos Containing Materials (ACM), sufficient and reasonable lead time shall be allowed for preparation, vetting and implementation of Asbestos Investigation Report and Asbestos Abatement Plan in accordance with Air Pollution Control Ordinance before commencement of any demolition or site clearance work. The handling and disposal of ACM will be carried out in accordance with the EPD's Code of Practice on Handling, Transportation and Disposal of Asbestos Waste and ProPECC PN 2/97 Handling of Asbestos Containing Materials in Buildings.

6.10 Emergency Response Procedures

Emergencies on the construction site may result in adverse impacts to the surrounding environment. Potential emergencies are identified below together with procedures formulated to deal with such situations.

6.10.1 Handling of Environmental Emergency

In the event of an environmental emergency, the following procedure will be followed:

- Immediately report the environmental emergency to the CM/SA/CTL, EO, SE, PMR, ET, IEC and CEDD;
- If necessary, notify the Police and evacuate all staff to a safe place outside the site;
- Identify the source and cause of environmental emergency and cease such activity as necessary;
- Carry out any remedial action to rectify the emergency situation;
- Recommence work activity if the emergency situation has been rectified; and
- Keep a record of the environmental emergency and remedial action taken.

6.10.2 Typhoon and Rainstorm

During the typhoon and rainstorm season, the following additional precautions will be taken:

- Temporary main access roads will be protected by crushed stone or gravel;
- If digging/backfilling trenches is necessary, this will be carried out in short sections;
- Stockpiles and temporary exposed slopes will be covered by an impermeable sheeting;
- Intercepting channels or sandbag will be provided at the edge of the excavated area to prevent storm runoff from washing across the exposed surface; and,
- Silt removal facilities, channels and manholes will be maintained, and the deposited silt and grit will be removed regularly
- This drill will be carried out by Safety Department.

6.10.3 Chemical Waste Spillage

Environmental emergency procedures including chemical waste spill will be developed for the Project. Formal written emergency procedures will be provided to staff and workers, and emergency drills will be conducted annually to ensure that people are familiar with the actual emergency. The procedures for dealing with spillage/ leakage of chemical waste will be as follows:

- Immediately report the environmental emergency to the CM/SA/CTL, EO, SE, PMR, ET, IEC and CEDD;
- The workers will be instructed to keep at a safe distance from the spillage/ leakage. If necessary, emergency evacuation will be initiated, and the emergency services notified;
- Adjacent worksites and private homes, if any, will be notified for the emergency situation;
- Only trained persons equipped with suitable protective clothing and equipment will be allowed to clean up the spillage/leakage;
- Where the chemical spillage area is small, the spill will be confined within earth barriers and the waste will be transferred back into suitable containers or soaked with suitable absorbing materials. The used absorbing materials will be treated as chemical waste and transferred to suitable containers for disposal;
- During the clean-up, all heat and ignitable sources will be switched off; and,
- The spraying of water to wash away the spill will be prohibited since some chemicals are likely to be bought.

If the spillage/ leakage is large, other concerned parties such as safety, security and subcontractor's representatives will be notified to assess the spillage/ leakage and determine the methods of clean up/ containment. If necessary, the police, emergency services, nearby worksites and residential developments will be notified.

6.11 Waste Recording System

CREC will record the quantities of C&D materials that have been generated each month by making use of the "Waste Flow Tables" (WFT). The monthly summary WFT will be updated on a monthly basis to record the flow of actual C&D waste quantities in **Appendix A**.

The EO will use the Waste Flow Table (WFT) to record the actual quantities of C&D materials generated on Site. The following information will be included:

- Inert C&D materials to be generated in the Contract;
- Inert C&D materials to be reused in the Contract;
- Inert C&D materials reused in other projects or CREC's outlet approved by the PMR;
- Inert C&D material suitable for recycling into aggregates for concrete or sub-base to be disposed of at an Approved location;
- Inert C&D materials for disposal to public filling outlets;
- Steel and other metals for collection by recycling contractors;
- Paper/ cardboard packaging for collection by recycling contractors;
- Plastics;
- Chemical wastes for collection by specialist contractor; and
- General refuses to be disposed of at landfills.

7. WASTE MONITORING AND AUDITING

7.1 Site Procedures for Trip Ticket System (TTS)

7.1.1 Implementation Procedure

For the disposal of C&D materials, CREC shall implement and comply with the requirements of the Trip-Ticket System stipulated in Works Bureau Technical Circular No. 31/2004.

CREC has applied for a registration as waste producer from EPD under the Construction Waste Disposal Charging Scheme. A billing account has been opened for the payment of waste disposal and chits issued by the Environmental Protection Department.

Each vehicle load of public fill or C&D waste transported off-site shall be accompanied by a duly completed Chit. The chit has 3 sections. The Designated Public Filling Facility / Landfill (operator) will take the 3rd section (with bar code) and return the remaining 2 sections to the truck driver who will return to CREC shall be retained. The SF/F will register all completed Chits for subsequent monitoring of the return of the trip ticket after the load has been disposed of and the EO/ES will check that the implementation is adequately carried out.

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.

The SF/F will issue a chit to the truck driver at the gate after checking the truck load and material/waste inside to ensure no overloading and proper control of material/waste disposed. Furthermore, he will also ensure any mud trail on public road from the site is prevented by ensuring that vehicle wheels are properly cleaned prior to exit. This will also be reinforced by the security guard who will control the boom at the exit.

For each trip, the truck driver shall present to the operator of the Designated Public Filling Facility / Landfill (operator) the Chit prior to disposal of the C&D materials. Upon completion of the disposal, the public fill / landfill operator will print-out receipt to acknowledge the disposal. The EO / ES shall collect and verify the chit and the computer receipt. A copy of the chit and computer receipt shall be maintained by the EO for record.

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 CREC'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 CREC will sort out an appropriate mitigation measure, including reclassification or reduction of the weight of waste carried.

CREC shall maintain a daily record of disposal of C&D materials from the Site including details of C&D materials, the truck number, departure time, etc., using the Daily Record Summary (DRS), a sample of which is given in **Appendix B**. CREC shall check the information recorded in the DRS against available information including his own records and data from the website of Civil Engineering and Development Department (CEDD) and complete Part 2 of the DRS form.

Surveillance on the truck drivers will be carried out randomly by following the truck drivers to the point of disposal to ensure that they dispose of C&D material at the designated disposal site and that the disposal activities fully comply with the client's requirements.

For the disposal of C&D materials, CREC shall implement and comply with the requirements of the amended Trip-Ticket System stipulated in Development Bureau Technical Circular (Works) No. 6/2010 with inclusion of site monitoring measures, particularly video recording system, for tracking of disposal on inert or non-inert material. On the other hand, the weight measurement records of C&D materials as loaded in the dump trucks before departure from the construction site and upon the delivery to the receiving facilities are to be compared to confirm if irregularities are found.

Video Recording System

CREC will:

(i) provide, operate and maintain, including all necessary cables, wirings, lightings and other accessories, a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Sites: The video cameras used in the system shall be of high resolution, lowlight and colour type; power backup shall be provided to cater for accidental breakdown of the power supply to the system; videos captured by the system shall be recorded continuously without break except with the agreement of the PMR, or in the month during which there is no disposal of C&D materials off the Site for the entire month; videos shall be captured in a format acceptable to the PMR; the registration mark of each vehicle leaving the site shall be recorded; and the loading conditions of dump trucks including empty trucks shall be captured;

(ii) securely protect the video cameras from being damaged or blocked;

(iii) design and construct all necessary temporary works, including any supporting frames and protections, for mounting the video cameras and their accessories;

(iv) provide the software and hardware for capturing the vehicle registration mark, and the time and date for the PMR's immediate taking and viewing of photograph of every truck leaving the Site and viewing the recorded videos;

(v) keep the videos record for at least 60 days and the photographs until such time as instructed by the PMR;

(vi) 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; and

(vii) if a video camera system cannot be installed at the exit, propose alternative methods of control to the PMR, who may accept such proposals if he is satisfied that the proposals are equally effective.

7.1.2 Trip-ticket System for Disposal of C&D Materials to Approved Alternative Disposal Ground

- Maintain a daily record of disposal of C&D materials from the Site including Disposal Delivery Form (DDF) numbers, vehicle registration numbers, approximate volume, C&D materials type, approved alternative disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground, using the Daily Record Summary (DRS);
- Submit the duly completed Part 1 of the DRS in duplicate before departure of the truck;
- When leaving the Site, each and every vehicle transporting C&D materials including both the inert and non-inert portion, must bear a DDF. A sample of the DDF for alternative disposal ground is shown at **Appendix B**. The DDF shall be duly completed and authorized by the PMR;
- Carry the DDF on board the vehicle at all times throughout the vehicular trip to the Approved alternative disposal ground as stipulated in the DDF;
- For each vehicular trip after disposal of C&D materials, ensure that the DDF is signed off by a competent person as agreed by the PMR at the Approved alternative disposal ground to confirm completion of each trip. Keep a copy of the DDF for inspection by the PMR upon request. Complete Part 2 of the DRS form and submit it to the PMR within 3 working days after the date of disposal; and
- Where an irregularity is observed or where requested by the PMR under special circumstances (e.g. a DDF has been issued but there is no disposal record at the Approved alternative disposal ground), submit to the PMR within 5 working days after the recorded date of disposal the supporting evidence such as the signed off DDF to confirm proper completion of the delivery trip(s) in question, or within 2 working days after the PMR has requested for such evidence, whichever is later.

7.1.3 Prevention of Overloading

CREC shall properly estimate the volume of C&D materials that can be carried by different dump trucks according to the permissible loading capacity of the dump trucks and the properties of the C&D materials, e.g. the bulk density with reference to the composition, moisture content and past data return, etc., in order to establish effective control measures to prevent overloading of dump trucks. They include:

- Height limit of the skip of the dump truck with consideration of its plan area and arrangement of measuring scale from the bottom of the skip; and/or
- Maximum number of grabs of the C&D materials loaded with the backhoe onto the dump truck with consideration of the grab capacity of the backhoe.

At the initial stage and any significant change of properties in C&D materials, trial run (means the first disposal dumping trip on that day) should be conducted with margin to avoid overloading in order to establish reference parameters for effective control of overloading. Whenever necessary, these control measures should be reviewed promptly to suit the prevailing site conditions.

Photos shall be taken to record the condition of materials in the skip of the dump truck and the related dump truck number for close monitoring and feedback control. Frequency of taking photo record can be adjusted in accordance with degree of monitoring control. Representative photos shall also be posted at site entrance as examples for reference of dump truck drivers and backhoe operators.

CREC shall check the vehicle loads shown on the returned trip ticket/electronic disposal data sheets to monitor its control measures against overloading. These control measures shall be reviewed immediately if there is any deficiency identified.

Furthermore, dump trucks employed will be fitted with pressure gauge for measurement of truck loads in order to avoid overloading. Pressure gauge will be calibrated and for ease of reference, an equivalent load value will be marked on the gauge itself to ensure no overloading will take place. Thus, at the time of loading of C&D waste for disposal the relevant Foreman at the exit will monitor with reference to the mark on the gauge while the loading of the truck takes place. He will also ensure the mechanical cover is in place prior to allowing the truck to leave the site.

7.1.4 Improvement Measures to Prevent Overloading

In order to control overloading effectively, the relevant SF/F/staff will monitor the maximum number of grabs of the C&D materials loaded onto the dump truck against the reference mark on the pressure gauge fitted on the dump truck to ensure no overloading will take place. If the gauge shows value beyond the referenced mark, the extra material will be unloaded prior to issue of chits for disposal. The returned trip ticket/electronic disposal data sheets will be checked to monitor its control measures against overloading. Furthermore, Senior Foreman / Foreman and staff will be briefed of the control measure.

7.1.5 Training for The Dump Truck Driver

Disposal trip training shall be provided to all truck drivers engaged for removal of C&D materials from the Site and keep the training records. All drivers must fully understand on the following particular points:

Each truck carrying C&D materials leaving the Site for a disposal ground must bear a duly completed chit, irrespective of the location and nature of the disposal ground;

The C&D materials must be disposed of at the designated disposal ground;

For an improper disposal, the Public Fill Committee (PFC) shall consider revoking the Dumping Licence from the holder of the offending trucks; and

Truck drivers must bear a valid Dumping Licence which he can apply from CEDD.

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.

7.1.6 Mechanical Cover

All dump trucks (i.e. goods vehicles of gross vehicle weight equal to or more than 16 tonnes, fitted with a dump bed) leaving the Site carrying dusty materials shall be fitted with a mechanical cover in good service condition which covers the dump bed.

7.2 Surveillance

The implementation of this document shall be regularly monitored through site monitoring. The monitoring of environmental performance shall be conducted at two principal levels. Firstly, construction personnel shall on an on-going basis, through their normal surveillance of site operations, ensure the compliance of site activities including the operations of subcontractors.

Secondly, the EO/ES or the assigned person shall undertake weekly inspection to ensure satisfactory performance on compliance with this document. Such checks shall be site-wide and encompass all pertinent trip ticket management issues applicable to the on-going works. If required, surprise checks can also be arranged on the disposal locations. In addition, the EO/ES or the assigned person shall verify the site disposal records against the data kept by the government disposal facilities via internet at the below links:

EPD: https://www.epd.gov.hk/epd/misc/cdm/b5_scheme.htm

The Surveillance Team will conduct regular site inspections to identify and report immediately to the IEC, the ER and the PMR on suspected illegal dumping and landfilling of construction and demolition (C&D) materials within the Project site throughout the construction phase.

7.3 GPS Implementation

CREC shall implement a GPS System for real time monitoring and to keep record of the speed, travel routings and parking locations of dump trucks collecting C&D materials to and from the Site in order to prevent the dump trucks from travelling above the speed limit at public roads and prohibits illegal dumping and landfilling of C&D materials. In addition, CREC shall utilise the GPS System to monitor and ensure that the C&D materials are disposed at locations accepted by the Project Manager (PMR).

Record and Analysis of Data Collected by GPS System

All the dump truck owners and driver that with installation of GPS tracking device inside the vehicle, the corresponding location information including every trip involving disposal of C&D materials from the site to disposal grounds shall be checked by CREC and the PMR. GPS vehicle location data of the dump truck will be logged throughout the whole disposal trip. All monitoring is riding at the web-based application (e.g., Autotoll: http://gps.autotoll-gps.com.hk), allowing the users to track the positions of the target vehicles and download reports or summaries via the Internet.

The corresponding historical GPS vehicle location data will be maintained for at least 6 months after any C&D material disposal trips for retrieval if needed.

The GPS location data of the dump truck could be retrieved from the web-based application with output in Excel format. The data set is associated by the following information from the GPS tracking device.

(i). Contract No. and title;

(ii). Fleet name (if appropriate);

(iii). Registration date;

(iv). Vehicle registration mark;

(v). Time;

(vi). Latitude & longitude (NEMA);

(vii). Region (Hong Kong, Kowloon, New Territories);

(viii). District;

(ix). Street name;

(x). Travelling direction;

(xi). Travelling speed;

(xii). Engine status (on or off).

At the web-based application, the tracking route of dump truck could be located in form of a digital map of Hong Kong and the reporting frequency of GPS tracking device is at every 30 seconds when the engine is ON and every hour when the engine is OFF respectively.

Automatic Notification System

Geofences will be set for the designated disposal locations, i.e. NENT Landfill and TM38 Fill Bank, and other locations approved by the Project Manager / Supervisor. Geofences are designated areas that can be defined on a map. They can either be a certain radius around a single point or any shape that create from several points. When trucks enter/trigger the Geo-fencing Zone, GPS data, such as travelling routes, travelling time for every delivery, etc. via the Automatic Notification System will be recorded. An alert email will be sent to ET, IEC, the Project Manager / Supervisor, the contractor and surveillance team at the end of each working day if the dump truck does not reach designated disposal locations after leaving the project site. Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the GPS data, such as travel routings, parking locations, etc. on a daily basis. The corresponding historical GPS vehicle location data will 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, etc. for the purpose of cross-checking and analyzing the time used for the delivery, traffic routing, weight difference for any irregularities and suspected illegal dumping situation. It ensures that the trucks are disposing of the C&D materials to the designated disposal locations after leaving the site. Also, ET, IEC, the Project Manager / Supervisor, the contractor and surveillance team can track the real-time position of the trucks on the web-based application.

To ensure that all C&D materials are disposed of at the designated disposal locations, at the end of each working day, in case that any dump truck does NOT reach the designated disposal locations after leaving the project site, the GPS monitoring system will automatically generate alert through email to the relevant parties (e.g. ET, IEC, project

manager, contractor, surveillance team, etc.) for follow up on any suspected irregularity and illegal dumping situation. The information of automatic notification includes relevant details, such as vehicle licence plate, event time, vehicle location, etc. Prohibited Zone on Tung Chung Road (section of Tung Chung Road south of Shek Mun Kap Road and all roads in south Lantau) or other areas designated as prohibited zones in Tung Chung can be set by the real time tracking and monitoring (RTTM) system, and signal (by email) will be sent to ET, IEC, project manager, contractor, surveillance team or other default users immediately once any irregularities/non-compliances are triggered. The notification emails records of the C&D materials disposal by trucks are to be checked by EO/ES to confirm whether all the dump trucks travel to the designated disposal locations after leaving the construction site.

7.4 Reporting Illegal Dumping and Follow-up Action

The approach of the monitoring of C&D materials disposal activities of the dump trucks from the construction site to the designated disposal facilities (e.g. landfills, public fill reception facilities and other locations approved by PMR) includes the following elements:

1. Travelling routes of the dump trucks via the GPS as installed in the dump trucks and the web-based application;
2. Travelling time of the dump trucks via the Automatic Notification System; and
3. Weight measurement records of the C&D materials as loaded in the dump truck before departure from the construction site and received at the designated disposal facilities or other locations approved by PMR.

CREC has established procedures to deal with any non-compliance and the principle corrective actions that would be undertaken include:

- Relevant staff including the EO, PM/CM/SA/CTL, PMR, ET, IEC and CEDD would be notified immediately in the event of there being a waste related non-conformance or complaint being made;
- The cause of the problem would be immediately investigated, and mitigation measures would be proposed by EO. These would be implemented with approval from the PM/CM/SA and the PMR;
- The PM/CM/SA would ensure that the mitigation measures are properly implemented;
- Further site surveillance by EO would evaluate the effectiveness of the mitigation measures and would immediately advise the PM/CM/SA if non-compliance persists;
- Reporting to the management on problems found, causes identified, improvement actions implemented, intended and the actual effects and any necessary follow-on actions being undertaken;
- Reporting of illegal dumping and landfilling of C&D materials within the Project site throughout the construction phase by the Surveillance Team appointed under the EP condition 2.6; and
- Follow-up actions to be taken by CREC and dump truck drivers for committing suspected offences relating to illegal dumping and landfilling of C&D materials.
- CREC will discuss with PMR for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.5 Preventive Action

In order to ensure the waste related non-conformance would not recur, the following preventive actions would be adopted:

- The EO would liaise closely with the construction team and forecast likely waste impacts, which may arise during the construction period and develop preventive procedures.
- The arrangement and progress of implementing waste management measures on site would be discussed and reviewed in the weekly SSEC meeting;
- The EO would closely monitor the waste management measures by the weekly site surveillance and checking of relevant monitoring results, meeting minutes, permits and reports, etc.; and

The conduct of a training programme to educate site staff about waste management and chemical waste handling on-site.

7.6 Record System

EO/ES or the assigned person shall maintain contemporary records of the following documents in the site office during the Project period:

- Site Management Plan for Trip Ticket System;
- Yearly Waste Flow Table;
- Monthly Summary Waste Flow Table;
- Registration as a Chemical Waste Producer;
- Register of all Disposal Delivery Form;
- Daily Disposal Record;
- Other records like trip tickets on disposal of chemical waste;
- Photographs and various measurement records; and
- Other statutory permits application / renewal.

All records shall be maintained in a legible manner, stored and retained in such a way that they are readily retrievable on site in a suitable environment to prevent deterioration or damage and to prevent loss.

(END)

APPENDIX A

MONTHLY SUMMARY WASTE FLOW TABLE

Contract No.: NL/2020/06

Monthly Summary Waste Flow Table for _____ (Year)

Month	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
		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 3)	Chemical Waste	Others, e.g. general refuse#
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Sub-total											
Total											

Notes:

(1) The performance targets ae given in PS clause 25.24

(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 summary table shall be submitted to the *Project Manager/Supervisor* monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24

APPENDIX B

DAILY RECORD SUMMARY OF C&D MATERIALS, SAMPLE CHIT, DISPOSAL DELIVERY FORM (CHIT OF ALTERNATIVE DISPOSAL GROUND)

"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 : Contract No.: NL/2020/06 Tung Chung New Town Extension – Site Formation And Infrastructure Works At Tung Chung Valley, Phase 1

(2) Date of Disposal 傾卸日期 :

(3) Designated 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 (a) Tuen Mun 38 Fill Bank
(b) NENT Landfill
(c) OTHER

(4) Approved Alternative Disposal Ground(s) 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 Material Type (e.g. inert / 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 Engineer's supervisory staff before departure or other time agreed between the Architect/Engineer's Representative and the Contractor 於離開地盤前或其他經承建商與建築師/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	Remark 備註

Part 1[1] 甲部 — Part 2[2] 乙部

Submitted by 呈交: _____ [Name of Contractor's Designated Person] 承建商的指定人仕姓名
Signature 簽名: _____
Date 日期: _____
Received by 接收: _____ [Name and signature of the 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] Part 1甲部 - The Contractor shall complete Part 1 in duplicate and a copy should be kept by the 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

[2] Part 2 乙部 - The Contractor shall complete Part 2 and submit the whole Summary to the 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

E 199279

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:

CEDD Civil Engineering and Development Department

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

甲部分:由物料供應地的營運商或司機保留
Part A: Retained by CP/Driver at Departure Site

參考編號 Ref. No.: _____

中國中鐵股份有限公司 CHINA RAILWAY GROUP LIMITED

Contract No.: NL/2020/06
Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

運載紀錄票
Disposal Delivery Form

使用日期
Date of Use: _____

到達日期
Date of Arrival: _____

離開時間
Departure Time: _____

到達時間
Arrival Time: _____

車牌號碼
Vehicle Registration Mark: _____

物料來源地
Location of Source: NL/2020/06 - Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

物料接收地
Location of Reception Site: _____

「✓」適合的選項:
Tick (✓) the appropriate:

負載量
Loading: ☐ 1/4 ☐ 1/2 ☐ 3/4 ☐ 滿載 Full

物料類別
Material Type:
☐ 惰性填料 Inert Material
☐ 石 Rock
☐ 泥 Soil
☐ 泥夾石 Soil & Rock
☐ 混凝土 Broken Concrete

物料來源地簽辦人
Issued by (Location of Source): _____
(簽名或蓋印 Signature or Stamp)

物料接收方簽收
Received by (Location of Reception): _____
(簽名或蓋印 Signature or Stamp)

甲部份: 物料接收方簽收後三個工作天交回物料來源地
Part A: To return to the Location of Souce after signed by the Reception Site within 3 working days

乙部份: 物料接收方保留
Part B: To be retained by the Reception Site

乙部分:由物料供應地的營運商或司機保留
Part B: Retained by CP at Reception Site

參考編號 Ref. No.: _____

中國中鐵股份有限公司 CHINA RAILWAY GROUP LIMITED

Contract No.: NL/2020/06
Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

運載紀錄票
Disposal Delivery Form

使用日期
Date of Use: _____

到達日期
Date of Arrival: _____

離開時間
Departure Time: _____

到達時間
Arrival Time: _____

車牌號碼
Vehicle Registration Mark: _____

物料來源地
Location of Source: NL/2020/06 - Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

物料接收地
Location of Reception Site: _____

「✓」適合的選項:
Tick (✓) the appropriate:

負載量
Loading: ☐ 1/4 ☐ 1/2 ☐ 3/4 ☐ 滿載 Full

物料類別
Material Type:
☐ 惰性填料 Inert Material
☐ 石 Rock
☐ 泥 Soil
☐ 泥夾石 Soil & Rock
☐ 混凝土 Broken Concrete

物料來源地簽辦人
Issued by (Location of Source): _____
(簽名或蓋印 Signature or Stamp)

物料接收方簽收
Received by (Location of Reception): _____
(簽名或蓋印 Signature or Stamp)

甲部份: 物料接收方簽收後三個工作天交回物料來源地
Part A: To return to the Location of Souce after signed by the Reception Site within 3 working days

乙部份: 物料接收方保留
Part B: To be retained by the Reception Site

APPENDIX C

SUMMARY TABLE FOR WORK PROCESSES OR ACTIVITIES REQUIRING TIMBER FOR TEMPORARY WORKS

Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

Contract No.: NL/2020/06
Contract Title: Tung Chung New Town Extension – Site Formation And Infrastructure Works At Tung Chung Valley, Phase 1

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 Project Manager/Supervisor in monthly basis together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24..

APPENDIX D

IMPLEMENTATION SCHEDULE

WMP Ref.	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
S6.3	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.	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

WMP Ref.	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
			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.					
S6.4	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
S6.5 S6.6	S7.4.1	WM3	Storage of Waste The following recommendation should be	Good site practice to minimize the	Contractor	All construction	Construction stage	Land (Miscellaneous

WMP Ref.	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
			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;	waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal		sites		Provisions) Ordinance Waste Disposal Ordinance ETWB TCW No. 19/2005
S6.6	S7.4.1	WM4	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
S6.6.2	S7.4.1	WM5	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	Minimize waste impacts from excavated and C&D materials	Contractor	construction sites	Construction stage	Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW No. 19/2005

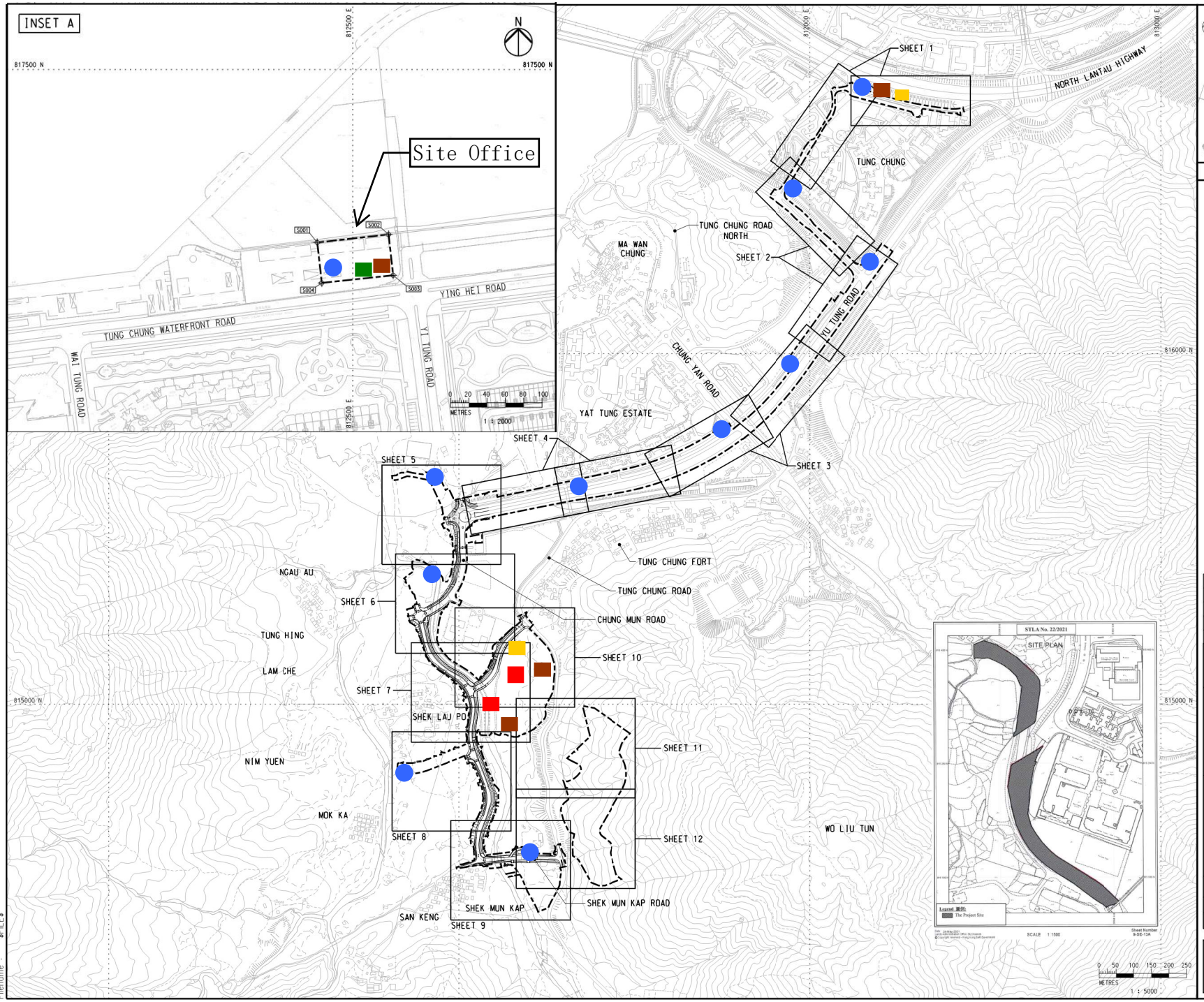
WMP Ref.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			to allow and promote the use of recycled aggregates where appropriate; 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: ▪ On-site sorting of C&D materials Reuse of C&D materials					Project Administrative Handbook for Civil Engineering Works, 2012 Edition
S7.1.1	S7.4.1	WM6	<u>Provision of Wheel Wash Facilities</u> 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	All construction sites
S6.7	S7.4.1	WM7	<u>Excavated Contaminated Soil</u> Guidelines/Recommendations in land contamination assessment guidelines/manual and land contamination plans/reports are required to be implemented prior to the construction phase to minimize any potential exposure to contaminated soils or groundwater.	Remediate contaminated soil	Contractor	All construction sites	Prior to the construction stage	Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated

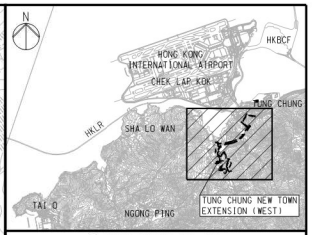
WMP Ref.	EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
								Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management
S6.8	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
S6.6.3	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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

WMP Ref.	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
			A reputable waste collector should be employed to remove general refuse on a daily basis.					
S7.3	N/A	N/A	GPS Implementation GPS System shall be implemented for real time monitoring and to keep record of the speed, travel routings and parking locations of dump trucks collecting C&D materials to and from the Site in order to prevent the dump trucks from travelling above the speed limit at public roads and prohibits illegal dumping and landfilling of C&D materials. In addition, CREC shall utilise the GPS System to monitor and ensure that the C&D materials are disposed at locations accepted by the Project Manager (PMR). Geofences will be set for the designated disposal locations. When trucks enter/trigger the Geo-fencing Zone, GPS data, such as travelling routes, travelling time for every delivery, etc. via the Automatic Notification System will be recorded. The GPS monitoring system will automatically generate alert through email to the relevant parties (e.g. ET, IEC, Project Manager, contractor, surveillance team, etc.) if dump truck does not reach designated disposal locations after leaving the project site at the end of each working day for follow up on any suspected irregularity and illegal dumping situation. Environmental Officer (EO) / Environmental Supervisor (ES) will analyze the GPS data to prevent the dump truck from disposing illegally.	Prohibit illegal dumping and landfilling of C&D materials	Contractor	All construction sites	Construction stage	N/A

APPENDIX E

SITE LAYOUT PLAN FOR WASTE MANAGEMENT FACILITIES





LOCATION PLAN

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWING NO. 251854/C6/G/1011 TO 1022.

LEGEND

- WORKS LIMIT
- Skips for general waste
- Waste separation bins
- Construction Waste (inert) Collection Container/ Storage Area
- Covered Rubbish Bins
- Chemical waste storage

Rev	Description	By	Date
-	TENDER DRAWING	TL	12/20

Consultant

ARUP

Project Title

Contract No. NL/2020/06

Tung Chung New Town Extension - Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

Temporary site layout plan of the waste management facilities

Drawing no.	Rev.
251854/C6/G/1000	-

Drawn	Date	Checked	Approved
RY	02/20	AW	DL

Scale	Status
1:5000 @ A1	TENDER

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : $DATE$
Filename : $FILE$

APPENDIX F

METHOD STATEMENT FOR STOCKPILING AND TRANSPORTATION OF EXCAVATED MATERIALS AND OTHER CONSTRUCTION WASTES

CONTENT

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 2m high maximum and 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 • 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, CREC 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 - <u>General refuse and C&D Materials</u> • Un-recyclable, non-inert C&D Materials, i.e. general refuse, which mainly consists of food waste, aluminium 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 and plastic sheets will be sorted and stored in separately labelled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recycling 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.

- Chemical Waste

- For chemical waste produced by a process, as defined by Schedule 1 of 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 asbestos waste, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.
- All chemical waste generated on site will be stored and labelled in accordance with the Code of Practice on the Packaging, Labelling 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 clothing.
- The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labelled 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 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, Labelling 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 instruction prescribed in Schedule 2 of the Regulations.
- The storage area for chemical waste will:
  - Be clearly labelled 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.
- All producers of chemical wastes (including asbestos) must register with EPD and treat their wastes either utilising on-site plant licensed by EPD, or arranging for a licensed collector to take the wastes to a licensed facility. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and 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.