

Ref.: HYDHZMBEEM00_0_0006L.12

8 March 2012

Engineer's Representative
Ove Arup & Partners
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong

By Fax (2268 3970) and By Post

Attention: Mr. Michael Lo

Dear Mr. Lo,

**Re: Contract No. HY/2010/02
Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Facilities –
Reclamation Work
Waste Management Plan**

Reference is made to the Environmental Team's submission of the Waste Management Plan (letter ref. C/lhc12030830 dated 8 March 2012) copied to us by E-mail on 8 March 2012.

We are pleased to inform you that we have no adverse comments on the captioned Waste Management Plan. We write to verify the captioned submission in accordance with Condition 2.10 of EP-353/2009/D and Condition 2.10 of EP-354/2009/A (only for TMCLKL Southern Landfall Reclamation).

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,



Raymond Dai
Independent Environmental Checker

c.c. HyD – Mr. Matthew Fung (By Fax.: 3188 6614)
AECOM – Ms. Echo Leong (By Fax: 2317 7609)
CHEC – Mr. C M Wong (By Fax: 2578 0413)

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中國港灣工程有限責任公司

香港代表： 振華工程有限公司

CHINA HARBOUR ENGINEERING COMPANY LIMITED
HONG KONG REPRESENTATIVE: ZHEN HUA ENGINEERING CO., LTD.

Date : 8th March 2012
Our Ref. : CHEC/C273/10.04/000515

Environ Hong Kong Limited
Room 2310, China Resources Building
26 Harbour Road, Wan Chai, Hong Kong

By email and fax 3548 6988

Attn.: Mr. David Yeung

Dear Sir,

Contract No. HY/2010/02
Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation Works
Submission of Waste Management Plan (incorporated EPD's comments)

We refer to EPD's letter with ref. () in Ax (1) to EP2/G/A/146 (V) dated 5th March 2012, we are pleased to provide the Waste Management Plan in which certified by ET (letter with ref. C/lhc12030830 dated 8th March 2012) as enclosed for your verification

Thank you for your kind attention and please do not hesitate to contact our Mr. C.M. Wong at 9717 7986 should you have any further enquiries.

Yours faithfully,
For and on behalf of
China Harbour Engineering Company Limited

Shum Hong Sang
Project Manager

Encl.

SHS/DC/WCM/sy
am tang

c.c.	Arup	Dr. K.K. Yin (The Engineer)
	Highways	Ms. Bill Chan Fax 3188 6614
	AECOM	Ms. Echo Leong Fax 2317 7609
	ER	Mr. Michael Lo Fax 2268 3970

Your Ref:
Our Ref: C/lchc12030830

By Fax (2578 0413) and E-mail

China Harbour Engineering Company Limited
19/F., China Harbour Building,
370-374 King's Road,
North Point,
Hong Kong.

Attn: Mr. SHUM Hong-sang

8 March 2012

Dear Sir,

**Contract No. HY/2010/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation Works**

Certification of Waste Management Plan (Rev. 3)

Reference is made to the Waste Management Plan (Rev. 3) submitted by you via e-mail dated 8 March 2012.

We hereby certify the captioned plan as in compliance with the condition 2.10 of Environmental Permits No. EP-353/2009/C and condition 2.10 of Environmental Permits EP-354/2009/A (only for TMCLKL Southern Landfall Reclamation), for your onward submission.

Should you require any further information, please do not hesitate to contact our Ms. Edith Ng at 3922 9407.

Yours faithfully,

For and on behalf of
AECOM Asia Co. Ltd.



Echo Leong
Environmental Team Leader

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Contract No.: HY/2010/02

Hong Kong – Zhuhai - Macao Bridge

Hong Kong Boundary Crossing Facilities – Reclamation Works

WASTE MANGEMENT PLAN

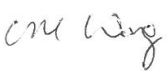
	Name	Signature
Prepared by:	China Harbour Engineering Company Limited	

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Abbreviations List

C&D	Construction & Demolition
CEDD	Civil Engineering and Development Department
CM	Construction Manager
DDF	Disposal Delivery Form
DRS	Daily Record Summary
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring & Audit
EO	Environmental Officer
EPD	Environmental Protection Department
EP	Environmental Permit
ER	Engineer Representative
ES	Environmental supervisor
ET	Environmental Team
ETL	Environmental Team Leader
Hyd	Highways Department
IEC	Independent Environmental Checker
MTRC	Mass Transit Railway Corporation
PFRF	Public Fill Reception Facility
TCA	Tung Chung Area 51, 53 and 54
TKO Area 137	Tseung Kwan O Area 137 Fill Bank
TM38	Tuen Mun Area 38 Fill Bank
TTS	Trip Ticket System
WAC	Waste Acceptance Criteria
WENT	West New Territories Landfill
WFT	Waste Flow Table
WMP	Waste Management Plan

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1 INTRODUCTION

The Waste Management Plan (WMP) has been developed in accordance with clause 2.10 of Environmental Permit EP-353/2009/C and clause 2.10 of Environmental Permit EP-354/2009/A and G.S. 25.25 of the Particular Specification for the Highways Department Contract namely Contract No. HY/2010/02 Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities –Reclamation Works (hereinafter the Contract)

1.1 Purpose of the Plan

This Waste Management Plan (WMP) aims to describe the arrangements for avoidance, minimization, handling, reuse, recovery and recycling, storage, transportation, collection, treatment and disposal of different categories of waste to be generated from the construction activities of this project. This WMP includes the recommended mitigations measures on waste management as contained as stipulated in EIA report and EM&A Manual.

The main objectives of the WMP include:

- i) providing reference to the waste management requirements, both statutory and non-statutory;
- ii) clarifying the responsibilities of each party on waste management and the personnel within the Contractor’s management;
- iii) establishing the waste management procedures for avoidance, minimization, material reuse/recovery/recycling, collection, transportation, storage and disposal of wastes generated from the activities.

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1.2 Environmental Management Policy

An Environmental Management Policy is established to demonstrate the Company's commitment in improving environmental performance. It aims to communicate China Harbour Engineering Company's mission, vision and beliefs towards the environment to the staff and provides a framework for guiding China Harbour Engineering Company's ongoing environmental improvement efforts.

The policy will be reviewed by relevant parties periodically and will be displayed on notice boards in languages suitable for the nationality for the workforce.

The Environmental Policy Statement, together with the Environmental Objectives and Targets, are listed below:

Environmental Policy Statement

The core business of China Harbour Engineering Company Limited / Zhen Hua Engineering Company Limited is design, construction and maintenance of civil, marine, environmental, building and foundation engineering works. It is the policy of the Company to ensure that all its activities are carried out in a manner that causes minimum adverse impact on the environment through the establishment and implementation of an environmental management system. We committed to: -

- comply with all environmental legal, contractual and other requirements;
- prevent pollution by providing sufficient resources for implementation of environmental nuisance control and waste management;
- reduce the production of construction waste and to minimize the consumption of natural resources by careful planning and implementation;
- provide appropriate training to all staff including subcontractors' staff;
- strive to achieve continual improvement through periodic review of the environmental objectives and targets and management reviews.

Mr. Wang Hong Rong, Deputy General Manager, responsible for the overall co-ordination and implementation of this policy. However, environmental protection is one of the prime responsibilities of every employee, all staff shall ensure that this policy is understood, implemented and maintained. This policy will be reviewed annually and whenever necessary.

Approved by:

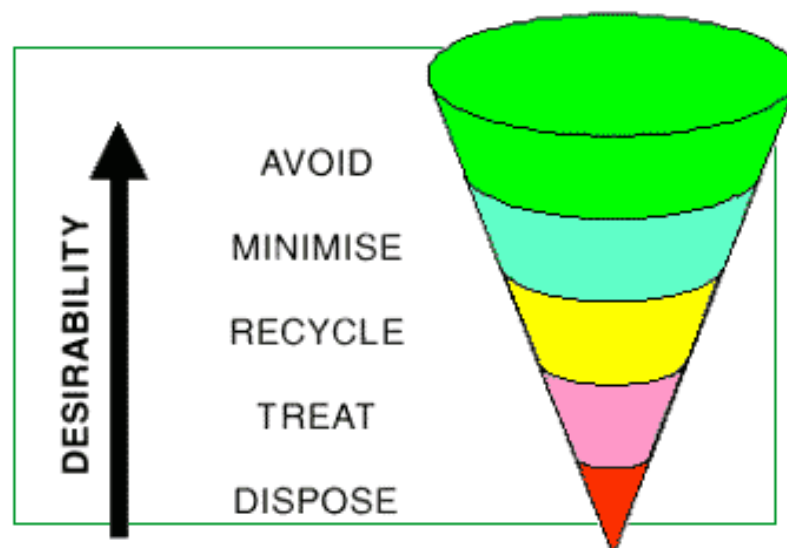


Managing Director
1 April 2011

1.3 The waste management policy

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

The hierarchy is illustrated below. It attempts to evaluate waste management practices and selects the best practical option since conceptually it makes sense to avoid producing a waste rather than developing extensive treatment schemes. Good planning and site management practices also help minimizing over ordering or misuse of construction materials. The overall objective is to reduce and minimize the amount of wastes generated, hence reducing the costs of waste handling and disposal.



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

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1.4 Regulations and Guidelines

General

1.4.1 Various types of wastes would be generated during the course of the Project and each waste types requires different approach for management and disposal as stipulated in the waste legislation and guidelines. The relevant statutory and non-statutory requirements regarding waste management are summarized in the sections below.

Statutory Requirements

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

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

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

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

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

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

- 1.4.6** Under the WDO and the Charging Regulation, wastes can only be disposed of at designated waste disposal facilities licensed by EPD. For construction work with a value of more than HK\$1M, the main contractor is required to establish a billing account at EPD before transporting the construction waste to the designated waste disposal facilities (e.g. landfill, public fill etc.). The vessels for delivering construction waste to public fill reception facility would need prior approval from EPD. Breach of these regulations can lead to a fine and/or imprisonment.
- 1.4.7** The Public Cleansing and Prevention of Nuisances By-Laws provide further controls on the illegal tipping of wastes on unauthorized (unlicensed) sites.
- 1.4.8** The Contractor would obtain all necessary permits and licenses under these ordinances including, but not limited to:
- Chemical waste permits/licenses under the Waste Disposal Ordinance (Cap 354);
 - Public Dumping License under the Land (Miscellaneous Provisions) Ordinance (Cap 28); and

Non-statutory Regulations

- 1.4.9** The following guidelines related to waste management and disposal would be adhered to during construction of the Project:
- Waste Disposal Plan for Hong Kong (1989), Planning, Environmental and Lands Branch Government Secretariat.
 - Environmental Guidelines for Planning in Hong Kong. Hong Kong planning Standards and Guidelines (1990).
 - New disposal Arrangements for Construction Waste, EPD and CEDD (1992).
 - Code of Practice on the Packaging, Labelling and storage of Chemical Wastes EPD (1992).
 - Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste, EPD.
 - Works Branch Technical Circular No. 12/2000, Fill Management, Works Bureau, HKSAR Government.

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- Works Branch Technical Circular No. 29/2000, Waste Management Plan, Works Bureau, HKSAE Government.
- Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002, Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau, HKSAR Government.
- Works Branch Technical Circular, 32/92, the Use of Tropical Hard Wood on Construction Site, Works Branch, Hong Kong Government.
- Works Branch Technical Circular No. 2/93, Public Dumps, Works Branch, Hong Kong Government.
- Works Branch Technical Circular No. 16/96, Wet Soil in Public Dumps, Works Branch, Hong Kong Government.
- Works Bureau Technical Circular NO. 4/98 and No.4/98A, Use of Public Fill in Reclamation and Earth Filling Projects, Works Bureau, HKD_SRA Government.
- Works Bureau Technical Circular No. 5/98, On-site sorting of Construction Waste on Demolition Site, Works Bureau, HKSAR Government.
- Environment, Transport and Works Bureau Technical Circular (Works) No. 33/2002, Management of Construction and Demolition Material including Rock, Environment, Transport and Works Bureau, HKSAR Government
- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat, 5 November 1998.
- Works Bureau Technical Circular No. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness, Works Bureau, HKSAR Government.
- Works Bureau Technical Circular No. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers, Works Bureau, HKSAR Government.
- A Guide to the Registration of Chemical Waste Producers.
- A Guide to the Chemical Waste Control Scheme.

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2 SITE ORGANIZATION AND STAFF DUTIES

2.1 Organisation Structure

The organization structure for waste management is outlined in **Figure 1**. This chart outlines the overall site management in relation to waste management and environmental issues. Details on the roles and responsibilities of staffs responsible for implementation of the waste management plan are outlined below.

2.2 Roles and Responsibilities

CHEC has appointed the Environmental Officer as the senior staff member fully responsible for implementing and overseeing the operation of the WMP. And the Construction Manager, Superintendents, General Foremen and Foremen are appointed a worker at each exit from the Site for the purpose of ensuring that every truck carrying C&D materials leaving the Site bears a duly completed, signed and stamped DDF.

2.2.1 Project Director

The Project Director has responsibility for coordinating all environmental matters and reporting on these to the China Harbour Engineering Co., Ltd. Supervisory Board and is responsible for all aspects of environmental issues within the project.

2.2.2 Project Manager

The Project Manager is also responsible for ensuring commitment and assigning resources to provide an effective environmental management program in the workplace. The Project Manager will also attend the Site Safety and Environmental Management Committee Meeting and the Site Safety and Environmental Committee Meeting if required.

2.2.3 Safety, Health and Environmental (SHE) Manager

The SHE Manager is a representative of head office responsible for ensuring commitment to environmental performance is fulfilled and assigning adequate resources and facilities to provide an effective environmental management programme on site.

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2.2.4 Construction Manager (CM)

The Construction Manager (CM) is a senior staff on site report to the Project Director has the responsibility to coordinate all instruct environmental matters on site with all relative authorities. CM is also responsible for all site operations, management of environmental issues, staff supervision, control, coordination & planning, external liaison as well as implementing and monitoring necessary corrective actions. CM is working full-time on the site.

The Construction Manager will also carry out immediate action to rectify any non-compliance of environmental requirements as well as handle any complaints received from the public.

Construction Manager has the responsibility to coordinate all environmental matters on site areas and to report these to the Site Safety and Environmental Committee, HyD, EPD and Engineer's Representatives. The Construction Manager is also responsible for ensuring commitment to environmental performance is fulfilled and assigning adequate resources and facilities. With the assistance of the Environmental Officer, he would also oversee the implementation and performance of the WMP. The Construction Manager reports to the Site Agent. He would assume environmental duties on site and ensure that works are executed in accordance with the WMP. He will arrange regular site inspections with the Environmental Officer (EO).

2.2.5 Environmental Officer (EO)

The Environmental Officer will be appointed on site for the overall coordination, monitoring and overseeing the performance and implementation of the WMP for the Contract. The Environmental Officer directly reports to the Construction Manager.

The responsibilities of the Environmental Officer are also included as follows:

- Review the Site Management Plan for Implementation of TTS and ensure works are executed in accordance with the plan;
- Monitor and control the works including those of subcontractors to ensure compliance with specified requirements;
- Assist in handling any complaints received; and
- Ensure regular environmental monitoring is carried out, and that all environmental

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monitoring results are recorded.

2.2.6 Environmental Supervisor (ES)

Environmental Supervisor (ES) is responsible for the implementation of this WMP with the assistance of the foreman. They are also responsible for:

- co-operate with the Environmental Officer to rectify any Non-conformances being identified;
- attend environmental meetings whenever necessary;
- carry out ad hoc environmental site inspections when deficiencies are being found; and
- assist with Environmental Officer on any environmental accidents like chemical spillage.

2.2.7 Superintendents / Senior Foremen / Foremen

The Superintendent / Senior Foremen / Foremen are responsible for site supervision and coordination of the works as well as implementation of any remedial actions or environmental protection measures as directed by the CM / EO.

The Superintendent / Senior Foremen / Foremen are also responsible for:

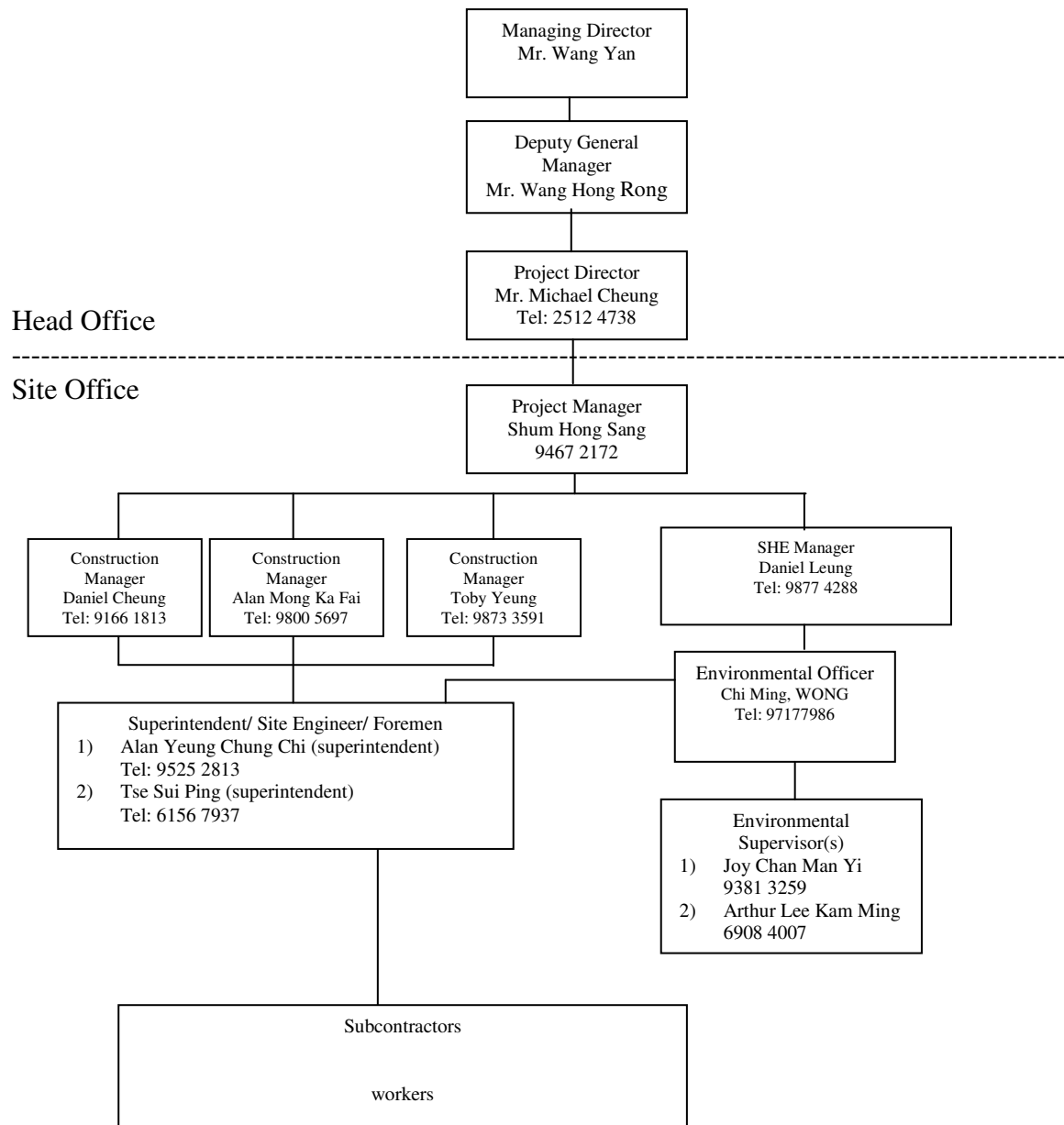
- assisting in the daily implementation of the WMP including to ensure all waste is sorted, segregated, recycled or reused when applicable;
- ensuring the trip-ticket system is followed and all appropriate paperwork to be collected and signed off; and
- ensuring waste is avoided and/or minimised as much as practically possible.

2.2.8 Workers

The workers are responsible to carry out the waste management practice. They are obligated to carry out the works like:

- sorting of different types of wastes;
- collection of wastes from each working sites to the temporary storage area/ designated fill banks / landfills;

- general site cleaning;
- attend waste management training organized by the Environmental Officer following this site management plan.



———— Line of responsibility and communication

Figure 1: The Organizational Structure for Site Management Plan

China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 3
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Name	Post	Telephone No.
Project Director	Michael Cheung	2512 4738
Project Manager	Shum Hong Sang	9467 2172
Daniel Cheung	Construction Manager	9166 1813
Alan Mong	Construction Manager	9800 5497
Toby Yeung	Construction Manager	9873 3591
Daniel Leung	SHE Manager	9877 4288
Wong Chi Ming	Environmental Officer	9717 7986
Joy Chan	Environmental Supervisor	3157 1086
Arthur Lee		6908 4007
Alan Yeung Chung Chi	Superintendent	9525 2813
Tse Sui Ping		6156 7937

Table 1: Contact List of Designated Persons for Implementation of the Trip Ticket System in site level.

3 SITE SPECIFIC WASTE MANAGEMENT

Waste Policy Principles

Refer to hierarchy abovementioned in Section 1, a further explanation of the hierarchy of waste management on site is detailed below.

3.1 Hierarchy of Waste Management

3.1.1 Key to waste management is to reduce the amount of waste generated from the work site. Waste management options would be exercised in accordance with the hierarchy stipulated in the following table:

Avoidance and Minimization	Avoid and minimize waste through careful planning and design works.
Reuse	Reuse construction waste such as excavated material, used wooden plants and ferric materials.
Recovery and Recycle	Undertake on-site or off-site waste recycling
Treatment and Disposal	Properly treat and dispose of waste in accordance with legislative requirements, guidelines and good practices.

Table 2: Hierarchy of Waste Management

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

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

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3.2 Waste Reduction

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

- recover all metallic waste for recycling;
- recover all cardboard and paper packaging, and properly stockpile them in dry and covered condition to prevent cross contamination;
- use of the materials (such as formworks and hoardings) in the construction would be calculated before purchasing in order to minimize waste generation.
- use of metal formworks and hoardings, and they would be recycled after demolition on site as far as it can before disposal.
- On site sorting facilities for imported material would be established in TKO Area 137. Please refer to **Appendix A** for the layout plan of sorting facility on site.

3.3 Internal Transfer of C&D Materials / Imported Fill Materials

3.3.1 Internal Transfer of C&D Materials (from WA4 to Reclamation Area)

There is a soil heap stockpiled at WA4 works area to be reused for reclamation filling. The soil heap would be checked by survey about the volume of quantities and submitted to the Engineer for their record. Upon filling, we will use barge for the transportation of the fill and each barge would be measured of the quantities of fill by trip ticket system for monitoring of record. The total barges used for the stockpiled soil would be checked against the survey record for monitoring of the transfer of the soil heap.

3.3.2 Imported Fill Materials

For imported fill materials, CHEC will seek the Engineer's Representative approval prior to acceptance of such materials from other site(s). To ensure that the fill materials are imported from the approved site(s) and to avoid illegal disposal of such materials, specific recording and monitoring system will be established for each case and the system will be submitted to the Engineer's Representative for approval.

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For control of the percentage of fine content in filling material, laboratory test for sample taken would be conducted for sieve analysis test by Government Laboratory to confirm compliance. The fine content test would be conducted earlier at the source site to confirm its compliance with the Contract requirement and the test results would be provided for verification by the Engineer Representative and the IEC before the fill materials are allowed to ship to our site for filling.

The target fine content of the sand fill in the WMP shall not exceed 5% when finally placed in the Works. For the fine content of the public fill material the target maximum level would be below 25%, which is to be controlled by prior testing at the source site and the test result would be verified by Engineer Representative and IEC before transporting to the site for filling.

3.3.3 Design, Construction and Operation of Sorting Facilities and Barge Points at TKO Area 137

According to our strategic planning, the delivery of public fill for earthwork above +2.5mPD will be commenced in Month11. The average required daily handling rate of public fill will be around 17,5000 m3 of Type A, Type B and surcharge fill majorly occurring in Month 11 to Month 30. The proposed sorting facilities together with barging points facilities have been designed to meet this peak production. In addition, CHEC will secure sufficient marine resources for handling the peak of consumption of public fill in HKBCF site.

3.3.4 Use of Public Fill from Fill Banks and Projects of MTRCL as Source of Filling Material

The public fill material will be collected from designated barging points as indicated in working drawing No: 211036/SL/1005 attached in **Appendix G**. CHEC will utilize our barges to collect the public fill material from those barging points as much as possible in order to maximize the usage of public fill material for this reclamation project. The features of public fill sorting plant layout plan & sorting facility design are presented in **Appendix A**.

Owing to the available sorting facilities, the supply quantities of public fill in TKO Area 137 will be constant and sorted to the most suitable for the reclamation purpose. However,

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the daily output capacity of the sorting facilities are around 45,000 tonne (Equivalent to 25,000 m³) which is only provide approximately 40% of public fill for the earthworks above +2.5mPD during the peak supply month. Therefore, the remaining 60% of public fill will be collected from other barging points such as TM38, WA4 and MTRC which become the major sources of the public fill material. In fact, the quantities of public fill collection in these barging points may be fluctuated depending on the output rate of the barging point operators and the relevant project progress. In order to overcome the risk of fluctuation, we will firstly deploy our vessels as much as possible to collect the public fill available from these barging points and the remaining quantities will be collected from TKO Area 137. Moreover, CHEC will closely coordinate with the contractors of the barging points regarding the schedule of barges for collecting public fill and the site conditions of the loading facilities to ensure smooth progress of loading and transporting public fill to the Site and that sufficient barges are provided. A trial will be conducted for collection of public fill in different barging points to ensure the navigation and mooring condition such that suitable barges will be provided for smooth logistic operation.

3.3.5 Logistics Relating to Collection, Sorting, Transportation and Stockpiling of Public Fill for filling works above +2.5mPD

In this project, the major usage of public fill material will be Type B and surcharge fill for the earthworks above +2.5mPD of which the total handling capacity is approximately 10.3 Million m³ in taking into account the settlement. In order to achieve the timely completion and maximization for usage of public fill material, an adequate logistic planning is crucial to handle such huge amount of filling material. CHEC will deploy both marine and land-based plant by using the most effective and efficient ways for collection, sorting, transportation and stockpiling of public fill for filling works above +2.5mPD so as to reach the goal of the project. According to our planning, the target delivery schedule for handling of public fill relating to below and above +2.5mPD will range from Month 11 to 30 and the average required daily filling rate of public fill is 17,500 m³ from Month 11 to Month 30. The overall quantities of public fill to be collected and handled for the earthworks below and above +2.5mPD is tabulated below:

Stage	Working Location (Portion)	Required Public Fill Above +2.5 (m ³)	Critical Month	Avg. Public Fill Daily Rate (m ³ /day)
1	A & D	1,714,000	M11 to M30	17,500
2	B & C2a	2,574,000		
3	C1a & C1b	2,329,000		
4	C2b	686,000		
4	C2c	563,000		
5	E1 & E2	2,458,000		
Total		10,324,000		

Table 3: The overall quantities of public fill to be collected and handled for the earthworks below and above +2.5mPD

Delivery Programme for Collection, Sorting and Transportation of Public Fill Material

The delivery arrangement of public fill material including the operation of sorting facilities and the collection, sorting, transportation and stockpile for earthworks above+2.5mPD will be same as the underwater filling works up to +2.5mPD except for unloading and placing filling works. In order to achieve the delivery programme as aforesaid above, CHEC will deploy 19 nos. material barges with the total delivery capacity over 43,280m³ per day which enable to collect the scheduled maximum daily output rate at 17,500m³ from different barging points and transport to site for earthworks above+2.5mPD. The daily delivery capacity of our planned fleet is scheduled in the table below.

Site	Vessel Type	Barge (nos.)	Ave. Carrying Capacity per Barge (m ³)	Cycle per day	Total Allowable Carrying Capacity per Day (m ³)	Max. Required Daily Filling Rate (m ³)
TKO Area 137	FTB	4	1,500	2	12,000	Below+2.5mPD = 8,500. Overall Avg. Required Filling Rate including Below & Above+2.5mPD = 17,500
	FTB	4	1,660	2	13,280	
WA4	DL	2	1,200	2	4,800	
TCA	DL	1	1,200	2	2,400	
TM38	DL	1	1,200	2	2,400	
MTRC	DL	7	1,200	1	8,400	
Others	DL					
Total					43,280	

Table 4: The daily delivery capacity of our planned fleet

Note for vessel type: - FTB: Flat Top Barge
- DL: Derrick Barge

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TCA refers to Tung Chung Area 51, 53 and 54 as marked in **Appendix G**. For MTRC barging point is at Nam Cheong as also marked in **Appendix G**.

In the above table, the overall logistic arrangements for barges have sufficient flexibility and taking into consideration with appropriate contingency plan and general holiday. The plant will be reviewed from time to time to suit the actual site condition and also extra plant will be deployed on site when required. In considering the combination effects for delivery of public fill material both underwater fill below+2.5mPD and earthworks above+2.5mPD, the maximum scheduled daily filling rate will require 17,500 m³ where filling for Portion C1b, E1 & E2 are concurrently executed. Our deployment of barge fleets will be well sufficient to fulfill such daily requirements.

Details of the filling rate, please refers to the **Appendix B**.

4 WASTE MANAGEMENT PROCEDURE

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

4.1 Acceptance Criteria for the Government Disposal Facilities

According to the Highways Department’s Memo ref.: (2NQ9) in Highways Department 7/10/1 dated 15 July 2010. The new WAC (as Tabulated below) became effective from 29 December 2010.

Vehicle Type	Waste Depth	Weight Ratio ^(note)	Designated Facility
Non-demountable Vehicle	Over 1.5m	No restriction	Landfill
	1.5m or below	0.20 or below	
		Over 0.20	Sorting Facility
Demountable Vehicle	Over 1m	No restriction	Landfill
	1m or below	0.25 or below	
		Over 0.25	Sorting Facility

Table 5: New Waste Acceptance Criteria

CHEC will comply with the acceptance criteria laid down by the operators of the corresponding fill bank(s) and landfill(s), as outlined below:

4.1.1 Acceptance Criteria for Fill Banks (Tuen Mun Area 38 Fill Bank or Tseng Kwan O Area 137 Fill Bank)

- The Truck Driver should bear a duly completed, signed and stamped DDF and a duly signed CHIT;
- The dump truck should also have a valid Dumping Licence issued by CEDD, dump trucks without Dumping Licences will be rejected;
- The inert C&D materials to be delivered to the fill bank(s) should be in accordance with the conditions stipulated in the Dumping Licence;

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- Any over-sized inert C&D materials should be broken down to less than 250mm in size so as to facilitate its reuse by other reclamation or earth-filling projects;
- The C&D materials to be disposed should consist entirely of inert construction waste (i.e. 100% inert construction waste).
- According to the Highways Department's Memo ref.: (32FV) in Highways Department 7/8/13 dated 25 June 2010. The bituminous material is required to be separated from other inert construction and demolition (C&D) materials for disposal prior to delivery to the PFRF.

4.1.2 Acceptance Criteria for WENT Landfill and Outlying Island

- The Truck Driver should bear a duly completed, signed and stamped DDF and a duly signed CHIT;
- The dump truck should also have a valid Dumping License issued by CEDD, dump trucks without Dumping Licenses will be rejected;
- The non-inert C&D waste to be delivered to the landfills should be in accordance with the conditions stipulated in the Dumping License;
- Construction waste containing not more than 50% by weight of inert C&D waste (Gazette Notice G.N. 4272 published on 27 June 2008);
- For a load of C&D waste not consisting entirely of bamboo, plywood or timber delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle (Gazette Notice G.N. 4272 published on 27 June 2008);
- Mixed C&D materials should be sorted at source to reduce the inert content as far as practicable to meet the above criteria before they are delivered to landfills;
- C&D waste delivered for landfill disposal should contain no free water and the liquid content will not exceed 70% by weight;
- At least one week's notice, including contractors name and contact details etc, will be submitted to the EPD before starting to deliver the C&D waste to the landfills. EPD will be informed of any subsequent change to the disposal programme.

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4.2 Procedures of the Trip Ticket System (Land Based)

China Harbour Engineering Co., Ltd. (CHEC) will implement a Trip Ticket System (TTS) to track the disposal of C&D materials. Under the TTS, each truck carrying C&D materials leaving the Site for a disposal ground will bear a duly completed and stamped Disposal Delivery Form (DDF) issued by the Engineer's Representative. The C&D materials must be disposed of at the disposal grounds as stipulated in the DDF.

The Trip Ticket System will be executed according to the following procedures:

- The Superintendents / Senior Foremen / Foremen will arrange the C&D waste to be sorted on site. He will also check the total actual amount of cumulated C&D waste after the completion of the particular works in the working area.
- If the sorted C&D waste is less than 1/3 of truckload, then the C&D waste will be transferred to the temporary holding area in CHEC's Works Area for temporary stockpiling. The C&D waste will be sorted and stored separately into different storage areas.
- Non-inert C&D waste will be stored in storage tanks properly covered with tarpaulin sheeting in the temporary holding area. Inert C&D materials will be stored on the ground properly covered with tarpaulin sheeting in the temporary holding area. Larvicidal oil or larvicide will be applied onto the stored C&D waste, if necessary.
- For every 7 days or one truckload collected, the stored non-inert C&D waste in the temporary holding area will be transferred to the designated landfills after the DDF has been received from the Engineer's Representative.
- For every 14 days or one truckload collected, the stored inert C&D waste in the temporary holding area will be transferred to the designated fill banks after the DDF has been received from the Engineer's Representative.
- If the sorted C&D waste is more than 1/3 of truckload, then the Foreman will arrange disposal of the C&D waste to designated fill banks / landfills after the Disposal Delivery Form (DDF) has been received from the Engineer's Representative.
- For each truckload of C&D materials leaving the working area / temporary holding area to the designated fill banks / landfills, the truck driver must bear a duly completed, signed and stamped Disposal Delivery Form (DDF) and a duly signed CHIT.

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- The truck will proceed to the disposal ground as stipulated in the DDF. The truck driver will present the DDF and the CHIT to the reception facility operator. If the C&D waste accords with the acceptance criteria, disposal of the C&D waste will be permitted and the facility operator will give the truck driver a transaction receipt and stamp the DDF.
- The truck driver will present the CHIT at the in-weightbridge officially. If the vehicle load is accepted, the CHIT is deemed to be used and the in-weight would be recorded on the “Transaction Record Slip”.
- If the truck driver was instructed by the reception facility operator to go to the sorting facility. The driver will need return back to the site and report to the Superintendent / Senior Foreman / Foremen. No driver is allowed to go to sorting facility without Superintendent / Senior Foreman / Foremen permission or instruction.
- The truck driver will then return the transaction receipt and the stamped DDF to CHEC as soon as possible. All DDFs are to be return to the Environmental Officer.
- CHEC will maintain a daily record disposal of C&D materials from the Site including details of the C&D waste, the truck number, departure time, etc, and should check against the Engineer’s Representative records as soon as possible and notify the Engineer’s Representative in case any discrepancy is noted.
- A daily record of disposal of C&D materials from the Site will be maintained, the record includes the details of the C&D materials, the truck number, departure time, etc., using the Daily Record Summary (DRS).
- The duly completed Part 1 of the DRS would be submitted promptly to the Engineer’s Representative by 1:00pm of the working day following the date of disposal.
- For disposal at government disposal facilities, CHEC will check the information recorded in the DRS against the disposal records in CEDD’s website (http://www.cedd.gov.hk/eng/services/trip_ticket/index.html) or EPD’s website (<http://www.epd.gov.hk/epd/misc/cdm/trip.htm>) and complete Part 2 of the DRS for submission to the Engineer’s Representative within 3 working days after the day of disposal, or a later day if the information in CEDD’s / EPD’s website is not yet available within 3 working days.
- Where an irregularity is observed or where requested by the Engineer’s Representative under special circumstances (e.g. a DDF has been issued but there is no disposal record at the designated disposal facilities), CHEC will submit to the Engineer’s Representative within 5 working days after the recorded date of disposal the supporting evidence such as duly stamped DDF and/or the transaction receipt (where relevant) to confirm proper completion of the delivery trips in question, or

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within 2 working days after the Engineer's Representative has requested for such evidence, whichever is later. A fax copy of the DDF and transaction receipt is acceptable, unless otherwise directed by the Engineer. CHEC will maintain all records on the DDF for at least one year or other period as may be directed by the Engineer's Representative.

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4.3 Procedures of the Trip Ticket System (Marine Based)

The characteristic of this Project is to import public fill and sand by barges onto the site for filling. Land route is not accessible to the reclamation site for filling works. The control of barges coming to the site for filling works will be controlled by the implementation of trip ticket system.

The public fill would be from the source sites of Fill Bank 137 at Tseung Kwan O managed by CEDD and the MTRC projects currently under construction. A trip ticket system will be agreed with the ER, CEDD and MTRC for the filling record such as the date and time of the barge leaving the site and the quantities of fill checked and agreed by ER and CEDD/MTRC for endorsing the tickets. The copies of tickets would be issued to the Engineer daily for their record and a summary of the record would be issued to the Engineer monthly for checking and verification.

The public fill at source site must be tested to confirm compliance with the Contract Specifications such as the fine contents of the public fill etc. Before they are allowed to leave the source site to our work site for filling work. Test sample of public fill and sand specimen at the source site must be submitted to the Engineer for record.

4.4 Measures to be implemented during transportation of wastes to avoid leakage of wastes on public areas

- All of the dump trucks used would be equipped with mechanical covers in which maintained in a good condition.
- In order to minimize the leaking of material from the dump trucks, no material should be stored higher than the trail board.
- Deposited silt and wastes on all dump trucks' wheels and bodies should be properly washed off by wheel washing facilities before leaving the constructions sites.
- CHEC will provide wheel washing facilities on site at the site entrance.

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4.5 Disposal of C&D Materials to Alternative Disposal Ground(s)

Where CHEC has identified a project that can be an alternative disposal ground, CHEC will provide a detailed description of the alternative disposal ground, including location, lot number (where appropriate) and location plan(s) to the Engineer to request for his written approval.

Where the alternative disposal ground is a private construction project, CHEC will submit a letter from the Authorized Person of the development (as defined under the Building Ordinance) to confirm that:

- the C&D materials for use in the development is acceptable;
- the use of land so formed by the C&D materials is in conformity with the statutory town plan / lease conditions;
- the Engineer's Representative are allowed to enter the alternative ground to conduct inspection where necessary; and
- the estimated quantity and type of C&D materials to be used in the construction works and the approximate delivery programme, together with the name, post and specimen signature of the competent person to sign the DDF / internal trip ticket stipulated in G.S. Clause 25.25(5)(a)(ii).

Where the alternative disposal ground is a private land but not a construction site, CHEC will submit a letter from the relevant authorities, such as the Lands Department and Planning Department, to confirm that the suitability of the alternative disposal ground in receiving the proposed amount of C&D materials for use, and a written consent from the landowner.

Where the alternative disposal ground is a government project, CHEC will submit written consent from the project office of the alternative disposal ground to use the C&D materials generated from the Site, and to confirm the estimated quantity and type of C&D materials required and the approximate delivery programme.

A system for transmitting disposal records from the alternative disposal ground will be submitted to the Engineer's Representative for approval before disposal to the alternative ground starts.

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4.6 Chemical Waste / Hazardous Waste Handling and Disposal

4.6.1 Chemical Waste Handling and Disposal

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

Packaging

Chemical waste will be packed and held in containers of suitable design and construction so as to prevent leakage, spillage or escape of the contents under normal conditions of handling, storage and transport.

Containers used for the storage of chemical wastes will:

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

Labelling

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

Storage

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

The storage area for chemical wastes will:

- Be clearly labelled and used solely for the storage of chemical waste;
- Be enclosed on at least 3 sides;
- Have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest;

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- Have adequate ventilation;
- Be covered to prevent rainfall entering (water collected with the bund must be tested and disposed of as chemical waste); and
- Be arranged so that incompatible materials are adequately separated.

Before reaching 80% capacity of the storage container, licensed waste collectors will be employed to remove the chemical waste.

Transportation and Disposal

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

4.7 General Refuse

4.7.1 Handling the general refuse

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

- Reducing the number of photos copies to a minimum and by copying on both sides of paper for internal documents and external documents where appropriate;
- Preventing over-ordering of office equipment and consumables;
- Procuring green office equipment and consumables in terms of energy efficiency, recycled content and durability, etc;
- Deploying sufficient recycle bins in site offices to facilitate collection of recyclables including wasted aluminum cans, plastics bottles and papers;
- Deploying sufficient collection bins with cover at convenient locations at site to facilitate collection of non-recyclable for disposal at landfills;
- General refuse generated from working vessels and barges can dispose the waste into temporary waste collection point.
- Working vessels for import fill or delivery should be handled by themselves.
- There will be waste receptacle on the working vessels for collection. In the event that some refuse are found on the sea, we will collect the refuse by worker on a regular daily basis.

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4.8 Handling of Construction Runoff and Sewage

During the construction stage, peripheral temporary surface channels will be constructed to collect surface runoff in the construction area for desilting before discharging into the adjacent waters. The measures would apply to office areas of WA2, WA3 and WA4 only.

The temporary drainage system during the construction phase will be formulated by the CHEC to match works and construction programme.

For reclamation area there will be no drainage system as the storm water is contained by the erected seawall which is 1m higher than the formation level of +5.5mPD. Storm water will be soaked into the new reclaimed soil ground.

For office area of WA2, WA3 and WA4, the locations of which are shown in **Appendix I**, storm water is collected by surface channel and catchpit and further treated by settlement tank before discharge into existing drainage system nearby. For sewage collection will be by holding tank to be pumped out at regular interval for disposal. Handling of sewage in terms sewage generated by human would be provided adequate chemical toilets for collection.

Sufficient numbers of chemical toilets for workers and frontier workforces were placed on works area other than site offices such as WA2, WA3 and WA4.

4.9 Estimate Quantities of C&D Material/Waste

The following types of waste would be generated from the works areas of WA2, WA3, WA4 and reclamation site.

- Site clearance waste from works areas WA2, WA3 and WA4.
- Excavated material from box culvert construction to be re-deposited into reclamation area.
- Chemical waste from maintenance of plant and equipment
- General refuse from the workforce on site
- Soil heap stored at WA4 to be reused in reclamation area
- General refuse from the workforce on site
- Import sand for reclamation works.
- Import public fill for reclamation works
- Removal of surcharge of public fill and return to Fill Bank 137 at Tseung Kwan O)

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The estimated amount of waste to be generated from the Contract is listed in the following table:

Forecast of C&D Materials to be Generated from the Contract	Imported	Generated	Reused in the Contract	Estimate Disposal Quantities	Proposed Disposal Outlet
Imported sand (m ³)	14,100,237	0	14,100,237	0	NA
Imported sorted public fill (m ³)	13,823,949	0	13,823,949	1,565,891	Tuen Mun Area 38 Fill Bank and Tseung Kwan O 137
Imported rock (m ³)	1,707,500	0	1,707,500	0	NA
Site clearance waste (vegetation, refuse on land) (m ³)	0	2,800	0	2,800	West New Territories Landfill (WENT) or Outlying Island Transfer Facilities.
General Waste: Food and packaging waste/office waste (m ³)	0	3,650	0	3,650	West New Territories Landfill (WENT) or Outlying Island Transfer Facilities.
Plastics & wood (kg)	0	Small amount	Small amount	Small amount	West New Territories Landfill (WENT) or Outlying Island Transfer Facilities.
Chemical Waste(L)	0	4000	0	4000	To be handled by Registered Contractor on the approved list

Table 6: The estimated amount of waste to be generated from the Contract

Note: NA – not applicable

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The disposal of imported sorted public fill of 1,565,891 cu.m to Fill Bank 137 at Tseung Kwan O is due to the surcharge material which will be trimmed down from +11.5mPD to +5.5mPD level after the surcharge period is over as stated in the Contract Specifications. The soil is disposed off site via marine access using barges. Trip ticket system is used and signed by ER/CEDD for endorsement of the ticket for proper control.

We assume this project to have 500 site personnel at peak level and each person consumes a waste of 5L per day. For a period of 4 years the waste would be 3,650 cu.m total.

CHEC will either dispose the dredged sediment generated sediment from the Project within the steel cellular structures or to the re-deposition area on site (if the associated VEP application is permitted). Hence, no dredged sediment would be disposal off-site and no designated marine disposal ground being approved by government.

In order to distinguish the waste generated from site, the waste is sorted into 3 colour receptacles would be provided on site at site areas WA2 and WA4. 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 of the recyclable material would be collected by registered contractors.

Details of these contractors were listed in the website of EPD as waste collectors and recyclers, the information can be search via the hyperlinks as http://www.epd.gov.hk/epd/english/environmentinhk/waste/guide_ref/guide_ref_dwc.htm

5 DISPOSAL PROGRAMME

The relevant licensing legislation and licensing/control requirement is listed in **Section 1** above.

There will be both inert C&D materials (comprising soil, broken rock and concrete, etc) and non-inert C&D materials generated under Contract No. HY/2010/02. With reference to the clause 25.25 of PS, the designated disposal grounds for inert and non-inert C&D materials are listed as follows:-

- Inert C&D Materials:
Tuen Mun Area 38 Fill Bank and Tseung Kwan O 137 or other disposal outlets as directed by the Engineer
- Non-inert C&D Materials:
West New Territories Landfill (WENT) or Outlying Island Transfer Facilities.

Monthly Summary for C&D material disposal off the Site will be provided to indicate the estimate quantities, types of C&D materials and corresponding disposal ground in Waste Flow Table (WFT).

Disposal locations for inert C&D materials would be Tuen Mun Area 38 or Tseung Kwan O Area 137. The non-inert C&D materials would be disposed to WENT landfill or Outlying Island Transfer Facilities.

For this contract, there is no marine disposal requirement outside reclamation area. No off-site designated marine disposal ground.

As the reclamation site is by marine access only, there will not be installed wheel washing bay for the reclaimed land. Wheel washing facilities would be installed at works areas WA2, WA3 and WA4 as these areas are land access for vehicles. The wheel washing facilities would be cleaned at least twice daily.

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6 NOTIFICATION TO TRUCK DRIVERS

CHEC will write to all truck drivers whom he or his sub-contractor(s) has engaged for removal of C&D materials from the Site and draw their attention to the following particular points:

- 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;
- The C&D materials must be disposed of at the disposal ground as stipulated in the DDF; and
- What constitute and improper disposal and that the Public Fill Committee (PFC) will consider revoking the Dumping Licence from the holder of the offending trucks.
- Truck drivers must bear a valid Dumping Licence that he can apply from the Civil Engineering and Development Department (CEDD)

The Flow Chart of the TTS and the notification to truck drivers and the receipt form is attached in **Appendix C and D** respectively.

7 WASTE MANAGEMENT RECORDS

The Construction and Demolition Material Disposal Delivery Form (DDF) will be used for each and every vehicular trip transporting construction and demolition (C&D) material off site.

Prior to the vehicle leaving the site, the Engineer's Representative will insert the date, time of departure, vehicle licence plate number, designated public filling facility / landfill, and other information as required, and stamp the form. The Engineer's Representative will then retain the first strip of the form and pass the rest to CHEC's Representative. The form will be carried on board the vehicle at all times throughout the vehicular trip.

A comprehensive register of the DDF issued will be maintained and available for inspection by the Engineer's Representative upon request. The following records will be kept for monitoring of the DDF issued:-

Daily Record Summary (DRS) and the Waste Flow Table (WFT) should be completed and submitted to the Engineer's Representative for record. A sample of DRS and WFT, please refer to **Appendix E** and **F** respectively.

Waste Flow Table – Monthly

Record of the quantities of C&D materials generated each month will be maintained using the monthly summary Waste flow Table (WFT). CHEC will complete and submit the monthly summary WFT to the Engineer by not later than the 15th day of each month follows the reporting month, or if it is a General Holiday, the day following the General Holiday, or a later date as agreed by the Engineer.

Waste Flow Table – Yearly

The estimated quantities of C&D materials to be generated each year from the site will be summarised using the yearly summary WFT. The WFT will be updated on a half-yearly basis and submit to the Project Proponent by not later than 1st of June and December of each year, or if it is a General Holiday, the day following the General Holiday, throughout the construction period in order to account for the revised works programme and latest outturn on the quantities of C&D materials generated from the site.

These summaries shall also be made available to ETL and IEC/ENPO

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Specific trip ticket and records for internal transfer of C&D materials and imported fill materials will also be kept for monitoring whatever necessary.

For recyclable materials, CHEC's Representative will record the quantities of all the recyclable materials before removal off the Site by the recycling contractors, and include the details in the WFT for submission to the Engineer's Representative.

In order to ensure proper disposal of C&D materials, enhancement measures to further improve the TTS recording system, a video recording system shall be installed and disposal shall be checked against survey record. Such video recording system used to monitor the vehicular exit / entrance of the site.

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8 WASTE MONITORING AND AUDIT

8.1 The aims and objectives of waste management audit are:

- To ensure that the waste arising from works are handled, stored, collected, transported and disposed of in an environmentally acceptable manner;
- To ensure that the handling, storage, collection and disposal of waste arising from the demolition works comply with the relevant requirements under the Waste Disposal Ordinance and its regulations, and this WMP; and
- To encourage the reuse and recycling of materials.

8.2 The ET, with assistance from the Project Manager, would audit the waste management practices during the weekly environmental site inspection to evaluate the overall performance of the implementation of the WMP and ensure the appropriate control measures are properly implemented. The results of the waste management audits would be reported in the monthly Environmental Monitoring and Audit reports.

8.3 In the event of any non-compliance or complaint against the provisions of this WMP, actions would be taken according to the event and Action Plan for non-compliance and complaints as shown in the following tables.

Step	Day	Action	Contractor /ET	ER	IEC/ ENPO
1	1	Create a new non-compliance record within 1 working day after making an observation during a site audit accompanied by Project Manager or his delegate. ET sends a Notice of Non-Compliance (NC) to the Contractor, ER and IEC/ENPO. The NC would include the observations and the reasons for non-compliance.	■		
2	2	Propose corrective actions within 1 working day after the receipt for the NC.	■	□	
3	3	Review and agree with the proposed corrective actions and make additional recommendations as required.		■ □	■ □
4	2	Implement the proposed corrective actions once they have been agreed.	■		
5	-	Check the implementation of the corrective actions at the next site audit. Close the non-compliance record if the implementation of the corrective actions is satisfactory/	■ □	■ □	■ □
6	-	Propose preventive actions within 3 working days after the closure of the non-compliance record.	■	□	

Table 7: Event Action Plan for Non-compliance

■ action party

□ comments on the non-compliance record where applicable

Step	Day	Action	Contractor/ET	ER	IEC/ENPO
1	1	Investigate validity of complaint and to assess whether the source of problem is due to site activity. If complaint is valid and due to site activity, log complaint into Complaint Record Form.	■		
2	2	Propose mitigation measures	■	<input type="checkbox"/>	
3	3	Review and agree with the proposed mitigation measures and propose further mitigation measures if required.		<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
4	2	Implement the proposed mitigation measures once they have been agreed.	■		
5	-	Check the implementation of the mitigation measures at the next site audit. Close out the complaint case if the implementation of the mitigation measures is satisfactory.	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
6	-	Propose prevention measures within 3 working days after closure of the complaint case.	■	<input type="checkbox"/>	

Table 8: Event Action Plan for Complaint

■ action party

□ comments on the non-compliance record where applicable.

Appendix A

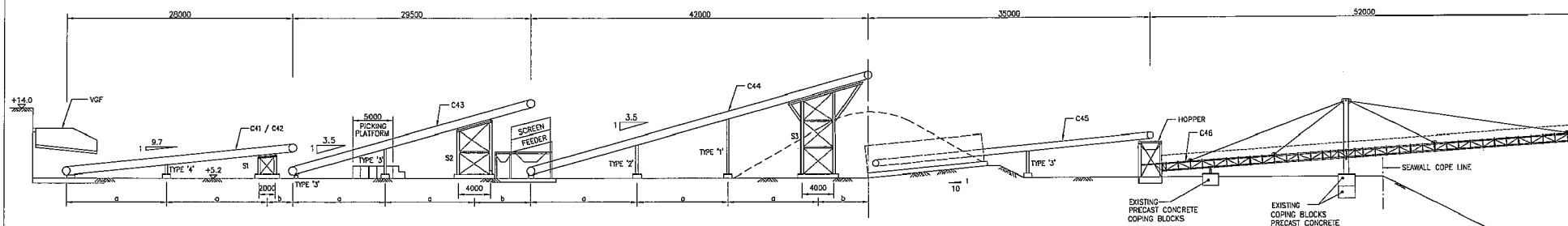
Public Fill Sorting Plant and Layout Plan

LEGEND:

S1 CONVEYOR SUPPORT S1

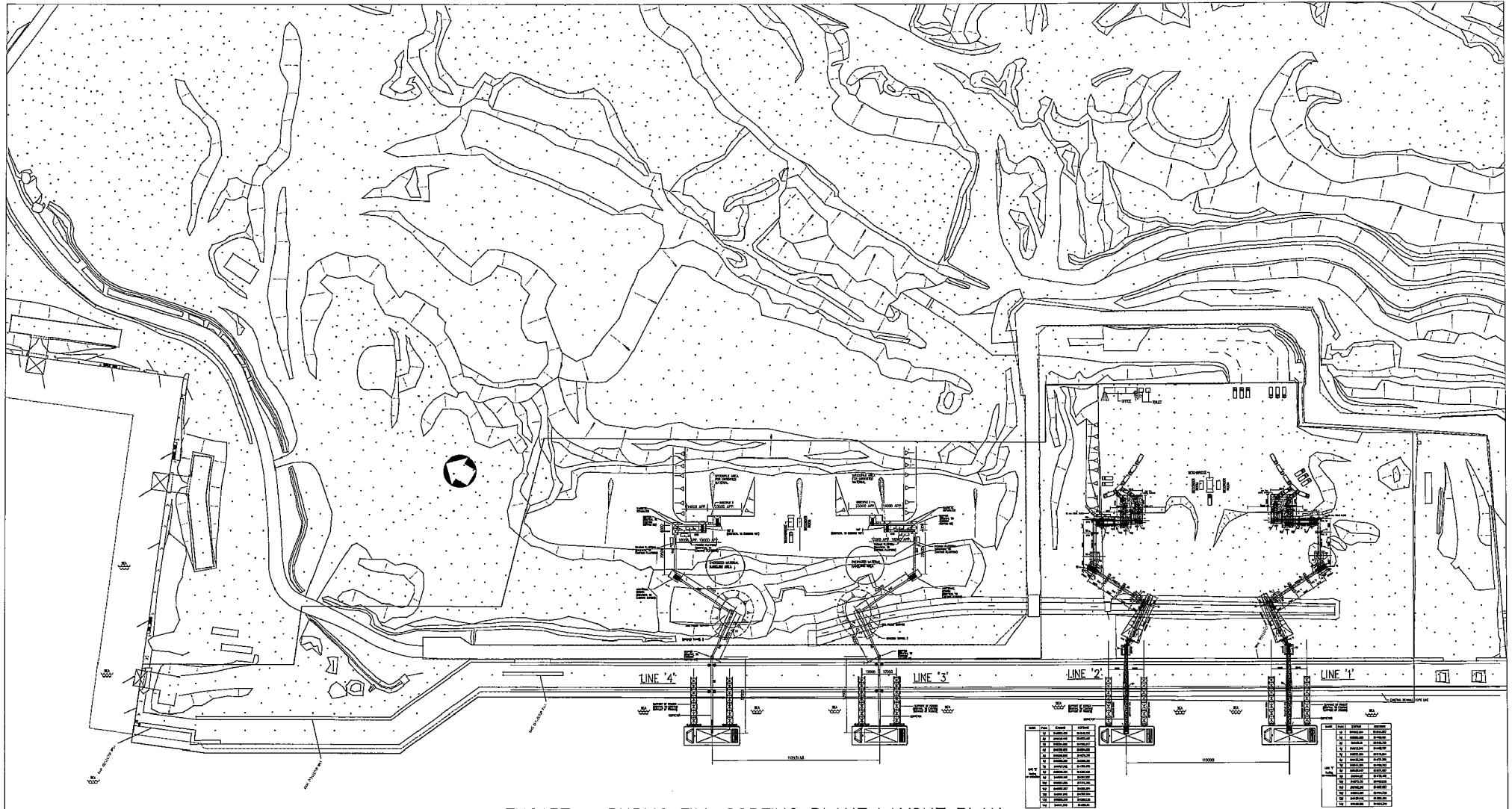
NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRG. No. MS/001.



DEVELOPED ELEVATION — LONGITUDINAL SECTION FOR LINE '1' TO '4'

1 : 250



TKO137 - PUBLIC FILL SORTING PLANT LAYOUT PLAN

1 : 1250





Public Fill Handling for Zone A, B1, B2 and C at TKO Fill Bank



Vibratory grizzly feeder: To remove oversized materials primarily



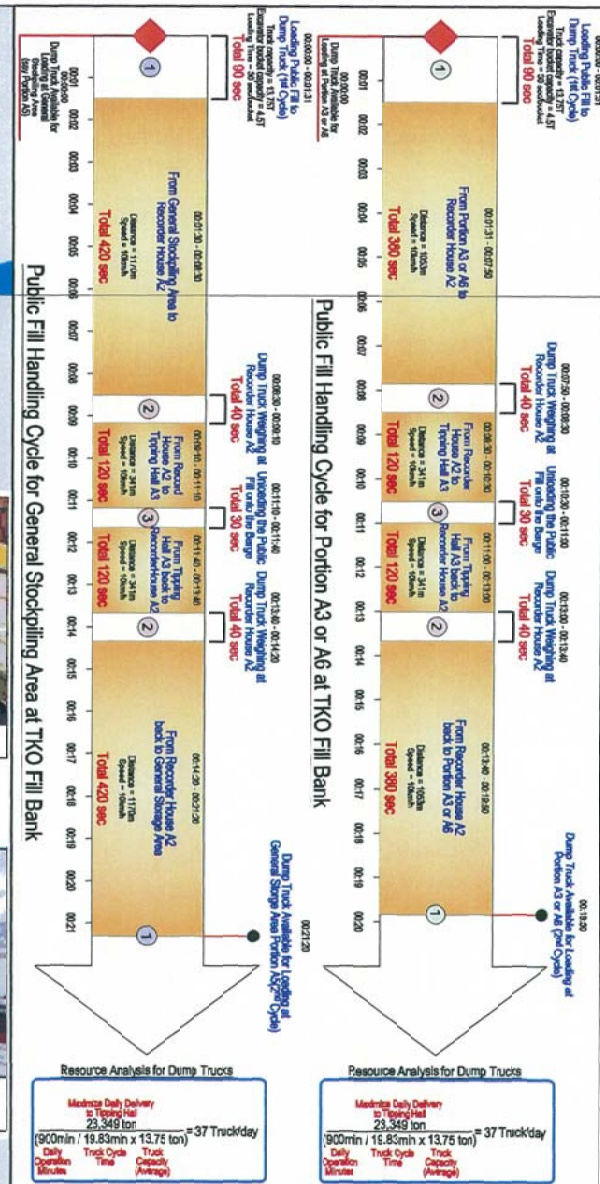
Picking platform: To remove unsuitable materials



Vibratory screen feeder: To remove oversized materials ($>250\text{mm}$)



Suspended conveyor: To load the sorted public fill into the barge.



Appendix B

Estimate Filling Rate for the Project

	Resource ID	Resource Name	Unit of Measure	Subtotal	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
Monthly	SND	Sand Fill (ton)	ton	22,713,582	-	-	-	-	-	275,040	1,391,413	1,370,746	1,999,126
	PBF	Public Fill (ton)	ton	30,382,257	-	-	-	-	68,760	206,280	300,680	287,366	368,872
	RF	Rock Fill (ton)	ton	3,873,000	-	26,140	176,369	348,764	271,526	251,977	197,116	372,592	188,340
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(9,576,766)	-	-	-	-	-	-	-	-	-

Average	SND	Sand Fill (ton)	ton		-	-	-	-	-	10,578	53,516	52,721	76,889
	PBF	Public Fill (ton)	ton		-	-	-	-	2,645	7,934	11,565	11,053	14,187
	RF	Rock Fill (ton)	ton		-	1,005	6,783	13,414	10,443	9,691	7,581	14,330	7,244
	RSU	Material Generated from Removal of Surcharge (ton)	ton		-	-	-	-	-	-	-	-	-

Accum	SND	Sand Fill (ton)	ton		-	-	-	-	-	275,040	1,666,453	3,037,199	5,036,325
	PBF	Public Fill (ton)	ton		-	-	-	-	68,760	275,040	575,720	863,086	1,231,958
	RF	Rock Fill (ton)	ton		-	26,140	202,509	551,273	822,799	1,074,776	1,271,892	1,644,484	1,832,824
	RSU	Material Generated from Removal of Surcharge (ton)	ton		-	-	-	-	-	-	-	-	-

	Resource ID	Resource Name	Unit of Measure	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
Monthly	SND	Sand Fill (ton)	ton	2,253,506	2,938,307	1,956,018	1,038,376	1,529,678	1,448,307	685,229	1,313,287	1,492,527
	PBF	Public Fill (ton)	ton	790,474	803,078	1,679,991	1,641,275	690,274	315,560	1,303,062	397,266	704,144
	RF	Rock Fill (ton)	ton	264,408	227,328	409,376	360,744	252,856	227,328	221,552	25,528	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	-	-	-	-	-	-	-	(176,268)	(105,761)

Average	SND	Sand Fill (ton)	ton	86,673	113,012	75,231	39,938	58,834	55,704	26,355	50,511	57,405
	PBF	Public Fill (ton)	ton	30,403	30,888	64,615	63,126	26,549	12,137	50,118	15,279	27,082
	RF	Rock Fill (ton)	ton	10,170	8,743	15,745	13,875	9,725	8,743	8,521	982	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	-	-	-	-	-	-	-	(6,780)	(4,068)

Accum	SND	Sand Fill (ton)	ton	7,289,831	10,228,138	12,184,156	13,222,532	14,752,210	16,200,517	16,885,746	18,199,033	19,691,560
	PBF	Public Fill (ton)	ton	2,022,432	2,825,510	4,505,501	6,146,776	6,837,050	7,152,610	8,455,672	8,852,938	9,557,082
	RF	Rock Fill (ton)	ton	2,097,232	2,324,560	2,733,936	3,094,680	3,347,536	3,574,864	3,796,416	3,821,944	3,821,944
	RSU	Material Generated from Removal of Surcharge (ton)	ton	-	-	-	-	-	-	-	(176,268)	(282,029)

	Resource ID	Resource Name	Unit of Measure	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14
Monthly	SND	Sand Fill (ton)	ton	1,235,005	1,136,120	612,960	37,937	-	-	-	-
	PBF	Public Fill (ton)	ton	2,008,373	2,305,327	3,000,057	2,313,825	2,556,334	1,682,016	919,393	1,356,626
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	51,056	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(70,507)	-	-	(669,101)	(589,583)	-	-	(97,746)

Average	SND	Sand Fill (ton)	ton	47,500	43,697	23,575	1,459	-	-	-	-
	PBF	Public Fill (ton)	ton	77,245	88,666	115,387	88,993	98,321	64,693	35,361	52,178
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	1,964	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(2,712)	-	-	(25,735)	(22,676)	-	-	(3,759)

Accum	SND	Sand Fill (ton)	ton	20,926,565	22,062,685	22,675,645	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582
	PBF	Public Fill (ton)	ton	11,565,455	13,870,782	16,870,839	19,184,664	21,740,998	23,423,014	24,342,407	25,699,033
	RF	Rock Fill (ton)	ton	3,821,944	3,821,944	3,821,944	3,821,944	3,821,944	3,821,944	3,873,000	3,873,000
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(352,536)	(352,536)	(352,536)	(1,021,637)	(1,611,220)	(1,611,220)	(1,611,220)	(1,708,966)

	Resource ID	Resource Name	Unit of Measure	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14
Monthly	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	1,602,209	657,672	483,362	736,069	209,366	42,524	40,823	174,595
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(195,492)	(366,556)	(1,074,130)	(1,164,122)	(925,152)	(1,347,304)	-	(344,552)

Average	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	61,623	25,295	18,591	28,310	8,053	1,636	1,570	6,715
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(7,519)	(14,098)	(41,313)	(44,774)	(35,583)	(51,819)	-	(13,252)

Accum	SND	Sand Fill (ton)	ton	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582
	PBF	Public Fill (ton)	ton	27,301,242	27,958,914	28,442,276	29,178,345	29,387,711	29,430,235	29,471,058	29,645,653
	RF	Rock Fill (ton)	ton	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(1,904,458)	(2,271,014)	(3,345,144)	(4,509,266)	(5,434,418)	(6,781,722)	(6,781,722)	(7,126,274)

	Resource ID	Resource Name	Unit of Measure	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Monthly	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	262,643	262,643	73,540	3,402	44,225	40,823	39,122	10,206
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(717,694)	(478,462)	(422,442)	-	-	-	(222,980)	(191,126)

Average	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	10,102	10,102	2,828	131	1,701	1,570	1,505	393
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(27,604)	(18,402)	(16,248)	-	-	-	(8,576)	(7,351)

Accum	SND	Sand Fill (ton)	ton	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582
	PBF	Public Fill (ton)	ton	29,908,296	30,170,939	30,244,479	30,247,881	30,292,106	30,332,929	30,372,051	30,382,257
	RF	Rock Fill (ton)	ton	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(7,843,968)	(8,322,430)	(8,744,872)	(8,744,872)	(8,744,872)	(8,744,872)	(8,967,852)	(9,158,978)

	Resource ID	Resource Name	Unit of Measure	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16
Monthly	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	-	-	-	-	-	-	-
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	-	(76,557)	(102,077)	(102,077)	(62,705)	(50,886)	(23,486)

Average	SND	Sand Fill (ton)	ton	-	-	-	-	-	-	-
	PBF	Public Fill (ton)	ton	-	-	-	-	-	-	-
	RF	Rock Fill (ton)	ton	-	-	-	-	-	-	-
	RSU	Material Generated from Removal of Surcharge (ton)	ton	-	(2,945)	(3,926)	(3,926)	(2,412)	(1,957)	(903)

Accum	SND	Sand Fill (ton)	ton	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582	22,713,582
	PBF	Public Fill (ton)	ton	30,382,257	30,382,257	30,382,257	30,382,257	30,382,257	30,382,257	30,382,257
	RF	Rock Fill (ton)	ton	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000	3,873,000
	RSU	Material Generated from Removal of Surcharge (ton)	ton	(9,158,978)	(9,235,535)	(9,337,612)	(9,439,689)	(9,502,394)	(9,553,280)	(9,576,766)

	Reclamation Works			Surcharge Laying			Surcharge Removal				
Portion	Type B			Surcharge Material			Surcharge Material				
	Required	Income	In Site	Required	Income	In Site	Removal	Shift to Other Portions			Out of Site
								Portion	Work Status	Refill	
A				3,080,240.00	3,080,240.00		1,258,684ton	C2a	Surcharge	1,258,684ton	
D				710,034ton	710,034ton		352,536ton	B	Surcharge	352,536ton	
B				4,192,878ton	3,840,342ton	352,536ton	1,955,008ton	E2 & E1	Surcharge	1,955,008ton	
C2a				1,979,500ton	720,816ton	1,258,684ton	943,038ton	C2b& C2c	Reclamation	700,310ton	
								E2 & E1	Surcharge	242,728ton	
C1a				2,402,598ton	2,402,598ton		1,119,622ton	C2b	Surcharge	903,752ton	215,870ton
C1b				2,254,528ton	2,254,528ton		1,152,834ton	C2c	Surcharge	1,031,966ton	120,868ton
E1	338,808ton	338,808ton		541,158ton		541,158ton	344,552ton				344,552ton
E2	1,587,134ton	1,587,134ton		3,127,038ton	1,470,460ton	1,656,578ton	1,618,598ton				1,618,598ton
C2b	467,940ton		467,940ton	903,752ton		903,752ton	414,106ton				414,106ton
C2c	232,370ton		232,370ton	1,031,966ton		1,031,966ton	417,788ton				417,788ton
Total	2,626,252ton	1,925,942ton	700,310ton	20,223,692ton	14,479,018ton	5,744,674ton	9,576,766ton			6,444,984ton	3,131,782ton

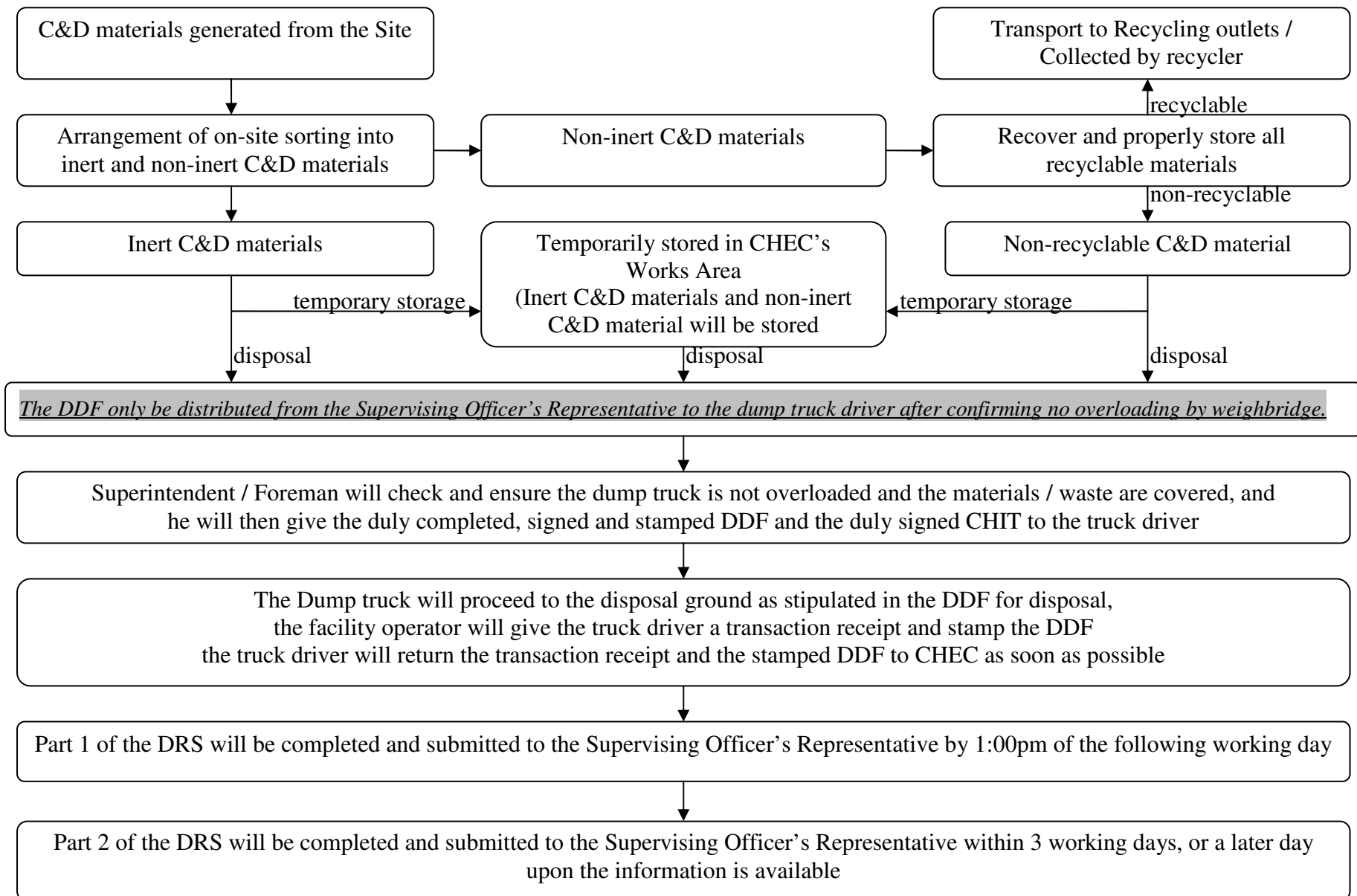
Income
Income
Refill

1,925,942ton
700,310ton
14,479,018ton
5,744,674ton

6,444,984ton

Appendix C

Flow Chart of the Trip Ticket System



China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 0
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Appendix D

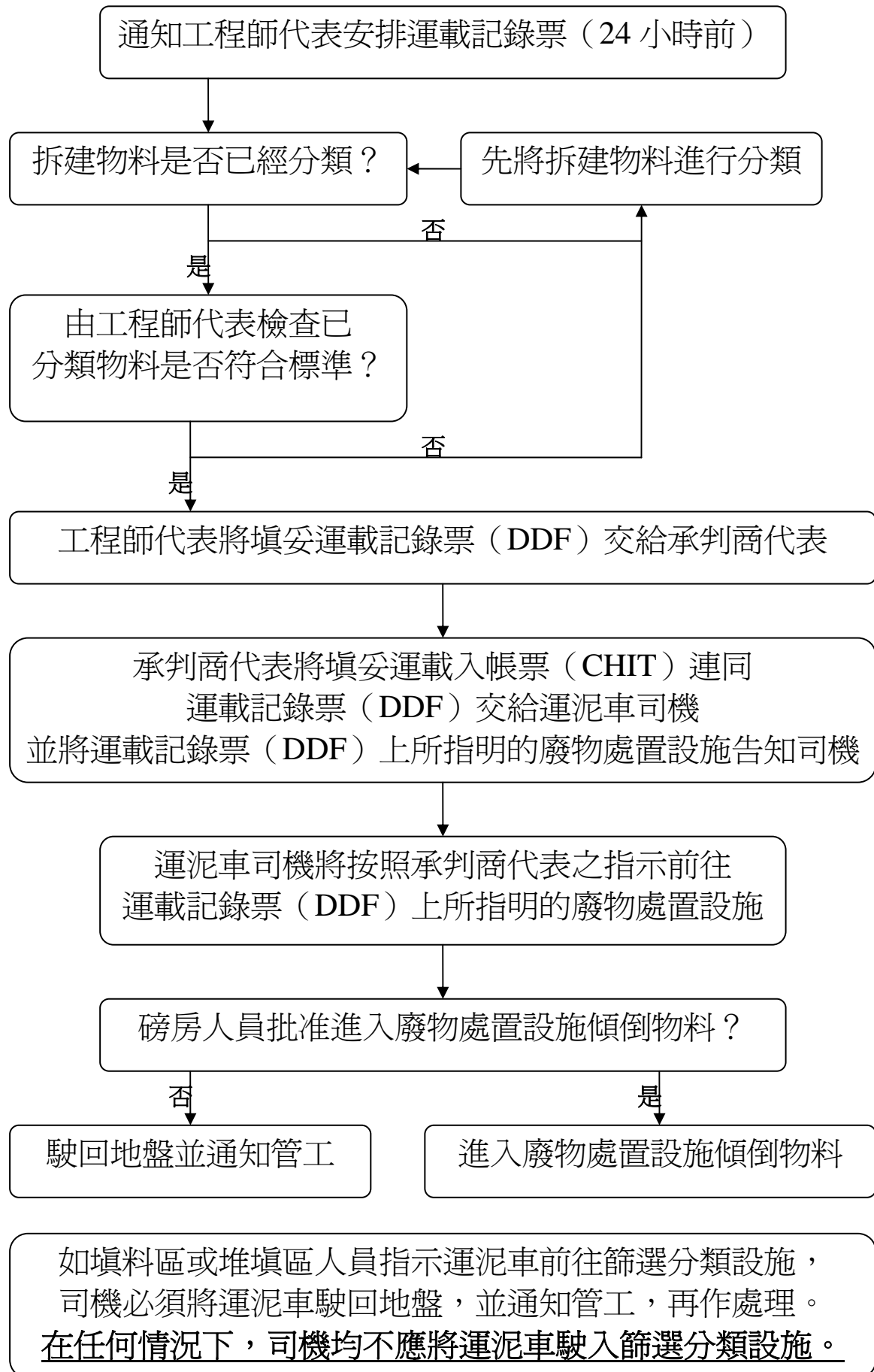
Notification to Truck Drivers

合約 HY/2010/02
運載物料及傾倒時需注意及檢查事項

運泥車司機於運載物料及離開地盤前，司機必須注意並檢查以下事項：

1. 運泥車上的物料已經篩選分類為：
 - a. 惰性（如泥土、石屎頭、石頭、碎石等）；
 - b. 非惰性（如樹枝、鐵枝、一般垃圾等）。
 2. 運泥車沒有超載。
 3. 車軌及車身已經徹底清洗及泥斗上物料已經完全蓋好。
 4. 運載記錄票上的第一截已交給駐地盆監工人員。
 5. 司機已持有有效的傾倒執照。
 6. 司機已持有運載記錄票（藍色）及運載入帳票（綠色）並票上的所有資料已經填妥。
 7. 必須依照運載記錄票（藍色）所指明的地點進行傾倒。
 8. 如司機沒有持有已填妥資料的運載記錄票（藍色）而離開地盤進行傾倒；或運泥車駛往非運載記錄票（藍色）所指明的地點進行傾倒；或司機於傾倒後未能提供已蓋印的運載記錄票（藍色）及傾倒記錄，則會構成不當傾倒。
 9. 如運泥車駛往非指明的地點進行傾倒，並該地點為私人土地；或運泥車非法傾倒，則會構成嚴重不當傾倒。
- ※ 運泥車不當傾倒或嚴重不當傾倒可被吊銷傾倒執照。

合約 HY/2010/02
運載物料及傾倒流程表



China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 3
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Appendix E

A Sample of Daily Record Summary

中國港灣工程有限責任公司

China Harbour Engineering Company Limited

Daily Record Summary for disposal of construction & demolition (C&D) materials

Contract no. & title: CONTRACT NO: HY/2010/02 Hong Kong – Zhuhai - Macao Bridge, Hong Kong Boundary Crossing Facilities – Reclamation Works

Date of disposal: _____

Designated disposal ground(s): _____

Approved alternative disposal grounds: _____

DDF Serial no.	Vehicle registration no.	Departure time from site	Approx. vol (e.g. Full/Three Quarter/Half/One	C&D material type (e.g. inert or non-inert)	Actual disposal ground	Arrival time at disposal ground	Remarks

Part 1¹

Submitted by : _____ [Name of Contractor's Designated Person]

Signature : _____

Date : _____

Received by : _____ [Name and signature of the officer]

Post : _____

Date & Time : _____

Part 2²

Submitted _____ [Name of Contractor's Designated Person]

Signature : _____

Date : _____

Received by : _____ [Name and signature of the officer]

Post : _____

Date & _____

¹ Part 1 - The Contractor shall complete Part 1 and submit it to the Supervising Officer's Representative by 1:00 pm of the following working day of the disposal trip.

² Part 2 - The Contractor shall complete Part 2 and submit it to the Supervising Officer's Representative within 3 working days of the disposal trip.

China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 3
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Appendix F

A Sample of Waste Flow Table



Monthly Summary of Waste Flow Table for / 2012 (year)

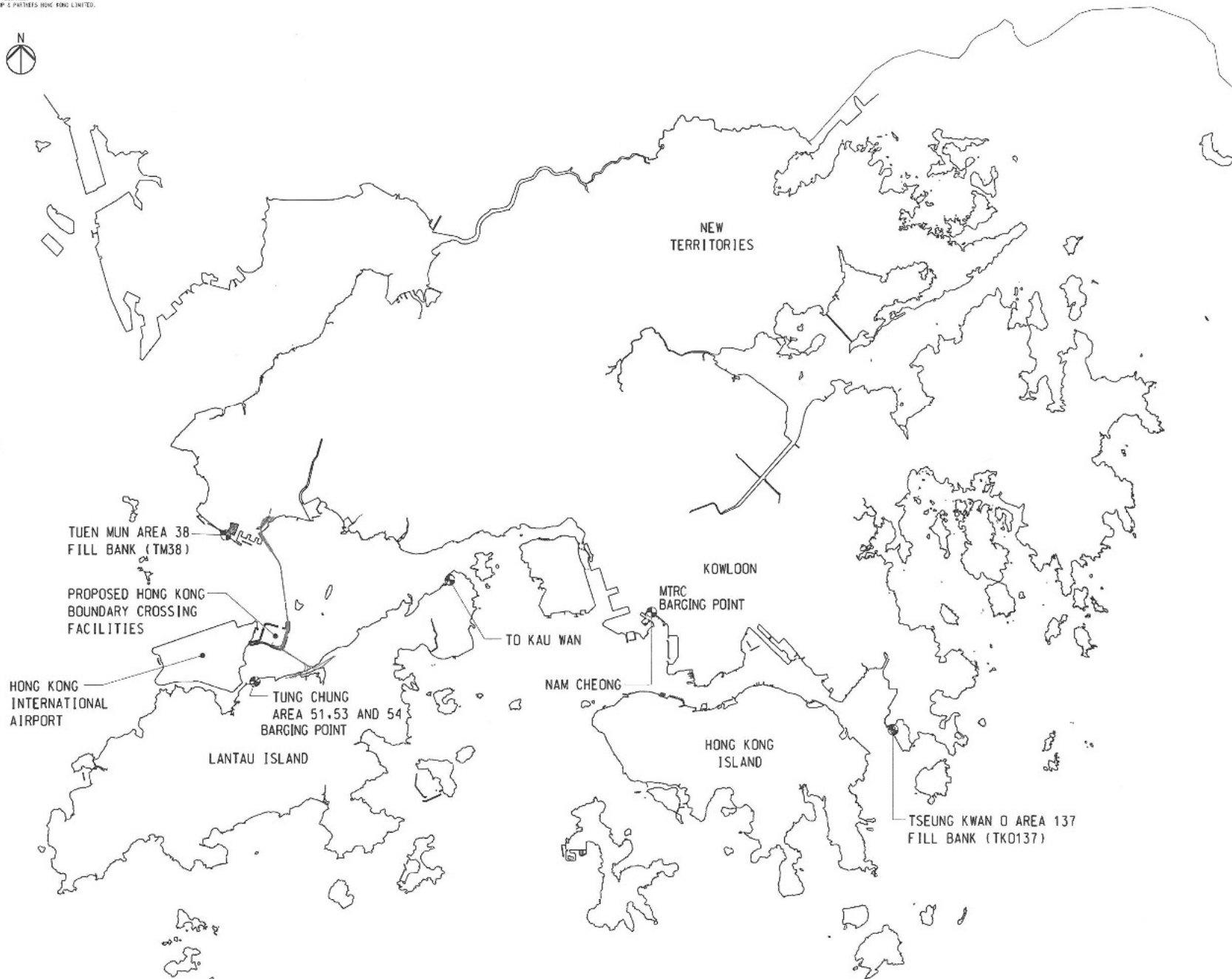
Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics <small>(see Note 3)</small>	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m ³)
Jan-12	0	0	0	0	0	0	0	0	0	0
Feb-12										
Mar-12										
Apr-12										
May-12										
Jun-12										
Sub-total	0	0	0	0	0	0	0	0	0	0
Jul-12										
Aug-12										
Sep-12										
Oct-12										
Nov-12										
Dec-12										
Total	0	0	0	0	0	0	0	0	0	0

China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 3
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Appendix G

Drawing No. 211036/SL/1005

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON S.D.
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NOTES

1. ALL COORDINATES ARE RELATED TO HONG KONG 1980 GRID.
2. BARGING POINTS SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PS CLAUSE 8.214 TO 8.216 FOR THE REQUIREMENTS OF USING BARGING POINTS AT VARIOUS LOCATIONS.

LEGEND

 BARGING POINT

Rev	Description	By	Date
-	FOR CONSTRUCTION	HYJL	11/

Consultant

ARUP 奧雅納工程顧問
Ove Arup & Partners Hong Kong Limited
Supported By : Ecosystems Ltd.
ED4 Marine Ltd.
Geotechnical Consulting Group
Tasitol Ltd.
Hong Kong Earthcare
Research Project
IntelliBuild Technology Asia Limited
Tony Gee and Partners LLP

Contract No. and Title:
Contract No. HY/2010/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facility
- Reclamation Works

Drawing title:
**BARGING POINTS
LOCATION PLAN**

Drawing No. 211036/SL/1005		Rev. -	
Drawn By	Date 05/10	Checked BY	Approved DML
Scale 1:100000000	1:200000000	SHEET WORKING	

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 香港政府
HIGHWAYS DEPARTMENT
港珠澳大橋香港段工程處
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Project Management Office

FOR INFORMATION ONLY

China Harbour Engineering Company HY/2010/02, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works	Rev. 3
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Appendix H

Environmental Mitigations Implementation Schedules (EMIS)

Appendix H Environmental Mitigation Measures Implementation Schedule – HKBCF – Reclamation Works

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
Waste Management (Construction Waste)							
S12.6 of TMCLKLE IA	WM1	The Contractor shall identify a coordinator for the management of waste.	Proper implementation of WMP	Contractor	All construction sites	Construction stage	
S12.6 of TMCLKLE IA	WM2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Proper control of wastes disposal in accordance to relevant ordinances	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance (Cap28); • Waste Disposal Ordinance (Cap 354); • Dumping at Sea Ordinance (Cap 466); • Water Pollution Control Ordinance.
S12.6 of TMCLKLE IA	WM3	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site auditprogramme shall be undertaken.	Ensure proper implementation mitigation measures stated in WMP	Contractor	All construction sites	Construction stage	

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Waste Management (Construction Waste)							
S8.3.8 of HKBCFEI A and S12.6 of TMCLKLE IA	WM4	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation; and • The surplus surcharge should be transferred to a fill bank. 	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	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC19/2005

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
Waste Management (Construction Waste)							
S8.3.9 - S8.3.11 of HKBCF EIA and S12.6 of TMCLK LEIA	WM5	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding and falsework should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 	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	<ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TC19/2005

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Waste Management (Construction Waste)							
S8.2.12 - S8.3.15 of HKBCF EIA and S12.6 of TMCLK LEIA	WM6	<u>Chemical Waste</u> <ul style="list-style-type: none"> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD. 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S8.3.16 of HKBCFEI A and S12.6 of TMCLKLE IA	WM7	<u>Sewage</u> <ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. 	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

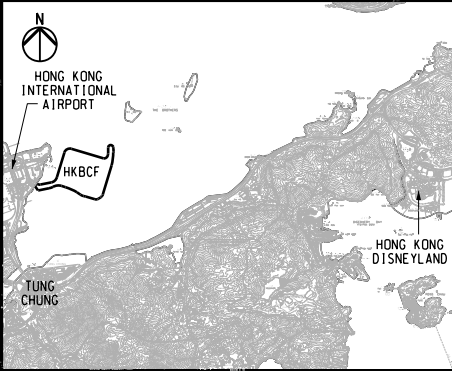
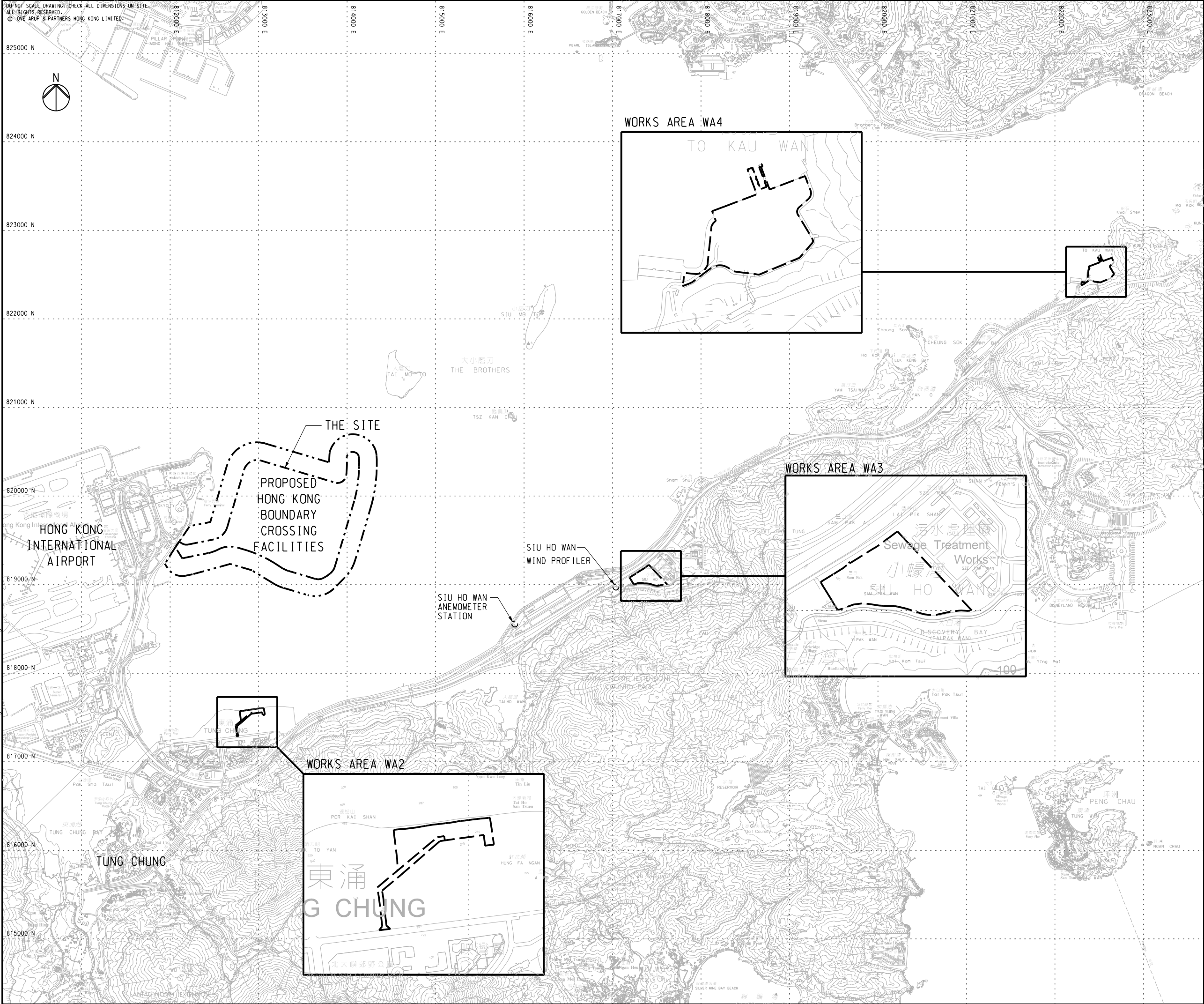
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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
Waste Management (Construction Waste)							
S8.3.17 of HKBCFEI A and S12.6 of TMCLKLE IA	WM8	<u>General Refuse</u> <ul style="list-style-type: none"> The site and surroundings shall be kept tidy and litter free. General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. All waste containers shall be in a secure area on hardstanding. 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

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Appendix I

Location Plan (Drawing No. 211036/SL/1001)



KEY PLAN

NOTES

1. ALL COORDINATES ARE RELATED TO HONG KONG 1980 GRID.
2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM (mPD).
3. REFER TO DRG NO. 211036/SL/1002 FOR THE DEFINITION OF SETTING OUT LINE (SOL) FOR THE HONG KONG BOUNDARY CROSSING FACILITIES (HKBCF) RECLAMATION SITE.
4. REFER TO DRG NO. 211036/SL/1004 FOR DETAILS OF SITE BOUNDARY.
5. FOR EXTENT OF SORTING FACILITIES AT FILL BANK AT TSEUNG KWAN O AREA 137 REFER TO DRG NO. 211036/SL/1015.

LEGEND

- SITE BOUNDARY
- SETTING OUT LINE (SOL)
- WORKS AREA BOUNDARY

-	FOR CONSTRUCTION	HYJL	11/11
Rev	Description	By	Date
Consultant			
ARUP 奧雅納工程顧問 • Ove Arup & Partners Hong Kong Limited			
Supported By :			
Ecosystems Ltd.			○
EDA Marine Ltd.			○
Geotechnical Consulting Group (Asia) Ltd.			○
Hong Kong Cetacean Research Project			○
IntelBuild Technyx Asia Limited			○
Tony Gee and Partners LLP			○
Contract No. and Title:			
Contract No. HY/2010/02			
Hong Kong-Zhuhai-Macao Bridge			
Hong Kong Boundary Crossing Facilities			
- Reclamation Works			
Drawing title			
KEY PLAN			
Drawing no.		211036/SL/1001	Rev. -
Drawn RL	Date 11/09	Checked KKY	Approved DML
Scale 1:20000 @A1 1:40000 @A3		Status	WORKING
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