

Your Ref :
Our Ref. : 2108/01.02.00/01998L
Date : 27 February 2023



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By Hand

Attention: Mr. FAN Shun Ling, Frankie (Project Manager's Delegate)

Dear Sir,

Contract No. NL/2020/03
Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East
Submission of Waste Management Plan (Rev.8)

We refer to your email dated 13 February 2023 regarding the EPD's comments on the submission of Waste Management Plan (Rev.7).

Pursuant to EP Condition 2.24, we are pleased to submit herewith the Waste Management Plan (Rev.8) and RtC table for this Contract for your review and acceptance.

Thank you for your kind attention.

Yours faithfully
For and on behalf of
Build King Civil Engineering Limited



Aldous Lo
Site Agent

KT/AL/KKL/aw

Encl.

Build King Civil Engineering Limited

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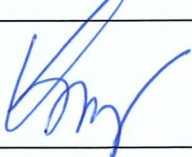
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Civil Engineering and Development Department
Contract No. NL/2020/03

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

Waste Management Plan (Rev.8)

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

Title of Submission: **Waste Management Plan**

Document Ref. Rev.8

Response to Comment Table

ITEM NO.	EPD's COMMENTS	CONTRACTOR'S RESPONSE
	Refer to comments from EPD's memo dated 7 February 2023.	
1	<u>Data Storage</u> For Contract 2, it is noted that the GPS data will be maintained for 6 months (ref to 2 nd last para. of S.5.3 in Annex 2 of Contract 2). Will Contract 1,3 and 7 adopt the same approach? If yes, please mention clearly in the Plan in the respective Annex.	No, the GPS data for NL/2020/03 will be maintained for at least 3 months. Please refer to the 4 th para. of section 5.3.
2	<u>Alert system</u> For Contract 1, It is noted that investigation will be carried out once the alert system has been triggered (refer to 3 rd last para. of S5.3 in Annex 1 of Contract 1). Will Contract 2,3,7 adopt the same approach? If yes, please mention clearly in the Plan.	Yes, we will adopt same approach, please refer to the 6 th para of section 5.3.

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Abbreviation List

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

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1.0 INTRODUCTION

1.1 Background

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

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

1.2 Scope of Works

The works mainly comprise

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

1.3 Purposes of the Waste Management Plan

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

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The aims of this WMP are:

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

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

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

1.4 Waste Management Requirements and Guidelines

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

■ Statutory requirements

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

■ Codes of Practice, Circulars and Guidelines

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

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

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

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

1.5 License Requirements

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

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

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

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2.0 ORGANISATION AND STRUCTURE

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

2.1 Organization and Responsibility

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

Construction Manager CM (Chairman)

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

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

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

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

Environmental Officer, EO

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

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and toolbox talks

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

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

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

Construction Team Leader (Team Member)

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

General Foreman, GF (Team Member)

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

Foremen, FN (Team Member)

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

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Subcontractor Representatives, SR (Team Member)

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

Workers, WR

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

3.0 IDENTIFICATION AND CLASSIFICATION OF WASTE GENERATED FROM THE CONSTRUCTION ACTIVITIES

3.1 Waste Arising from the Construction Activities

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

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

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

3.1.1 Excavated Material

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

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3.1.2 Construction & Demolition Materials (C&D Materials)

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

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

3.1.3 General Refuse

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

3.1.4 Chemical Waste

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

3.1.5 Recyclable Waste

Control measures would be devised to ensure that the recyclable materials are delivered to a proper recycling outlet for processing, and to avoid such materials being considered as C&D materials for the purposes of the Contract. All recyclable material that is generated during the course of the Contract will be collected by registered contractors and transported to an approved facility. Details of these contractors were listed in the website of EPD as waste collectors and recyclers, the information can be search via the hyperlinks at:

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

3.2 Designated Waste Disposal Facilities and Disposal Criteria

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

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

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Table 3.1 *Designated Waste Disposal Facilities / Outlets and Locations*

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

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

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

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

4.0 PROPOSAL FOR WASTE MANAGEMENT

4.1 Waste Management Hierarchy

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

Table 4.1 Waste Management Hierarchy

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

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

4.2 Design and Planning of Construction Works

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

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

4.3 Waste Minimization Measures and Good Site Practice

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

- a. Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
- b. Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;

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- c. Using the correct amount of raw materials at the correct time and the recording of materials flow to minimize over ordering. The construction materials will be stocked carefully to prevent damage or contamination. During the works, only exact quantity of materials will be collected and if necessary, any surplus will be returned to stock after consideration of its use;
- d. Maximizing the utilization of materials and the avoidance of unnecessary cutting such that off-cuts will be used when short lengths or a small quantity of materials are required;
- e. A preference for reusable non-timber formwork such as steel formwork or plastic facing;
- f. Sorting of all excavated / demolition materials to recover the inert portion (e.g. soil and broken rock) for reuse on site whenever possible or disposal to designed outlets (e.g. public filling areas). Recover all metal, cardboard and paper on site and properly stored in dry and clean conditions temporarily for later collection by recycling contractors;
- g. Segregation and storage of constituents of C&D Materials in appropriate containers, skips or stockpiles to enhance the opportunity for reuse and recycling of materials or their proper disposal. Sufficient protective measures provided in the storage area for sorting to avoid damage or contamination;
- h. Collection of aluminum cans, paper waste and plastic bottles by site staff, and provision of separately labeled bins to segregate these wastes from other general refuse arising from the work force;
- i. Provision of a designated waste working team to collect the refuse on site regularly;
- j. Removal of all other un-reusable C&D Materials off site as soon as practicable in order to optimize the use of the on-site storage space;
- k. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The Experienced person(s) will ensure only dump trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&D Materials transported off site. The trip-tickets, with valid stamp from an agreed dumping / filling location, will be collected upon return and appropriately filed in the site records;
- l. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimize fugitive dust emission;
- m. Unused chemicals or those with remaining functional capacity will be retained for reuse. The chemicals will be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facilities (CWTF);
- n. The setting up of special control measures to regulate storage, labeling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTF;
- o. Imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;

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- p. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- q. The amount of waste reused, recycled or disposed will be recorded regularly.

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

4.4 Handling of C&D Materials

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

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

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

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

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

4.4.1 Waste Sorting

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

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

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

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

(I) Inert C&D Materials

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

Excavated Material

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

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

Concrete Waste

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

(II) Non-Inert C&D Materials

Timber Waste

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

Metal Wastes

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

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

General Refuse and C&D Materials

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

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

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

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

4.4.2 Chemical Waste

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

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

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

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

Storage of Chemical Waste

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

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

The storage area for chemical waste will:

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

Disposal of Chemical Waste

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

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

4.4.3 Hazardous Material

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

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

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

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

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

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

4.4.4 Excavated Trim Materials

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

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

4.5 Promotion and Training on Waste Management

4.5.1 Environmental Training

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

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

Site Specific Induction Training

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

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

Tool box talk

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

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4.5.2 Environmental Promotion

Environmental information

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

Environmental Award

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

5.0 TRIP TICKET SYSTEM AND RECORDING

5.1 Trip Ticket System (TTS)

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

The manpower resources for TTS

- (1) A senior staff member (with at least two-year experience in site management) fully responsible for implementing and overseeing the operation of the TTS; and
- (2) Experienced person(s) to man each exit from the Site for the purpose of checking every truck carrying C&D Materials leaving the Site so as to ensure that the truck driver bears a duly completed signed and stamped Disposal Delivery Form (DDF).

General Procedure of the TTS

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

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

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

- (2) The CHIT shall be used for disposal of C&D Materials at a prescribed facility as defined under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) (hereinafter referred to as "prescribed facility") and the Particular Specification, Sample of the CHIT is provided in Appendix H.
- (3) Where the inert C&D Materials is delivered to other sites for reuse as approved by the Project Manager, a special designed ticket (i.e. similar to the Chit) will be deployed and the mechanism and procedure is also similar to the Chit system. The ET and IEC will be notified for the C&D Materials delivery.

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

- a) For each truckload of C&D Materials leaving the Site, all truck drivers must bear a duly completed CHIT.
- b) A daily record of disposal of C&D Materials shall be maintained from the Site including CHIT numbers, vehicle registration marks, drivers' particulars, approximate volume, C&D materials type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground. The appointed designated person(s) shall complete Part I of the Daily Record Summary (DRS) in duplicate and inform the Engineer's staff before departure of the vehicle.
- c) The Engineer's staff shall sign Part I of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Project Manager and BKCEL.
- d) The truck shall proceed to the disposal ground as stipulated in the Contract. If the C&D Materials accord with the acceptance criteria, disposal of the materials will be permitted and the facility operator will give the Contractor's truck driver a Transaction Record Slip and stamp the CHIT. When the disposal of waste is not permitted (rejected by facility operator due to overloading or non-compliance with relevant acceptance criteria, closure of facility etc.), the truck will go back to the construction site and the Contractor will sort out an appropriate mitigation measure.
- e) The information recorded in the DRS shall be checked against available information including site records/register and data from EPD's website [<https://www.epd.gov.hk/epd/misc/cdm/scheme.htm>].
- f) Site Engineer shall complete Part 2 of the DRS form for submission to the Project Manager within 1 working day after the records are posted at the EPD web-site.
- g) Where an irregularity is observed or where requested by the Project Manager under special circumstances (e.g. a CHIT has been issued but there is no disposal record at the disposal ground), BKCEL shall submit to the Project Manager within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped CHIT and/or the

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

Informing the Truck Drivers

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

- (a) Each truck carrying C&D Materials leaving the Site for a disposal ground must bear a duly completed and stamped DDF, irrespective of the location and nature of the disposal ground.
- (b) The C&D Materials must be disposed of at the disposal grounds as stipulated in the DDF.
- (c) What constitutes an improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping License from the holder of the offending trucks.
- (d) Truck drivers must bear a valid Dumping License which he can apply from the Civil Engineering and Development Department (CEDD).
- (e) The Contractor will inform the truck drivers that all dump trucks engaged on site shall be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping & landfilling of C&D materials.

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

5.2 Waste Recording System

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

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

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

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

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

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

5.3 Global Positioning System (GPS) and Load Cell System

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

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

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

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

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

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

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

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

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

The details of the load cell system is provided in the **Appendix J.**

5.4 Illegal Dumping and Landfilling of C&D Materials

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

5.5 Weighting System at Recorder House

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

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

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

6.0 EVENT CONTINGENCY PLAN FOR NON-COMPLAINE AND COMPLAINT

6.1 In the Event of Non-Compliance

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

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

6.2 In the Event of Complaint:

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

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

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1. The dump truck drivers will be asked to explain for the suspected offences relating to illegal dumping and landfilling of C&D materials. An investigation report will then be prepared by the EO and submit to AECOM.
2. The Contractor will discuss with AECOM for the follow up actions (e.g. warning letter, cease operation, etc.) if required.

7.0 AUDITING PROPOSAL

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

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

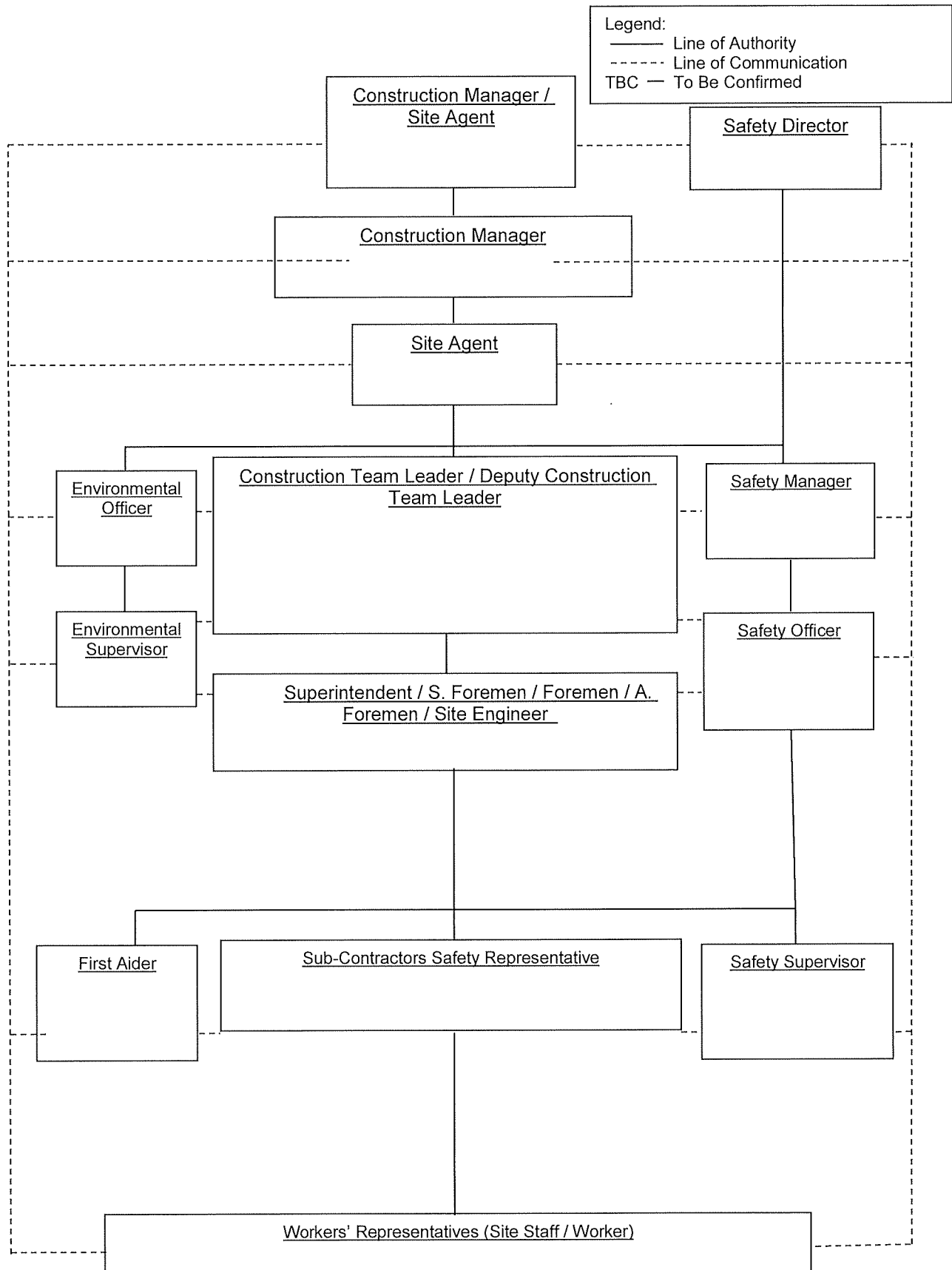
The waste (generated from construction activities) handling procedures documented in this stand-alone WMP will be incorporated into the Environmental Management Plan and the effectiveness of waste management and implementation of trip ticket system will be discussed and reviewed during the SSEM and SSEC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

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Appendix A

Project Environmental Management Organization Chart for Waste Management

Site Safety & Environmental Organization Chart



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Appendix B

Tentative C&D Materials Disposal Programme



Monthly Summary Waste Flow Table for 2022

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

Remark:

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



Monthly Summary Waste Flow Table for 2023

Month	Forecast Quantities of Inert C&D Materials Generated Monthly					Forecast Quantities of C&D Wastes Generated Monthly					
	a.Total Quantity Generated (a=c+d+e) (in '000m³)	b. Hard Rock and Large Broken Concrete (in '000m³)	c. Reused in the Contract (in '000m³)	d. Reused in Other Projects (in '000m³)	e. Disposed as Public Fill (in '000m³)	f. Imported Fill (in '000m³)	g. Metals (in '000kg)	h. Paper / Cardboard Packaging (in '000kg)	i. Plastics (in '000kg)	j. Chemical Waste (in '000kg)	k. Others, e.g. general refuse (in '000m³)
January	6.079	0.000	0.000	6.079	0.000	0.000	0.000	0.277	0.000	0.000	0.007
February	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
March	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
April	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
May	5.000	0.000	0.000	5.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.777	0.000	0.000	0.257
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
October	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
November	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
December	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.050
Total	26.079	0.000	0.000	26.079	0.000	0.000	0.000	1.377	0.000	0.000	0.557

Remark:

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

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Appendix C

Environmental Mitigation for Waste Management

Mitigation Measures for Waste Management

Construction Phase

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

Good Site Practices

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

- nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
 - training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
 - provision of sufficient waste disposal points and regular collection for disposal;
 - imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported;
 - appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
 - regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and
 - the contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TC(W) No. 19/2005 for construction phase. The EMP should be submitted to the Engineer for approval.
- Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.

Waste Reduction Measures

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

- segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- proper storage and site practices to minimize the potential for damage and contamination of construction materials;
- plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;
- sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.);

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

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

Storage, Collection and Transportation of Waste

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

- waste such as soil should be handled and stored well to ensure secure containment; and
- depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions.
- The collection and transportation of waste from works area to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendation should be implemented to minimize the impacts:
 - remove waste in timely manner;
 - employ the trucks with cover or enclosed containers for waste transportation;
 - obtain relevant waste disposal permits from the appropriate authorities; and
 - disposal of waste should be done at licensed waste disposal facilities.

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

C&D Materials

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

- maintain temporary stockpiles and reuse excavated fill material for backfilling;
- carry out on-site sorting;
- make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and
- implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW.

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

On-site Sorting of C&D Materials

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

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

Reuse of C&D Materials

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

Use of Standard Formwork and Planning of Construction Materials Purchasing

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

Provision of Wheel Wash Facilities

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

Excavated Contaminated Soil and Marine Sediments

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

- Reference has been made to the sediment testing results. Possible mitigation measures to handle the contaminated/ uncontaminated sediment are summarized as follows.
- All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location.
- All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

- Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.

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

- The Contractors shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance.
- All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material.
- The excavated sediment shall be placed into the disposal pit by bottom dumping.
- Contaminated marine mud shall be transported by split barge of not less than 750m³ capacity and capable of rapid opening and discharge at the disposal site.
- Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.
- For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed.
- Moreover, the geosynthetic containment has also been proposed for Type 3 disposal in the EIA Study under Wan Chai Development Phase II and Central-Wan Chai Bypass (WDII) (EIA 141/2007). Several field trials had been undertaken under WDII – Design and Construction to demonstrate the feasibility on the use of the geosynthetic containment. Report on the field trials concluded that disposal by sealing sediments in geosynthetic containers and dropping these containers into the contaminated mud pits at East Sha Chau has been shown to be a successful and viable disposal method. The use of geosynthetic containment for special disposal was considered to be an effective system with negligible loss of contaminants to the marine environment during disposal.

Chemical Waste

For those processes which generated chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type of less impact on environment, health and safety as far as possible.

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

General Refuse

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

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Appendix D

Environmental Mitigation Implementation Schedule

Implementation Schedule of Major Waste Mitigation Measures

WMIP Section No.	Recommended Mitigation Measures	EM&A Log Ref.	EIA Ref.	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/or Standard to be Achieved
4.3	<u>Good Site Practices</u> The following good site practices are recommended throughout the construction activities: • nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • provision of sufficient waste disposal points and regular collection for disposal; • imposition of penalty system on Contractors' improper behaviors when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • the contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TC(W) No. 19/2005 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation	WM1	S7.4.1	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site

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

										Circular No. 19/2005, Environmental Management on Construction Site
4.4	<u>Collection and Transportation of Waste</u> The following recommendation should be implemented to minimize the impacts: • remove waste in timely manner; • employ the trucks with cover or enclosed containers for waste transportation; • obtain relevant waste disposal permits from the appropriate authorities; and • disposal of waste should be done at licensed waste disposal facilities.	WM4	S7.4.1	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site		
4.4	<u>Excavated and C&D Materials</u> Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure implemented in handling the excavated and C&D materials: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and	WM5	S7.4.1	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical		

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

	• All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material. • The excavated sediment shall be placed into the disposal pit by bottom dumping. • Contaminated marine mud shall be transported by split barge of not less than 750m3 capacity and capable of rapid opening and discharge at the disposal site. • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.								Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site
4.3	<u>Chemical Waste</u> If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	WM10	S7.4.1	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical	

									Circular No. 19/2005, Environmental Management on Construction Site
									Code of Practice on the Package, Labelling and Storage of Chemical Wastes
4.3	<u>General Refuse</u> - General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. - Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. - A reputable waste collector should be employed to remove general refuse on a daily basis.	WM11	S7.4.1	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Contract No. NL/2020/03 Particular Specification The Waste Disposal Ordinance (Cap.354) Works Bureau Technical Circular No. 19/2005, Environmental Management on Construction Site	
5.3	<u>GPS Implementation</u> All dump trucks engaged on site will be equipped with Global Positioning	N.A.	S7.4.1	Monitor tracking of dump trucks and prevent any illegal dumping	Contractor	All construction sites	Construction stage	EP-519/2016 General Conditions 2.24 (vi-vii)	

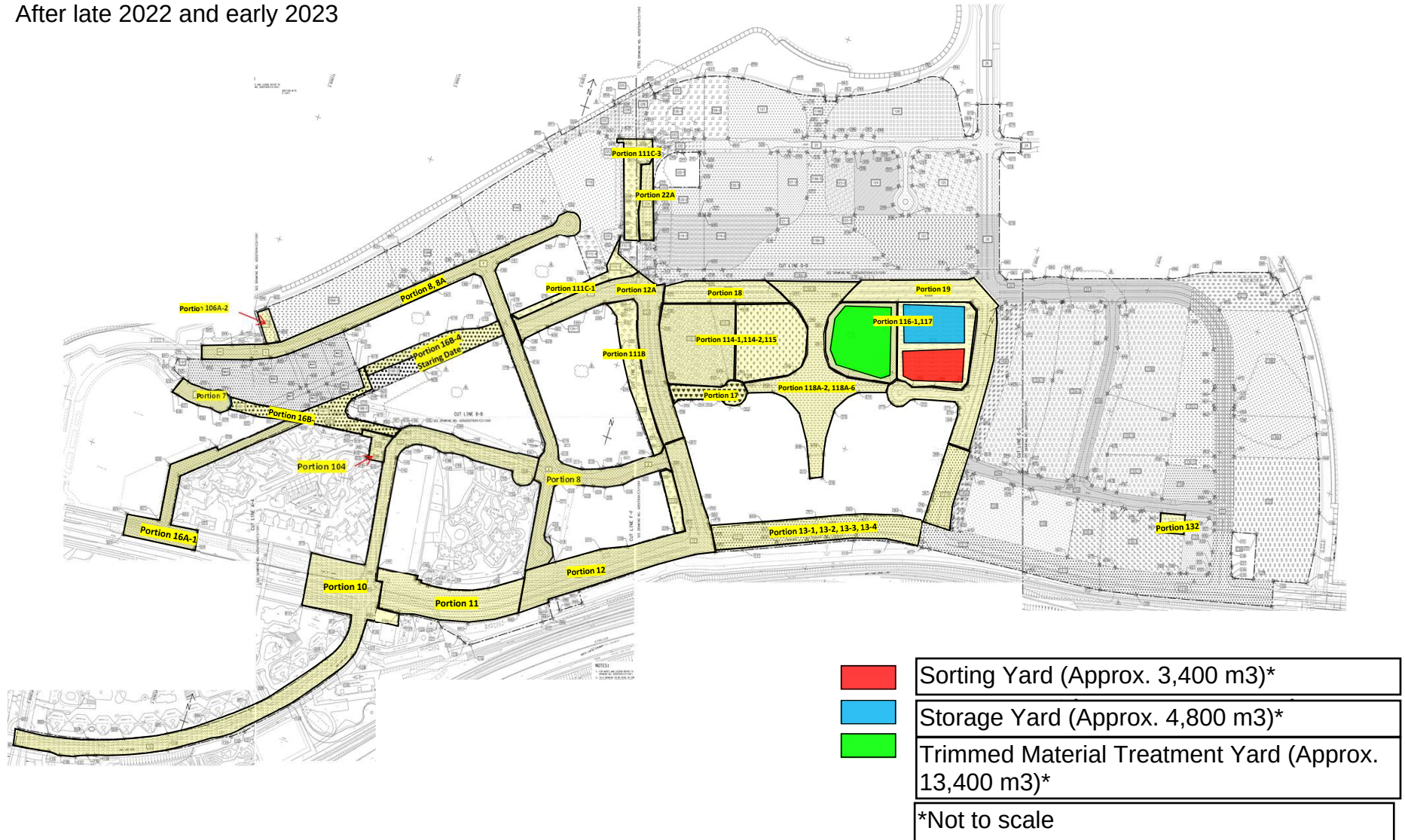
System (GPS) or equivalent automatic system for real time tracking and monitoring (RTTM) of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials.						
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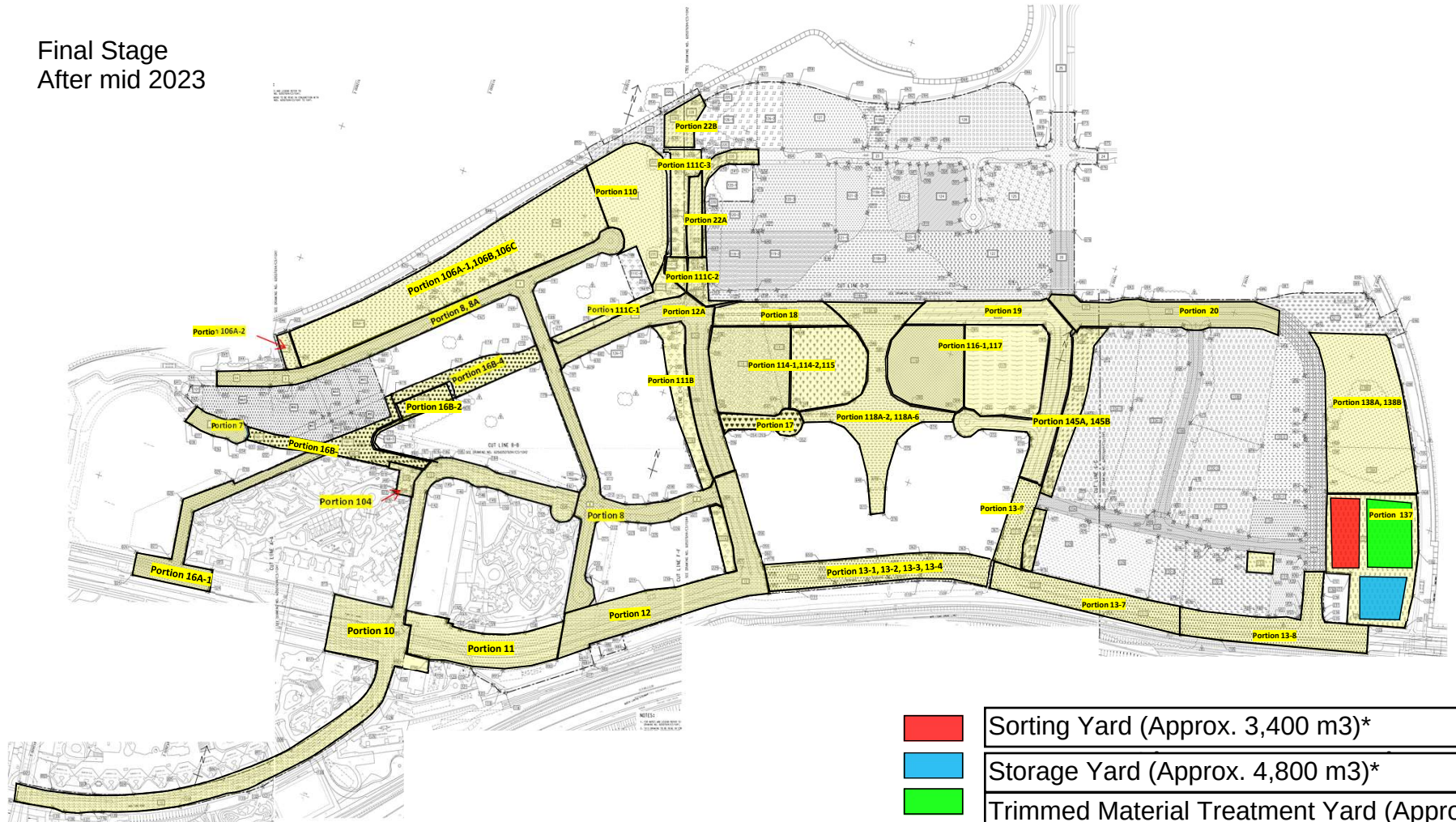
Appendix E

The Planned Sorting Facility Location

1st Stage
After late 2022 and early 2023



Final Stage
After mid 2023



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

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Appendix F

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

Name of Department: Civil Engineering Development Department

Contract No.: NL/2020/03

Waste Flow Table



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

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01



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

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

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

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

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

Appendix 1.34A

SUMMARY TABLE FOR USE OF TIMBER IN TEMPORARY WORKS

(PS CLAUSE 1.115(17))

Contract No.: _____

Contract Title: _____

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

- Notes: (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.
- (b) The summary table shall be submitted to the Supervisor monthly together with the Waste Flow Table for review and monitoring in accordance with PS clause 25.24(11).

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Appendix G

Sample of CHIT and Daily Summary Record

入賬號碼:

Chit No.:

選擇「✓」一個指定設施:

Tick (✓) One Prescribed Facility:

☐ 堆填區 ☐ 篩選分類設施

☐ Landfills ☐ Sorting Facilities

☐ 公眾廢料接收設施

☐ Public Fill Reception Facilities

☐ 離島廢物轉運設施

☐ Outlying Islands Transfer Facilities

車輛號碼 Vehicle Registration Mark:

入賬號碼:

Chit No.:

選擇「✓」一個指定設施:

Tick (✓) One Prescribed Facility:

☐ 堆填區 ☐ 篩選分類設施

☐ Landfills ☐ Sorting Facilities

☐ 公眾廢料接收設施

☐ Public Fill Reception Facilities

☐ 離島廢物轉運設施

☐ Outlying Islands Transfer Facilities

車輛號碼 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:

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.:

甲部份: 由政府保留

Part A: retained by Government

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章廢物處理條例

廢物處理(建築廢物處理費)條例

Waste Disposal Ordinance (Chapter 354)

Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票

CHIT

車輛號碼:

Vehicle Registration Mark:

有效期限:

Valid Until:

建築、物業發展、

Construction Waste Generated Site:

帳戶名稱:

Name of the Account-holder:

CEPD Construction and Environmental Protection Department
Part C: retained by Government
丙部份: 由政府保留

F 199279

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the "Site"
"每日巡視紀錄摘要" 記錄每日由"地點"移出的建造物料

- (1) Contract no. & title 合約編號及名稱: _____
- (2) Date of disposal 拆卸日期: _____
- (3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer 合約指定或建築師/工程師指示接收設施: (a) _____
 (b) Others 其它 _____
- (4) Approved alternative disposal grounds 另可接受的接收設施 _____

CHIT/DDP no. 批發/預置物料編號	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 於離開地點前，承建商的指定人姓名及簽名	Departure time from "Site" 離開地點時間	Signature & name of the Architect/Engineer's supervisory staff before departure or other time as agreed between the Architect/Engineer's Representative and the Contractor 建築師/工程師代表或與承建商商議時間前，建築師/工程師代表及承建商代表姓名及簽名	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

Part 1 申報

Submitted by 呈交: _____

Signature 簽名: _____

Date 日期: _____

Received by 接收: _____

Post 職位: _____

Date & Time 日期及時間: _____

Part 2 乙部

(Name of Contractor's Designated Person
承建商指定人姓名)

(Name and signature of the Architect/Engineer's staff
建築師/工程師代表姓名及簽名)

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

Part 1 甲部 The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/Engineer's Representative. 承建商須將甲部填妥兩份，副本由建築師/工程師代表持有

Part 2 乙部 The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD website. 承建商須將乙部及將整份巡視紀錄摘要於記錄上載至環境保護署網頁後 1 個工作天內呈交給建築師/工程師代表

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

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Appendix H

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



Civil Engineering and Development Department

Contract No. NL/2020/03

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

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

Revision: 0

Date: 17 Sep 2021

1. Scope of Work

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

2. Construction Sequence of Works

2.1 Stockpiling

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

2.2 Transportation of Excavated Materials

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

2.3 Transportation of Other Construction Waste

- General refuse and C&D Materials
 - Un-recyclable, non-inert C&D Materials, i.e. C&D Materials, floating refuse

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

- The C&D materials will be temporarily stored and containers or skips will be provided for temporary waste storage to prevent odour, pest and windblown litter.
 - Office waste will be reduced through the recycling of paper. Sacks for waste paper and baskets for reusable papers will be provided in the Site office. General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labeled bins for subsequent recycling. Reputable recycle contractors will be employed to collect recyclable materials. The amount of waste to be recycled will be recorded, controlled and monitored through the maintenance of WFT.
 - The general refuse and the un-recyclable C&D Material will be collected and disposed of on a regular basis to minimize the likelihood of odour, pests and litter. Its will be transported and disposed of by a licensed waste hauler. A trip-ticket system to trace the transportation and destination of the waste will be implemented and the burning of refuse on the site will be strictly prohibited.
- Chemical Waste
- For chemical waste produced by a process, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, a 'Chemical Waste Producer' registration will be made with EPD.
 - Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers.

- All chemical wastes generated on site will be stored and labeled in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD. All workers involved in the handling of chemical waste will be trained properly and will be provided with appropriate protective clothing.
- The sorting and segregation of chemical waste will be carried out on site to ensure the waste is appropriately handled, labeled and treated prior to disposal off-site. The recoverable chemical wastes such as oil, paint and solvent, will be separated from other chemical wastes and an EPD licensed chemical waste collector will be employed to collect the chemical waste.
- Chemical waste will be stored at designated storage areas in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The containers to be used for the storage of chemical waste will:
 - be suitable for the substance they are holding, resistant to corrosion and be maintained in a good condition and kept securely closed;
 - have a capacity of less than 450L unless the specifications have been approved by the EPD; and,
 - display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.
- The storage area for chemical waste will:
 - be clearly labeled and used solely for the storage of chemical waste;
 - be enclosed on at least three sides;
 - have an impermeable floor and be banded to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
 - have adequate ventilation;
 - be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
 - be arranged so that incompatible materials are adequately separated.
- A licensed waste collector will be employed to deliver the chemical waste to legal treatment facilities. The trip-ticket system will be strictly

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

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Appendix I

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

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

Weighing System at Recorder House within Stockpiling Sites

- (1) The Weighing System installed at each of the Recorder House within the Stockpiling Sites is a system to collect information in respect of loads of surplus filling materials delivered to and removed from the Stockpiling Sites by the following:
 - (a) dump trucks by the *Contractor*, including those excavated within the contract boundary, and transporting between individual stockpiling sites;
 - (b) dump trucks by the *Contractor* or others for collecting fill material or removing fill from the stockpiling areas; and
 - (c) others as directed by the *Supervisor*.
- (2) The *Contractor* shall proper record the following types of fill materials separately:
 - (a) Soft C&D materials deposited by other *Contractors*;
 - (b) Hard C&D materials with size >200mm deposited by other *Contractors*;
 - (c) Excavated marine deposit deposited by other *Contractor*;
 - (d) Soft C&D materials collected by the *Contractor*;
 - (e) Hard C&D materials with size >200mm collected by the *Contractor*;
 - (f) Treated marine deposit used for filling collected by the *Contractor*;
 - (g) Soft C&D materials deposited by the *Contractor*;
 - (h) Hard C&D materials with size >200mm deposited by the *Contractor*;
 - (i) Excavated marine deposit deposited by the *Contractor*;
 - (j) Treated marine deposit treated by the *Contractor*;
 - (k) Treated marine deposit collected by the *Contractor*;
 - (l) Soft C&D materials disposed of by the *Contractor*;
 - (m) Hard C&D materials with size >200mm disposed of by the *Contractor*;
 - (n) Treated marine deposit used for filling disposed of by the *Contractor*;
- (3) The technical specifications of loadcells and weighing terminals of the existing Weighing Systems are shown in Part 2 of this Appendix.
- (4) Within 4 weeks after the *starting date* as notified by the *Supervisor*, the *Contractor* shall submit detailed proposal for the checking, calibration, operation and maintenance procedures of his proposed Weighing Systems to the *Supervisor* or acceptance.
- (5) In addition to the normal power supply, the *Contractor* shall provide, operate and

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

- (6) The *Contractor* shall operate and maintain the Weighing Systems to measure the net weights of fill materials with this PS Clause as instructed by the *Supervisor*. The *Contractor* shall direct those vehicles which require measurement to the Weighing Systems for weighing. The *Contractor*'s staff shall input the following information using the weighbridge terminal to record each weighing operation:
- (a) vehicle identification
 - (b) type of material
 - (c) destination of materials
 - (d) remarks (to be advised by the *Supervisor*'s staff)

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

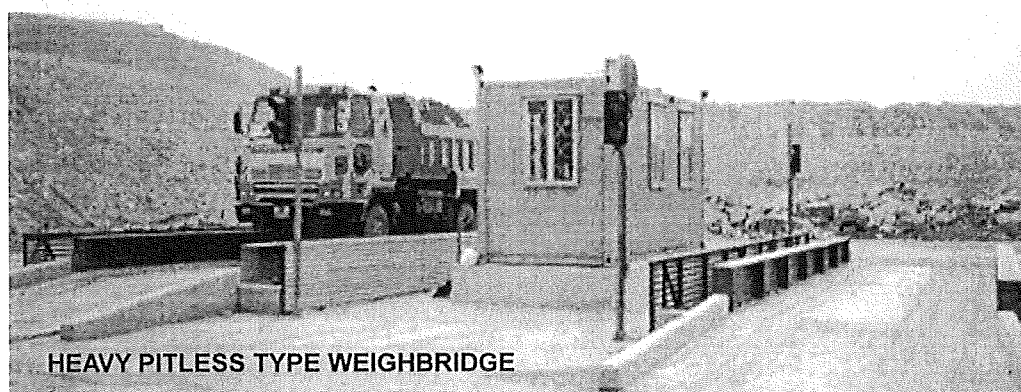
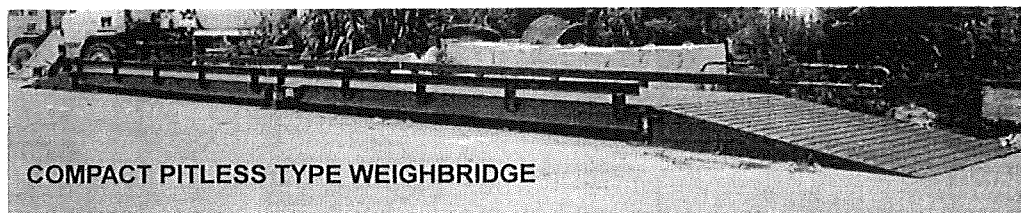
The net weight of the material as automatically calculated from the weights of vehicle measured at the in-weighbridge and the out-weighbridge, together with other information as inputted in accordance with this sub-clause, shall be printed immediately on the dot-matrix printer in a daily transaction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

- (7) The *Contractor* shall be responsible for the operation and maintenance of the Weighing Systems and shall deploy adequate experienced superintendent personnel, labour and Constructional Plant to ensure the Weighing Systems are operated properly. The *Contractor* is also responsible for directing the vehicles to the appropriate Weighing Systems for carrying out and completing the weighing operation in accordance with the contract requirements.
- (8) Notwithstanding the *Contractor*'s responsibility with respect to management and operation of the Weighing Systems under this PS Clause, the *Supervisor* reserves

- the right to use any of the Weighing Systems at any time for whatsoever reason he considers necessary.
- (9) All weighbridges of the Weighing Systems shall be calibrated on a three-month basis by an independent calibration firm proposed by the *Contractor* and accepted by the *Engineer*. The calibration shall be carried out from zero loading at an increment of 2 tonnes up to 50 tonnes. In addition, the *Contractor* shall arrange for weekly checking and routine repainting of the weighbridges in accordance with his proposal accepted by the *Supervisor*. The permitted tolerance in measured weight shall be within $\pm 0.1\%$.
- (10) The *Contractor* shall carry out weekly checking of the weighbridges. The *Contractor* shall provide a weight of not less than 12 tonnes made of concrete or other approved material for use as a standard weight in the weekly checking of the weighbridges. The initial calibration of the standard weights shall be carried out by an independent calibration firm proposed by the *Contractor* and accepted by the *Supervisor*. The weekly checking of the weighbridges shall be carried out by comparing the measured value, which shall be the difference between the laden weight of a vehicle loaded with the standard weight and the unladen of the same vehicle measured by the weighbridge, against the initial calibrated value of the standard weights. The accuracy of the weights printed on the daily transaction list shall be also checked. If the measured or printed values of the standard weight deviates from the calibrated value by more than $\pm 1.5\%$ (in terms of kilogram), the weighbridge shall be deemed as not operational. When not in use, the standard weight shall be stored properly in the Site and be protected from rain, heat, abrasion or other attacks.
- (11) Unless otherwise instructed by the *Supervisor*, the *Contractor* shall hand over the Weighing System to the *Employer*. Prior to the handover, the *Contractor* shall demonstrate to the satisfaction of the *Supervisor* that the weighbridges, including all related equipment, hardware and software, are in proper condition and shall be responsible for all repairs, checking, calibration and adjustments if necessary.

Technical Specifications of Loadcell and Weighing Terminal of Weighing System

WWB3000 Weighbridge Systems



FEATURES

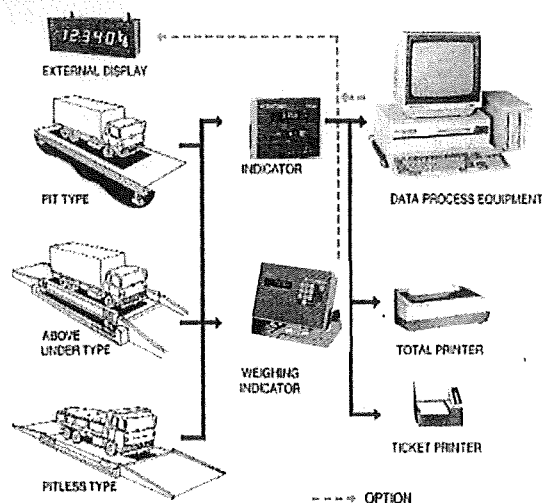
- HIGH ACCURACY
- FULL LOADCELL TYPE
- BCD & RS-232C INTERFACE
- COMPUTERIZED WEIGHT MANAGEMENT SYSTEMS
- LARGE EXTERNAL INDICATOR (OPTION)

SPECIFICATIONS (Unit : mm)

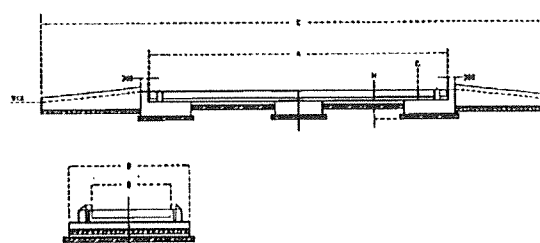
CAPACITY	MIN GRAD	L/C QTY.	A	B	C	D	G	H
30	10	4	8,000	3,000	16,620	4,000	450	1,250
50	10	4(6)	12,000	3,000	20,620	4,000	450	1,250
60	10	6	16,000	3,000	24,620	4,000	450	1,250
60	10	6(8)	18,000	3,000	26,620	4,000	450	1,250

* OVER 60 ton (OPTION)

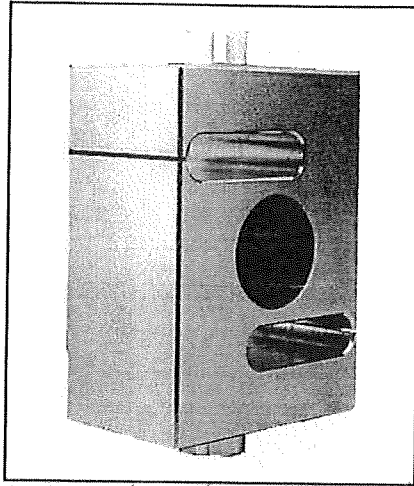
SYSTEM COMPOSITION



DIMENSIONS (Unit : mm)



ZY30 COMPRESSION LOADCELL



STANDARD CAPACITY:

30 ton

WIRING:

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

6 COLOUR SHIELD CABLE 30FT

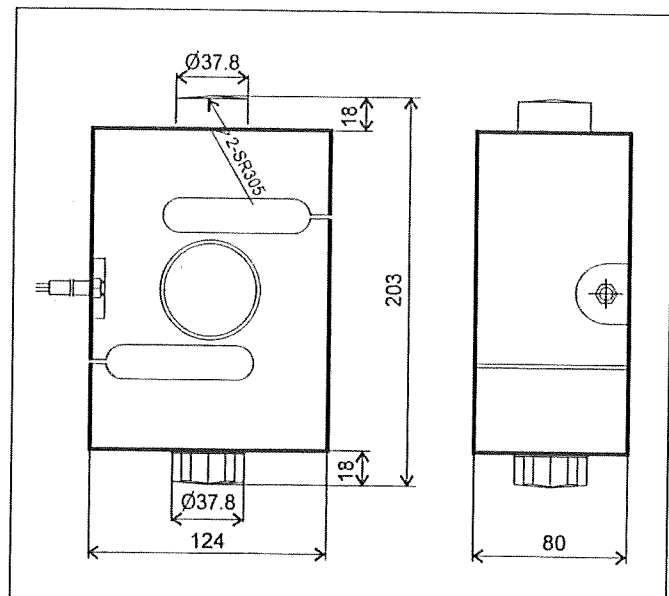
- Alloy tool steel electroless nickel
- Moisture protected
- Center-link loaded

- Temperature compensation, both zero and span
- Compatible with international standard fixings
- Full range of mounting accessories

Specifications

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

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



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

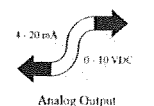
Cost-Effective, Easy-to-Use, Basic Weight Terminal

Designed for chemical, pharmaceutical, food and other process industries, Mettler Toledo's PANTHER Weighing Terminal provides basic weight indication, unit switching and data output. Standard capabilities include two setpoints or four target weight storage (for manual checkweighing applications.) Built-in setpoints can be used to back up automated control systems or for simple batching applications.

Offering a top value, the PANTHER terminal is simple to operate. It includes our exclusive TraxDSP vibration rejection and superior noise filtering system. You can adjust the amount of filtering to minimize response time, and get stable weights, even when your scale has a mixer or agitator mounted on it. The analog version of PANTHER terminal is suitable for use with up to 8 load cell scale installations... thus will easily handle oversize tanks.

PANTHER Enclosures

Two enclosure styles are available. A Harsh Environment stainless steel enclosure, that meets NEMA 4X (IP65) requirements, can be column, wall or desk mounted. The stand is adjustable to provide the best operator viewing angle. Minimum panel space is needed to mount the compact panel mount PANTHER terminal in enclosures, doors, or control panels. The keyboard display enclosure for the panel mount version meets NEMA 4X (IP65) requirements. The PANTHER terminal includes a 0.5" (12.7 mm) high, vacuum fluorescent display and a six-function keypad. A 16 bit analog output is available for either version, and three high level outputs are available for the Panel Mount version.

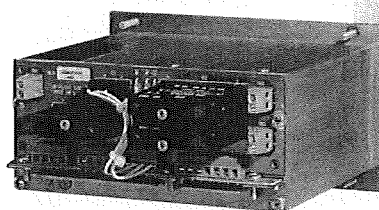


Process Control Connectivity

The PANTHER may be integrated with your process controller through a variety of methods, including Allen-Bradley RIO, Modbus Plus® and PROFIBUS®. Alternatively, an analog output option provides 4-20 mA or 0-10 V analog output of weight information.

ISO 9001

This product was developed, produced and tested in a Mettler Toledo facility that has been audited and registered according to international (ISO 9001) quality standards.



Panel Mount with
Optional High Level Output



Wall Mounted
Harsh Enclosure

Features	Benefits
Analog Load Cell Version	Supports up to eight 350k analog load cells.
DigitOL Load Cell Version	Compatible with Mettler Toledo XX96, XX97, UltraRes® and DigitOL junction box products.
Setpoint or Checkweigh Operation	Select either standard weighing, simple batch process weighing or manual checkweighing.
LED Status Indicators	LEDs indicate setpoint status or target zone condition.
Memory	Stores two setpoints with preact – or four target weights, zero and tare values.
TraxDSP	Tunable digital filtering to suppress effect of vibration on weighing.
Universal Power Supply	Works with 100, 120, 220, 240 VAC power supplies.
Compact Design	Takes up less panel or desk space.
Hazardous Area Applications	Can interface with scale bases used in hazardous areas when used with appropriate barriers.
Data Output	Standard RS-232 demand, bidirectional or serial continuous output. Printer connection is standard.
Mettler Toledo Continuous Output	For connections to PLCs, DCS and SCADA devices.
Options	
Analog Output Option	0-10 V or 4-20 mA analog output.
Optional High Level Outputs	For switching between 28-230 VAC (panel mount only).
Discrete PLC Connectivity	Allen-Bradley RIO, PROFIBUS or Modbus Plus

International Approvals

The PANTHER meets UL, cUL and CE safety standards. It meets or exceeds requirements for Class III and IIIL devices. A certificate of conformance, #96-125A1 was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights & Measures.



Global Sales and Service

We have been our nation's major supplier of industrial scales since the century began. As part of Mettler Toledo Worldwide we also have global capabilities...with authorized sales and service offices throughout the US, Canada, and every major part of the world. See your nearest authorized distributor for details on PANTHER Terminals... or any other weighing application.

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Appendix J

Details of the Load Cell System

“GPS Load Cell” Contract Requirements

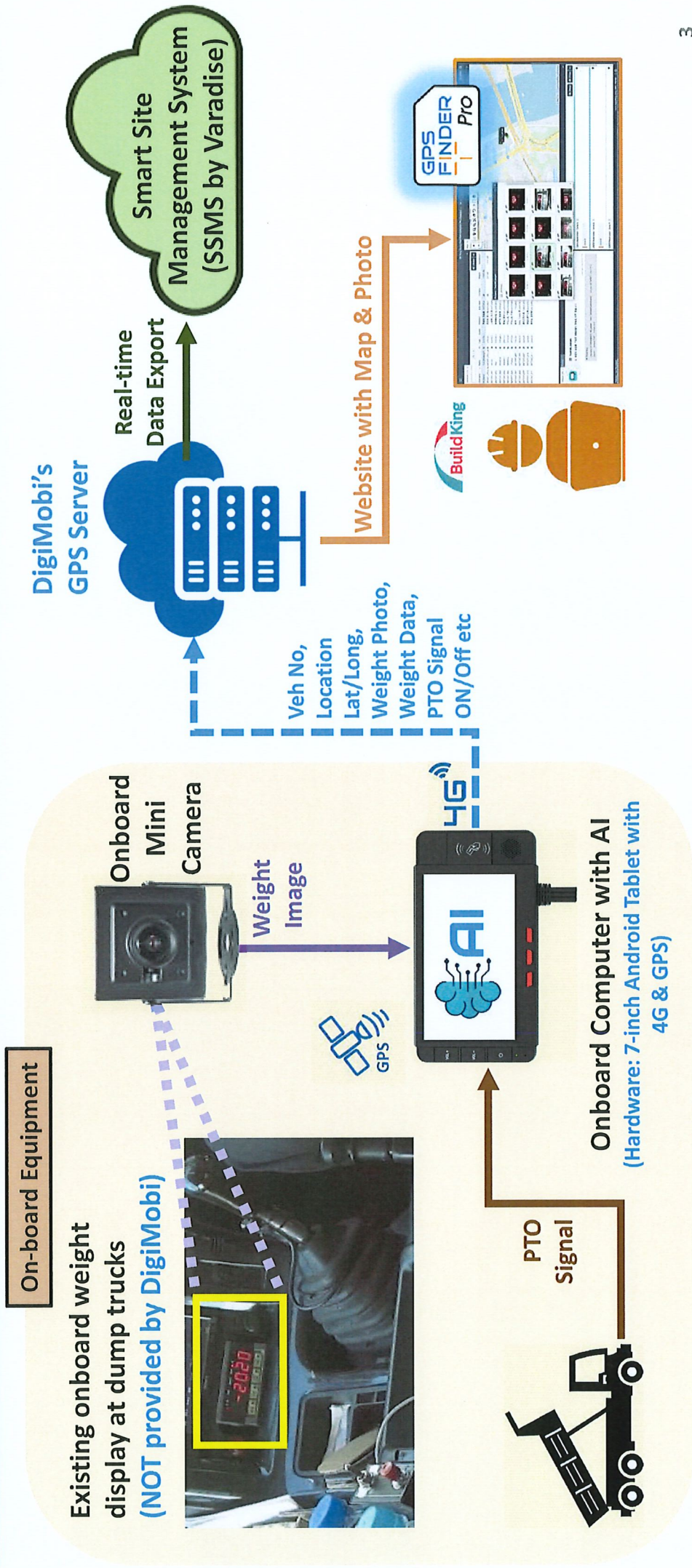
1) Contract Requirement of 25.25A (2):

- (2) All dump trucks the contract shall be fitted with both GPS and load cells so that the locations and loads of the dump trucks shall be monitored by the Smart Site Management System stated in PS1.70B.

2) Requirement of 25.25A (4):

- (4) The Contractor shall submit the proposal of the dump truck tracking system no later than one month from the commencement of the contract for the approval of EPD and the Project Manager. The submission shall include: the technical specification and accuracy of the GPS, load cells and the recording system in Smart Site Management System.

Overview of Weight Display Camera AI Solution



Screenshot of Onboard Computer in the Dump Truck - **“Confirm” button for driver to double-confirm a stable weight**



Photo will be taken for Weight Display every 10 seconds when PTO Button is switched On
All weight display photo will be sent to server for record and double check by user

“Confirm” Button:

“Confirm” button for driver to confirm a stable weight figure for submission to the system

On-Board Computer Screen

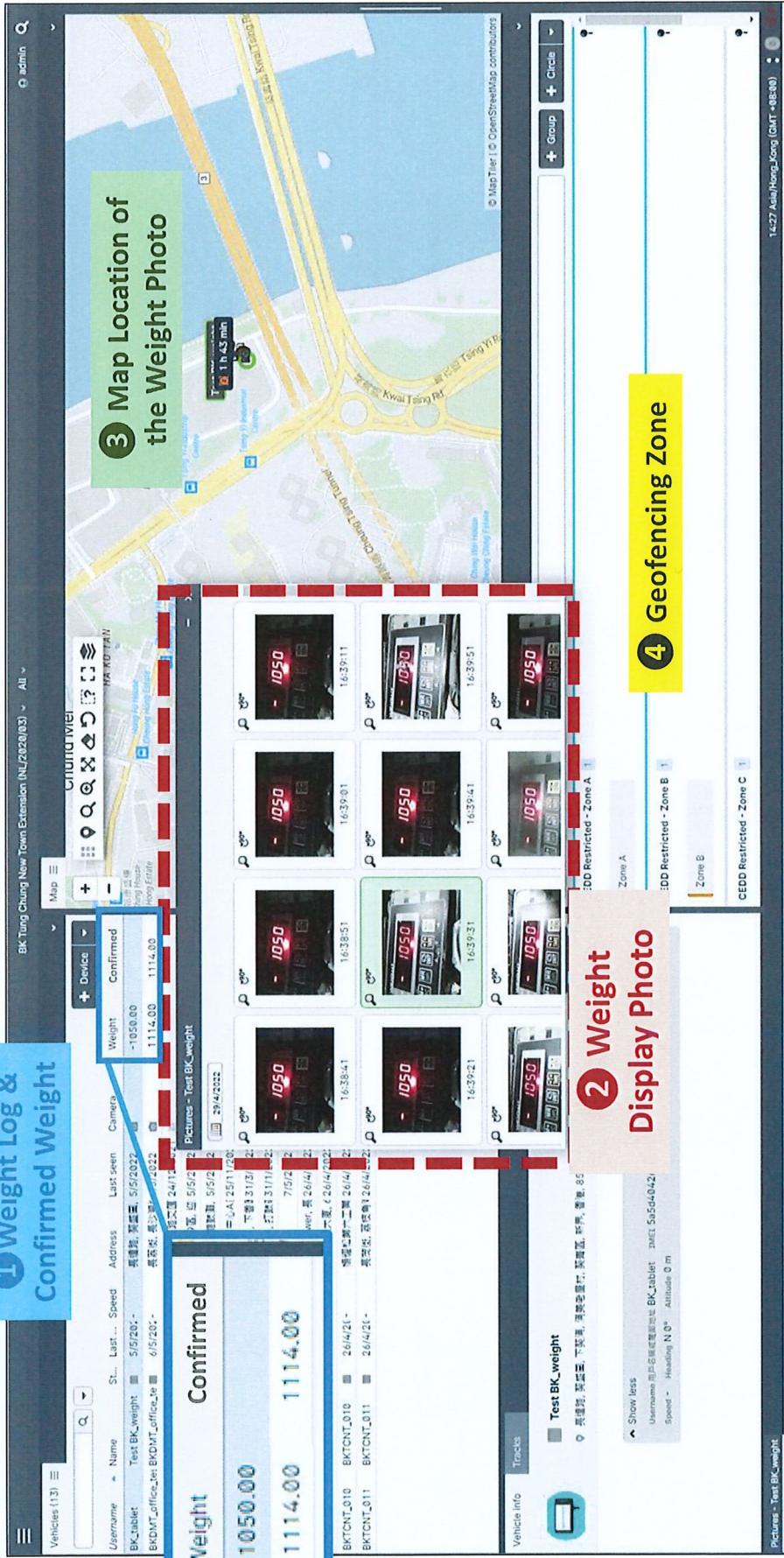
Screenshot of Weight Display Photo and Weight Data at the website of DigiMobi's GPS Server

1 Weight Log & Confirmed Weight

3 Map Location of the Weight Photo

2 Weight Display Photo

4 Geofencing Zone



The screenshot displays the DigiMobi GPS server interface. At the top, there's a header with 'admin' and a search bar. Below the header, the main content area is divided into several sections:

- Vehicle List:** A table showing vehicle details. The first row is highlighted:

Vehicle Name	St.	Last ...	Speed	Address	Camera
BK_Tablet	Test BK_weight	5/5/2022		香港新界沙田區馬鞍山路	
BKONT_official	Test BK_weight	5/5/2022		香港新界沙田區馬鞍山路	
- Weight Log & Confirmed Weight:** A table showing weight data for the selected vehicle. The first row is highlighted:

Weight	Confirmed
-1050.00	1114.00
- Map Location of the Weight Photo:** A map showing the location of the weight photo. A green box highlights the location, and a red dashed line indicates the geofencing zone.
- Weight Display Photo:** A grid of 12 photos showing the weight display on a vehicle's dashboard. Each photo is labeled with a timestamp and a weight value (e.g., 16:39:11, 1050).
- Geofencing Zone:** A section showing the geofencing zone. It includes a map and a list of zones:
 - Zone A
 - Zone B
 - Zone C

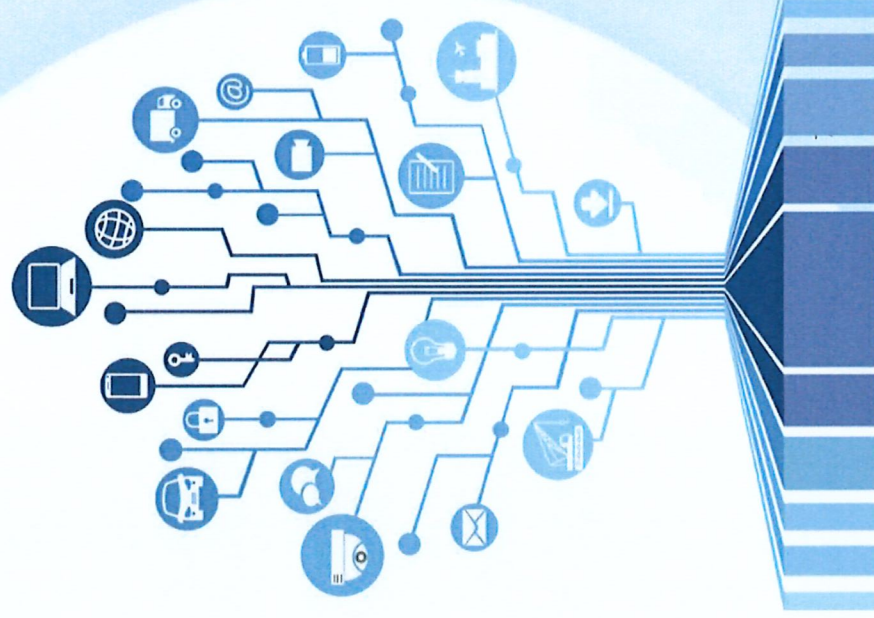
At the bottom, there's a footer with 'DigiMobi' and 'Weight-Eye' logos.

Quality Assurance measures to ensure the Accuracy of Weight Data

- 1) PTO Signal from the Dump Truck
 - a) In order to carry out weighing, PTO Signal must be switched on first at the dump truck
 - b) The PTO signal helps to ensure that weighing activity is in progress
 - c) The Weight Display will display some “false” weight data even when weighing activity is not in progress and the solution uses PTO Signal to “ignore” such false weight data
 - d) In addition, the PTO signal also helps monitor whether there is illegal dumping activity
- 2) “Confirm” Button for the driver
 - a) There is a “Confirm” button for the driver to double confirm that the weight is correct and stable
 - b) AND the driver CANNOT manually input a weight data
 - c) DigiMobi’s server can export only “confirmed” weight to Smart Site Management System
- 3) Weight Display Photo & Weight Data Log for Build King to counter check
 - a) Weight Display photo is taken every 10 seconds when PTO Signal is on;
 - b) Weight data is then logged every 10 seconds by the AI Program and sent to DigiMobi’s Server no matter the driver press “Confirm” button or not
 - c) The weight display photo and weight data log help Build King staff to counter check whether a weight is correctly reported by the driver or DigiMobi’s AI Solution



Product Specifications



Product Specifications of Onboard Computer

-Industrial-grade Vehicle-Use 7 inch Android Tablet

DATASHEET



7" Rugged Smart Android MDT

Hero-MDT-AT5 (V2)



Key Feature`

- Android 7.1 OS; faster and smoother interface
- More Powerful CPU, Quad core ARM Cortex-A17, 1.6GHz
- Better multi-tasking capability
- Powerful video recording: 2 ch 720p, 1ch1080p camera recording ability
- H.265 video decoding
- Ruggedized design for vehicle environment and operation
- 7-inch 1024*600 capacitive multi-point touch control screen
- 2/3 Axis Mounting Holder for pan/tilt installation
- Specialized RFID module

Software	
OS	Android V7.1
Audio format	MPEG-3, VMA, etc.
Video format	MPEG-4, AVI, RMVB, etc.
Picture format	JPG, BMP, GIF, etc.
Text format	TXT
TTS voice	Support
Image hard decoding	H.264/H.265 decoding
Navigation	Support Android navigation software. Support pinch to zoom (capacitive screen)
SDK	Test APP and source code for programming guidance
Communication	
3G/4G	Support 3G and LTE modules optional. (PCI e mini card). WCDMA/HSDPA/HSUPA/HSPA+: Band 1, Band 8 GSM/GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz
DATA	GPRS: UL 85.6 kbit/s; DL 85.6 kbit/s EDGE: UL 236.8 kbit/s; DL 236.8 kbit/s WCDMA PS: UL 384 kbit/s; DL 384 kbit/s HSPA+: UL 5.76 Mbit/s; DL 21.6 Mbit/s
GSM Voice	support
Sensitivity	-110dBm
3G antenna gain	3.3 dB
GPS	
GPS/GNSS/BEIDOU module	SKG12BL (default) / Ublox M8 series for option
Receiver Type	L1 frequency band, C/A code, 22 tracking/66 Acquisition-channel
Sensitivity	-165dBm (tracking), -148dBm (Acquisition)
GPS antenna gain	The gain of active antenna should be no more than 25dB (18~20dB Typical). The noise figure should be no more than 1.5dB and output impedance is at 50 Ohm.
Accuracy	3.0m CEP50 without SA(position), 0.1m/s(velocity)
Acquisition Time	23s (cold start)

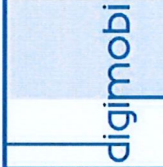
Product Specifications of USB Camera



Rmoncam 林柏视	
技术参数	
型号	S908 (480P)
传感器	CMOS 1/4传感器
镜头	70/90/100/150/180度可逆
分辨率	默认1280*720 支持640*480 320*240
音频	模拟麦克风
压缩格式	MJPEG (可逆 YUY2)
工作电流	约100-150mA
接口	标准USB2.0 免驱
线长	标配1.5米 (1-5米可订制)
帧率	30帧/秒
调焦方式	手动调焦 (顺时针或逆时针旋转镜头)
成像范围	2cm至无穷远
工作电压	USB5V
工作寿命	约50000小时
动态范围	65 db
图像处理	自动曝光、自动增益、自动白平衡、伽马校正
图像控制	饱和度控制/锐度控制/亮度控制/对比度控制/伽马控制/白平衡
工作湿度	避免在过于潮湿的环境使用, 适用温度范围 (85%RH以下) 内使用
工作温度	避免在过热或过冷环境使用, 适用温度范围 (-40 ~ +70°C) 内使用
支持软件	支持录像大师、美图自拍、微方、掌上管家、Q聊天、SKEPY、MSN、证照之星、千千静听、阿里旺旺、YY伴侣、斗鱼、花椒直播、快手直播等第三方视频软件
支持系统	支持已集成了UVC Drive 的 Vista Linux Android XP Win7 Win8 Win10 MAC 等主流系统免驱、即插即用。(台式机、笔记本、平板、手机通用)
适用于	远程教学、直播直播、人脸识别、视频会议、广告机、单片机、机器人、门禁刷卡拍照、行车记录、虹膜识别、工业机柜等等



Company Background & Job Reference

 The logo for DigiMobi, featuring the word "digi" in a light blue sans-serif font and "mobi" in a darker blue sans-serif font, both in lowercase.	DigiMobi Technology Limited 圓方電信科技有限公司
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Signature Projects & Job Reference

亮點項目、應用行業及現有知名客戶



Signature Projects
(亮點項目)



Job Reference by Industries
(應用行業及現有知名客戶)

Customer	Project Information
	• Manage all 5,000 Vehicles/GSEs inside Airport Restricted Area • Biggest Private FMS Server in HK
	• Permanent & Removable GPS Trackers for 600 Vehicles • Speed Monitoring
	• Driver Management & Access Control using RFID Card • 4G Live Video Service
	• Real-time Temperature Monitoring for Chilled/Frozen Food • Alert Management System

Industries	Existing Customers
Construction & Environmental Protection	        
Government & Utilities	    
Food, Retail, Hotel & Macau	     
Airport, Logistics & Transportation	        

Thank you !

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