

Our Ref : 178711/DC/2020/02/M45/460-B00474
Your Ref: () In Ax (13) to EP 2/N9/F/50 Pt.6

19 November 2021

BY HAND

Lantau South, Lamma, Cheung Chau & Tsing Yi Section (5)
Regional Assessment Group
Environmental Assessment Division
Environmental Protection Department
27/F, Southorn Centre, 130 Hennessy Road
Wan Chai, Hong Kong

For the attention of Mr. TSE Tsz Lok, Jason (Env Protection Officer (Regional Assessment) 52)

Dear Sir,

Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Environmental Permit No. EP-538/2017
Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works:
Submission of Waste Management Plan

I refer to your previous letter referenced above issuing comments on the captioned submission.

In accordance with EP Condition No. 2.10 and on behalf of the Permit Holder (Drainage Services Department), we submit herewith 3 hard copies and 1 electronic copy of the revised Waste Management Plan.

Yours faithfully,



Thomas Cheung
Chief Resident Engineer

Encl.

c.c.	DSD/SDD1	- Attn: Mr. Silas Chan (w/o encl.)
	Lam Environmental Services Ltd	- Attn: Ms. Melody Cheng (by email) (w/o encl.)
	SMEC Asia Ltd	- Attn: Ms. Kitty Lee (by email) (w/o encl.)



Our ref.: LES/J2021-01/CS/L021
Date : 19 November 2021

Engr/Special Duty 1
Group 3, Special Duty Division
Sewage Services Branch
Drainage Services Department
42/F, Revenue Tower
5 Gloucester Road
Wan Chai, Hong Kong

By Email & Post

Attn: Mr. CHAN Kwun Sing, Silas

Dear Mr. CHAN,

Contract No. SD 6/2020
Construction of San Shek Wan Sewage Treatment Works, Associated Submarine
Outfall and Pui O Sewerage Works – Environmental Team Services (2021 – 2022)
Certification of Waste Management Plan

Reference is made to the Waste Management Plan (WMP) (Revision: 05) dated 19 November 2021. We have no comment on the WMP in accordance with the requirements stipulated in Condition 2.10 of the Environmental Permit (EP) No. EP-538/2017 for the project of Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works. We hereby certify the captioned document pursuant to Condition 1.9 of the EP No. EP-538/2017.

Should you have any queries, please do not hesitate to contact the undersigned on 60969697.

Yours faithfully,
For and On Behalf Of
Lam Environmental Services Limited

Melody Cheng
Environmental Team Leader

Encl.

c.c.	Binnies Hong Kong Limited	Mr. Clarence CHAK	By Email
	SMEC Asia Limited	Mr. Arthur CHIU	By Email
	Kwan Lee – Chun Wo Joint Venture	Mr. Charles TSE	By Email



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Our ref: 7076811/L28035/AW/KL/CY/rw

19 November 2021

Drainage Services Department
Sewage Services Branch
Special Duty Division Group 3
42/F Revenue Tower
5 Gloucester Road
Wan Chai, Hong Kong

By Email and Post
(kschan04@dsd.gov.hk)

Attention: Mr Silas CHAN

Dear Sir

**Contract No. SD 7/2020
Independent Environmental Checker ("IEC") for Environmental Monitoring Work for
South Lantau Sewerage Works
Waste Management Plan (WMP)**

With reference to the Waste Management Plan (Revision 05) dated 19 November 2021, please note that we have no adverse comments on the captioned. We herewith verify the captioned in accordance with Conditions 1.9 and 2.10 of the Environmental Permit No. EP-538/2017.

Thank you for your attention and please do not hesitate to contact our Ir Kitty LEE on tel. 3995-8140 or by email to kitty.lee@smec.com.

Yours faithfully

Cleo YIP
Independent Environmental Checker

cc	Binnies	-	Mr Clarence CHAK	by email
	Lam	-	Ms Melody CHENG / Mr Raymond DAI	by email
	KLCW-JV	-	Mr Charles TSE	by email

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Contract No. DC/2020/02

**Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works**



Submission No.: KLCWJV/1027/0XXX-2021
Submission Title: **Waste Management Plan (WMP) (Rev.4)**
Submission Date: 11 November 2021

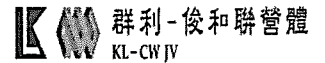
Item No.	Ref.	Comments	Contractor's Response
2. a. (i)	() in Ax (13) to EP 2/N9/F/50 Pt.6	S.1.2: Please note that ETWB TC (W) No. 33/2002 has been subsumed in Project Administration Handbook Section 4.1.3. Please update the reference as appropriate.	Removed.
2. a. (ii)		S.1.2: Please note that CEDD Technical Circular No. 05/2005 – Management of Construction and Demolition Materials has been superseded by CEDD Technical Circular No. 03/2015. Please update the reference as appropriate.	Revised.
2. b.		S.4: In accordance with the EIA Report, marine sediment and general refuse will be generated from the construction activities, Please provide the relevant information in the Plan.	- General refuse: Non-inert materials was included general refuse, and Table 4.1 and section 7.4 provided the relevant information and handling methodology. - Marine sediment: Added the "Marine sediment" in section 4, and Table 4.1 and section 7.6 provided the relevant information and handling methodology.
2. c.		In accordance with the EP Condition 2.10 (v) and (vi), all dump trucks engaged on site should be equipped with GPS or equivalent automatic system for real time tracking and the relevant data collected should be recorded and analyzed. The relevant information cannot be found in the WMP. Please provide the relevant information and ensure the compliance of EP conditions.	Section 9 had mentioned "Dump trucks engaged on site will also be equipped with real time tracking and monitoring system." Section 9.1 was added for more detail information.

Contract No:

DC/2020/02

Project Title:

**Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works**



Waste Management Plan

Document No: KL-CW JV/WMP
Revision: 05
Date: 19 November 2021


Revision History

Revision No.	Description	Prepared/ Revised By	Date
00	First Submission	Ken Cheung	29 April 2021
01	Second Submission	Ken Cheung	31 May 2021
02	Third Submission	Ken Cheung	23 June 2021
03	Fourth Submission	Ken Cheung	23 June 2021
04	Fifth Submission	Shirley Kong	11 November 2021
05	Sixth Submission	Shirley Kong	19 November 2021


Waste Management Plan

Document No: KL-CW JV/WMP
Revision: 05
Date: 19 November 2021

Prepared by:

Position	Signature	Name	Date
Environmental Officer		Shirley Kong	19 November 2021

Approved by:

Position	Signature	Name	Date
Site Agent		Charles Tse	19 November 2021

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0. Abbreviation and Acronyms

C&D	Construction & Demolition
CEDD	Civil Engineering and Development Department
CM	Construction Manager
CTS	Chit Ticket System
CP	Competent Person for Operation of Chit Ticket System
DRS	Daily Record Summary Form
EPD	Environmental Protection Department
EO	Environmental Officer
FEMU	Front End Mobile Unit
RTTMV	Real Time Tracking & Monitoring of Vessel
SA	Site Agent
SE	Site Engineer
SMP	Site Management Plan
TTS	Trip Ticket System
WFT	Waste Flow Table
WMP	Waste Management Plan

1. INTRODUCTION

1.1 Scope of Works

The works to be executed under this contract involves construction of

- Construction of a secondary sewage treatment works (STW) at San Shek Wan in South Lantau;
- Construction of a sewage pumping station (SPS) at Pui O;
- Construction of about 1.4 kilometres (km) of submarine outfall with a diameter of 350 millimetres (mm) for the disposal of treated effluent from the STW at San Shek Wan;
- Construction of about 4.1 km of gravity sewers with diameters ranging from 150 mm to 375 mm along South Lantau Road and Chi Ma Wan Road and at Pui O Lo Uk;
- Construction of about 1.2 km of twin rising mains with a diameter of 200 mm along South Lantau Road and Chi Ma Wan Road; and
- Ancillary works

1.2 Objectives of the Waste Management Plan

This Waste Management Plan (WMP) prepared by the *Kwan Lee – Chun Wo Joint Venture (KL-CW JV)*, JV, is to demonstrate clearly the management of the *Chit Ticket System (CTS)* in lieu of *Trip Ticket System (TTS)* introduced by CEDD in 2010 for disposal of construction waste generated in the Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works (the Project).

Pursuant to Environmental Permit EP-538/2017 Part C Clause 2.10, the Waste Management Plan (WMP) shall be deposited to the Environmental Protection Department no later than 3months before commencement of construction of the Project.

This WMP forms part of the Environmental Management Plan (EMP) of the Project. The measures specified in this WMP will be implemented on-site to manage the disposal of construction and demolition (C&D) materials. The WMP will be reviewed and updated regularly.

The following legislation covers or has some bearing upon the handling and disposal of wastes in Hong Kong, and will be used as the criteria:

- *Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)*
- *Waste Disposal Ordinance and its subsidiary regulation;*
- *Waste Disposal (Chemical Waste) (General) Regulation;*
- *Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation; and,*

- *Land (Miscellaneous Provisions) Ordinance.*

In addition, The JV will refer to and comply with the Clause 9.2.7 of the EIA Report (AEIAR-210/2017):

- *Waste Disposal Plan for Hong Kong (December 1989), Planning, Environment and Lands Branch Government Secretariat, Hong Kong Government;*
- *Chapter 9 - Environment (2008), Hong Kong Planning Standards and Guidelines, Hong Kong Government;*
- *Hong Kong Planning Standards and Guidelines Planning (2014), Planning Department, Hong Kong SAR Government;*
- *New Disposal Arrangements for Construction Waste (1992), EPD & CED, Hong Kong Government;*
- *Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat, 5 November 1998;*
- *WBTC No. 11/2002 - Control of Site Crushers, Works Bureau, Hong Kong SAR Government;*
- *ETWB TC(W) Nos. 22/2003 and 22/2003A, Additional Measures to Improve Site Cleanliness and Control Mosquito Breeding on Construction Sites;*
- *ETWB TC(W) No. 34/2002, Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau, Hong Kong SAR Government;*
- *DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness, Development Bureau, Hong Kong SAR Government;*
- *Section 3.3 of Chapter 2 of Project Administration Handbook for Civil Engineering Works, 2012 Edition, Civil Engineering and Development Department, Hong Kong SAR Government;*
- *Sections 4.1.3 and 4.13 of Chapter 4 of Project Administration Handbook for Civil Engineering Works, 2012 Edition, Civil Engineering and Development Department, Hong Kong SAR Government;*
- *Section 9.12 of Chapter 5 of Project Administration Handbook for Civil Engineering Works, 2012 Edition, Civil Engineering and Development Department, Hong Kong SAR Government;*
- *Section 21.25 of Chapter 7 of Project Administration Handbook for Civil Engineering Works, 2012 Edition, Civil Engineering and Development Department, Hong Kong SAR Government;*
- *Hong Kong Planning Standards and Guidelines Planning (2014), Planning Department, Hong Kong SAR Government;*
- *WBTC No. 25/99, 25/99A and 25/99C - Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers, Works Bureau, Hong Kong SAR Government;*

- *Practice Note for Authorized Persons and Registered Structural Engineers No. 252 - Management Framework for Disposal of Dredged/Excavated Sediment, Buildings Department, Hong Kong SAR Government;*
- *A Guide to the Registration of Chemical Waste Producers;*
- *A Guide to the Chemical Waste Control Scheme;*
- *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes;*
- *Chapter 9 of Hong Kong Planning and Standards Guidelines;*
- *Dumping at Sea Ordinance;*
- *Dangerous Goods Ordinance;*
- *Environment, Transport and Works Bureau Technical Circular No. 19/2005 – Environmental Management on Construction Site*
- *Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 - Management of Dredged/Excavated Sediment (ETWB TC(W) No. 34/2002)*
- *CEDD Technical Circular No 03/2015 – Management of Construction and Demolition Materials*
- *Development Bureau Technical Circular No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Material;*
- *Works Bureau Technical Circular No. 12/2002 - Specifications Facilitating the Use of Recycled Aggregates;*
- *Works Bureau Technical Circular No. 06/2002A - Enhanced Specification for Site Cleanliness and Tidiness;*
- *Works Bureau Technical Circular No. 06/2002 - Enhanced Specification for Site Cleanliness and Tidiness;*
- *Works Bureau Technical Circular No. 19/2001 - Metallic Site Hoardings and Signboards;*
- *Works Bureau Technical Circular No. 12/2000 - Fill Management;*
- *Works Bureau Technical Circular No. 04/1998A - Use of Public Fill in Reclamation and Earth Filling Projects;*
- *Works Bureau Technical Circular No. 04/1998 - Use of Public Fill in Reclamation and Earth Filling Projects;*
- *Works Bureau Technical Circular No. 16/1996 - Wet Soil in Public Dumps;*
- *Works Bureau Technical Circular No. 02/1993B - Public Filling Facilities;*
- *Works Bureau Technical Circular No. 02/1993 - Public Dumps; and,*
- *Works Bureau Technical Circular No. 32/1992 - The Use of Tropical Hardwood on Construction Sites.*

2. WASTE MANAGEMENT HIERARCHY

The *JV* 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 2.1** below.

Table 2.1 Waste Management Hierarchy

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

The hierarchy will be used to evaluate waste management options for the minimisation 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.

3. DESIGN AND PLANNING OF CONSTRUCTION WORKS

Prior to the commencement of the works, The *JV* will carefully consider the construction methodology and programme to assess the waste generation during the 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 will also contribute to the performance of the works in the first instance so as to avoid abortive activity.

The waste generation of the Project will be estimated and presented in the monthly summary 'Waste Flow Table' (WFT) (See *Appendix D*).

Prior to the commencement of works, the location and necessary facilities for construction material storage, on-site 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. SOURCES OF WASTE AND DISPOSAL LOCATION

Construction and Demolition (C&D) materials include public fill (inert material) and C&D wastes (non-inert material). Public fill should comprise broken concrete, brick and aggregates, etc. C&D wastes should comprise unwanted materials generated during construction, including rejected structures and materials, materials which have been over ordered or are surplus to requirement and materials, which have been used and discarded.

The following types of waste will be generated from the construction activities:

- C&D material containing inert and non-inert materials;
- Marine sediment;
- Chemical waste;
- General refuse.

The disposal sites for the wastes generated from the project as shown in the **Table 4.1**.

Table 4.1 Sources and Waste and Corresponding Disposal Site

Waste Type	Examples	Disposal Site	Estimate Size Generated	Estimate Size Reused / Recycled	Estimate Size Disposed off-site
C&D material – public fill (inert)	<ul style="list-style-type: none"> • Debris, • Rubble, • Earth • Concrete • Soil • Asphalt • Slurry • Bentonite 	<ul style="list-style-type: none"> • Mui Wo Temporary Public Fill Bank (MW-PFRF) 	68,484m ³	N/A	68,484m ³
	<ul style="list-style-type: none"> • Slurry • Bentonite 	<ul style="list-style-type: none"> • Tseung Kwan O Area 137 Fill Bank (TKOFB) 			
C&D material – C&D waste (non-inert)	<ul style="list-style-type: none"> • Timber • Metal • Plastic • Paper 	<ul style="list-style-type: none"> • North East New Territories (NENT) or Outlying Islands Transfer Facilities. 	1,500m ³	300m ³	1,200 m ³
Chemical waste	<ul style="list-style-type: none"> • Spent filter cartridges containing heavy metals • Spent batteries • Used mechanical oil • Cleaning fluid • Spent solvents • Lubricating oil • Paints 	<ul style="list-style-type: none"> • Chemical Waste Treatment Facility at Tsing Yi • Other approved facility 	Few hundred litres per month	N/A	Few hundred litres per month

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	<ul style="list-style-type: none"> • Paint container 				
General Refuse	<ul style="list-style-type: none"> • Food waste • Aluminium can • Plastic bottle • Waste paper 	<ul style="list-style-type: none"> • North East New Territories (NENT) or Outlying Islands Transfer Facilities. 	65 kg per day	0.2 kg per day	64.8 kg per day
Marine sediment	<ul style="list-style-type: none"> • Marine sediment Cat. L 	<ul style="list-style-type: none"> • Marine dumping site at South Cheung Chau 	4,700m ³	N/A	4,700m ³
	<ul style="list-style-type: none"> • Marine sediment Cat. M and Cat. H 	<ul style="list-style-type: none"> • Marine dumping site at East of Sha Chau 			

5. SITE ORGANIZATION AND STAFF DUTIES

A site organisation structure would be established to identify a senior staff overseeing the operation of TTS; a designated person (EO, ES or Foreman) to fill in and sign Part 1 of the Daily Record Summary (DRS) before departure of the truck; a competent person (CP) to man the exit and record the CHIT no. and the truck information.

The Site Organisational Chart showing the manpower resources for implementation of all waste management issues of the Site (to be updated regularly) is attached in Appendix A.

5.1 Roles and Responsibilities

5.1.1 Site Agent (SA)

The SA is responsible for provision of sufficient resources and facilities for effective and efficient implementation of WMP on-site. The SA will be on-site full time and will be ultimately responsible for overall coordination, implementation, monitoring and overseeing of the performance of the WMP for the contract. He will be assisted by Environmental Officer (EO).

5.1.2 Sub Agent (SubA)

The Sub Agent is responsible for assisting the SA for waste management of the site. The SubA responsible for day-to-day overview of site practices in relation to waste management to ensure efficient and effective implementation of the WMP.

5.1.3 Environmental Officer (EO)

The EO will oversee all environmental matters in the Contract. He will act as an in-house advisor to provide training and expertise to all levels of staff in respect of all environmental protection issues. The EO will also handle environmental complaints, carry out site surveillance to monitor the implementation of the WMP and review its effectiveness. The EO will report his work to the SA and will be assisted by the ES. The EO is responsible for the following tasks:

- a. Prepare, implement and update the Waste Management Plan;
- b. Monitor onsite work to ensure compliance with the environmental requirements for the site;
- c. Assist the SA in handling any complaints that are received;
- d. Ensure that the required environmental monitoring is carried out, and that all environmental monitoring results are recorded;
- e. Keep the records of the trip tickets; and
- f. Complete Part 2 of DRS.

5.1.4 Site Engineer (SE)

The SE will assist the SA in carrying out day-to-day management of construction works and WMP implementation. He will work closely with the EO to provide him with information on site including the performance of the sub-JVs and the occurrence of non-compliance etc.

5.1.5 Environmental Supervisor (ES)

The ES will assist the EO for inspection, supervision and monitoring of the environmental performance of the Works. The ES is responsible for the following tasks:

- a. Assist the EO to rectify any non-conformances with the environmental requirements of this WMP that are identified onsite;
- b. Attend environmental meetings related to waste management when necessary;
- c. Carry out environmental site inspections with the EO when deficiencies in waste management are identified; and
- d. Assist the EO with any environmental accidents.

5.1.6 Foreman

Foreman shall be responsible for the following duties in relation to environmental and waste control.

- a. Assisting the EO in implementing the WMP;
- b. Assisting in the daily implementation of the WMP including the sorting and segregation of construction waste in to separate stockpiles/staging areas and where possible the recycling (via recycling containers) or reusing materials.
- c. Ensuring that, where possible, the generation of waste is avoided or minimized.

5.1.7 Competent Person (CP) for Operation of Chit Ticket System

The CP (trained foreman) for operation of chit ticket system is responsible for ensuring that the trip-ticket system is followed and that all paperwork (e.g. CHIT and Daily Record Summary Form) is signed, completed and collected. The CP is also responsible to complete Part 1 of DRS.

6. WASTE MINIMISATION 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:

General Construction Activities

- a. Nomination of an accepted person to be responsible for 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 proper waste management and chemical waste handling procedures. Training will be provided to workers on the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the construction works;
- c. Provision of sufficient waste disposal points and regular collection for disposal;
- d. Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- e. Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi;
- f. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and
- g. A recording system for the amount of wastes generated, recycled and disposed of, including the disposal sites.

Waste Reduction During Construction

- a. Use of steel formwork instead of timber formwork to reduce the generation of timber waste;
- b. Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- c. Encourage collection of aluminium cans by individual collectors by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force;
- d. Proper storage and site practices to minimise the potential for damage or contamination of construction materials;
- e. Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste;
- f. Ordering the correct raw materials at the correct time and the recording of materials flow to minimise over ordering. The construction materials will be stocked carefully to prevent damage or contamination. During the works, only the exact quantity of materials will be collected and if necessary, any surplus will be returned to stock after consideration of its use;
- g. Maximising the utilisation 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;
- h. A preference for reusable non-timber formwork such as steel formwork or plastic facing;
- i. 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 stockpile them in dry and clean conditions for later collection by recycling JVs;
- j. 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. Layout plan showing the temporary storage of C&D materials on the Site was attached in *Appendix B*;
- k. Encourage the collection of aluminium cans, paper waste and plastic bottles by site staff, and provide separately labelled bins to segregate these wastes from other general refuse arising from the work force;
- l. Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste;
- m. Provision of a designated waste working team to collect the refuse on-site regularly;
- n. The removal of all other un-reusable C&D materials off site as soon as practicable in order to optimise the use of the on-site storage space.
- o. Implementation of the trip-ticket system to ensure that the dumping / filling location is used so as to prevent fly tipping. The security guard will ensure only dump

trucks with properly completed trip-tickets can leave the site. Wherever practicable, weighing equipment will be provided at the site entrance to accurately record the amount of C&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;

- p. During the storage and transportation of waste, a tarpaulin covering or enclosed containers will be used to minimise fugitive dust emission;
- q. 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 Centre (CWTC) or others authorized by EPD;
- r. The setting up of special control measures to regulate storage, labelling, transport and the disposal of classified chemical waste such as paint residues, lubricants or other oil waste including the registration as a chemical waste producer and the disposal of such wastes by a licensed collector to CWTC.
- s. The regular recording of waste reused, recycled or disposed of should be recorded regularly. The yearly and monthly waste flow tables shall be kept updated to reflect the actual generation of waste;

7. HANDLING OF C&D MATERIALS

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

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

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

7.1 On-site Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert materials and a unique access checkpoint with security control. The SA / Foreman will manage the on-site sorting facilities and promptly remove all the sorted and processed

materials arising from or in connection with the works from the site to minimize the extent of temporary stockpiling on the site. The on-site sorting of inert and non-inert materials is not necessary in Stage 1 of Construction HDD and Sheet Pile Wall work that will be reviewed timely. The categories of C&D materials to be sorted within the on-site sorting facilities include:

- Hard rock and large broken concrete suitable for reuse on the Site or recycling at a designated location;
- Metals;
- Plastics;
- Paper;
- Chemical waste; and
- Materials suitable for disposal at public fill reception facilities, sorting facilities, landfills and other possible reception facilities.

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

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

7.2 **INERT C&D MATERIALS**

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

7.2.1 **Excavated Material**

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

- The JV will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges;
- A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping;
- Suitable excavated material will be stored for backfilling purposes;
- Excess excavated material will be transported to other projects for reuse as approved by the *Project Manager*;
- Only the amount of excavated material remaining after reuse as described under

items a. and b. above will be transported to the public fill facilities;

- Clean excavated soil would be reused on-site as far as possible in order to minimise the amount of public fill to be disposed of off-site; and

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

7.2.2 Concrete Waste

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

All the remaining inert C&D materials will be transported to public fill (e.g. Outlying Islands Transfer Facilities at Mui Wo or other disposal outlets as approved by the Supervisor (Consultant's Representative)). The trip ticket system will ensure there is no illegal dumping of the above-mentioned materials.

7.3 WASTE REDUCTION MEASURES

Good management and control can prevent generation of significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of standard site practices. Recommendations to achieve waste reduction include:

- segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal;
- encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce;
- any unused chemicals and those with remaining functional capacity will be recycled as far as possible;
- use of reusable non-timber formwork to reduce the amount of C&D materials;
- prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill;
- proper storage and site practices to reduce the potential for damage or contamination of construction materials; and
- plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste.

7.4 NON INERT C&D MATERIALS

The construction waste (excluding contaminated materials) that is not recyclable shall be disposed of at North East New Territories (NENT) Landfill or other disposal outlets as approved by the Supervisor. The construction waste shall be the non-inert portion of C&D materials not including rock, rubble, boulder, earth, soil, sand, concrete, asphalt, brick, tile, masonry or used bentonite. For a truck load of C&D materials to be accepted by the NENT Landfill, 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 vehicle. A truck load of C&D materials satisfying the following new criteria will also be accepted at the NENT Landfill:

- The depth of the waste is greater than 1 metre for goods vehicle with demountable skip and 1.5 metres for other types of vehicle regardless of the weight of the waste; or
- The truck load of C&D materials consists entirely of bamboo, timber or plywood regardless of the weight and the depth of the waste

The C&D materials delivered for landfill disposal shall further contain no free water and the liquid content shall not exceed 70% by weight.

(a) Management of Waste Disposal

The JV will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges. Every waste load transferred to Government waste disposal facilities such as public fill, sorting facilities, landfills or transfer facility will require a valid “Chit” which contains the information of the account holder to facilitate waste transaction recording and billing to the waste producer.

A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping. The billing “chit” and trip ticket system will be included as one of the contractual requirements and implemented by the JV. The project proponent will also conduct regular inspection of the waste management measures implemented on site as described in the Waste Management Plan, which becomes part of the Environmental Management Plan according to the requirements as stipulated in ETWB TC(W) No. 19/2005, to be prepared before commencement of construction.

A recording system (similar to summary table as shown in Annex 4 of Appendix C of ETWB TC(W) No. 19/2005) for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established during the construction phase.

(b) Measures for the Reduction of C&D Material Generation

Inert C&D materials (public fill) will be reused within the Project as far as practicable. Public fill and construction waste shall be segregated and stored in different containers or skips to facilitate reuse or recycling of materials and their

proper disposal. Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.

To reduce the potential dust and water quality impacts of site formation works, C&D materials will be wetted as quickly as possible to the extent practice after filling. Open stockpiles of excavated/ fill materials or construction wastes on-site should be covered with tarpaulin or similar fabric.

7.4.1 Timber Waste

The *JV* will avoid, reduce and minimise the use of timber in temporary works construction. Where the timber is used for this purpose or for one process/ activity with an estimated quantity exceeding 5m³, The *JV* will submit method statement to the *Supervisor* for agreement prior to the commencement of the works.

Description, justification and the estimated quantity for every work process/ activity requiring the use of timber for temporary works construction will be documented in form of summary table which will be updated and submitted monthly to the *Supervisor* by the EO together with the monthly summary. The summary table on the use of timber for Temporary Works construction is attached in **Appendix D**. WFT for the purpose of ongoing monitoring and review. When timber waste has arisen on-site, it will be sorted and collected daily by an assigned work team and will be stored in a designated storage area for subsequent use or collection by recycling *JVs*.

7.4.2 Metal Waste

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

7.4.3 Plastic Waste

The *JV* will also avoid and reduce plastic waste during the design, planning and construction process. It will be considered for re-use in temporary or minor works on-site. When plastic waste (i.e. water barrier, road lantern, safety helmet etc.) has been arisen on-site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling *JVs*.

7.4.4 Paper Waste

The *JV* will also avoid and reduce paper waste during the design, planning and construction process. When paper waste has been arisen on-site, it will be sorted and collected daily by an assigned work team and stored in a designated storage area for subsequent use or collection by recycling *JVs*.

7.4.5 Un-recyclable, Non-inert C&D Waste

Un-recyclable, non-inert C&D materials generated from construction activities will be temporarily stored and containers or skips with openable doors will be provided for temporary waste storage to prevent windblown litter. The containers or skips will be located at a demarcated area

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

The un-recyclable C&D waste will be collected and disposed of on a regular basis. They will be transported and disposed of by a licensed waste haulier to North East New Territories (NENT) landfill and Outlying Islands Transfer Facilities. A trip-ticket system to trace the transportation and destination of the waste will be implemented. The amount of waste to be disposed will be recorded, controlled and monitored through the maintenance of WFT.

7.5 CHEMICAL WASTE

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

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

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

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

7.5.1 Storage of Chemical Waste

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

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

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

The storage area for chemical waste 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 bund, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest;
- have adequate ventilation;
- be sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and
- be arranged so that incompatible materials are appropriately separated.

The location for chemical waste storage can be referred to *Appendix B*.

7.5.2 Disposal of Chemical Waste

A licensed waste collector will be employed to deliver the chemical waste to the Chemical Waste Treatment Centre (CWTC) in Tsing Yi or others authorized by EPD. The trip-ticket system will be strictly implemented to ensure the chemical waste is transported by and to proper agents. Trip tickets issued for every chemical waste collection will be retained and filed for future reference and inspection. JV would submit in advance particulars of waste collector where disposal of chemical waste is anticipated.

7.6 GENERAL REFUSE

Un-recyclable general refuse, which mainly consists of food waste, aluminium cans, plastic bottles and waste paper, will be generated from workers and the site office.

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

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

General refuse including food and domestic waste will be stored in enclosed bins or compaction units separate from the construction and chemical wastes. Lunch boxes, plastic bottles, containers, plastic sheets and foam will be sorted and stored in separately labelled bins for subsequent recycling. Reputable recycle JVs will be employed to collect recyclable materials. The amount of waste to be disposed will be recorded, controlled and monitored through the maintenance of WFT.

The general refuse will be collected and disposed of on a regular basis to minimise the likelihood of odour, pests and litter. They will be transported and disposed of by a licensed waste haulier to North East New Territories (NENT) landfill or Outlying Islands Transfer Facilities. A trip-ticket system to trace the transportation and destination of the waste will be implemented.

Adequate number of waste containers will be provided to avoid over-spillage of waste on site.

The burning of refuse on the site will be strictly prohibited.

7.7 DREDGED MARINE SEDIMENT

The requirements and procedures detailed in the ETWB TC(W) No. 34/2002 and under the DASO will be followed. A proposal for sampling and chemical testing of the sediment will be prepared and submitted to the EPD for approval. The approved detailed sampling and chemical testing will be carried out prior to the commencement of the dredging activities to confirm the sediment disposal method. After carrying out the sampling and testing, a Sediment Quality Report (SQR) will be prepared for EPD approval as required under the DASO. The SQR will include the sampling details, chemical testing results, quality control records, proposed classification and delineation of sediment according to the requirements of the Appendix A of ETWB TC(W) No. 34/2002.

7.7.1 *Measures of Dredged marine sediment*

The following measures shall apply at all times where practicable:

- Silt curtains will be deployed during dredging to reduce the elevation of suspended solids to nearby sensitive receivers. The current speeds around the dredging location (near outfall) are less than 0.5 m/s based on EIA Table 4A.5 of Annex 4A and thus deployment of silt curtain is considered practical;
- Closed grab dredgers should be used to reduce the potential for leakage of sediments.
- Dredged marine sediment will be disposed of in a gazetted marine disposal area in accordance with marine dumping permit conditions of the Dumping at Sea Ordinance (DASO).
- Disposal vessels will be fitted with tight bottom seals in order to prevent leakage of material during transport.
- Barges will be filled to a level, which ensures that material does not spill over during transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.
- After dredging, any excess materials will be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.
- The JV will confirm that the works cause no visible foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the dredging site.

- If installed, degassing systems will be used to avoid irregular cavitation within the pump.
- Monitoring and automation systems will be used to improve the crew's information regarding the various dredging parameters to improve dredging accuracy and efficiency.
- Control and monitoring systems will be used to alert the crew to leaks or any other potential risks.
- When the dredged material has been unloaded at the disposal areas, any material that has accumulated on the deck or other exposed parts of the vessel will be removed and placed in the hold or a hopper. Under no circumstances will decks be washed clean in a way that permits material to be released overboard.
- Dredger will maintain adequate clearance between vessels and the seabed at all states of the tide and reduce operations speed to ensure that excessive turbidity is not generated by turbulence from vessel movement or propeller wash.

The recommended mitigation measures on waste management contained in the approved EIA Report will be strictly followed as shown in the table below.”

Implementation Schedule of Recommended Mitigation Measures for Waste Management

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Relevant Legislation & Guidelines
Waste Management				
S 9.5.1	Nomination of approved personnel to be responsible for standard site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site.	Contract mobilisation/ During construction	JV	
S 9.5.1	Training of site personnel in proper waste management and chemical handling procedures. Training will be provided to workers on the concepts of site cleanliness and appropriate waste management procedures, including	Contract mobilisation/ During construction	JV	

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	waste reduction, reuse and recycling at the beginning of the construction works.			
S 9.5.1	Provision of sufficient waste disposal points and regular collection for disposal.	All area/ During construction	JV	WBTC Nos.6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness. Works Bureau, Hong Kong SAR Government
S 9.5.1	Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	All area/ During construction	JV	WBTC Nos.6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness. Works Bureau, Hong Kong SAR Government
S 9.5.1	Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi.	All area/ During construction	JV	Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi.
S 9.5.1	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Land site/ During construction	JV	Waste Disposal Ordinance
S 9.5.1	A recording system for the amount of wastes generated/ recycled and disposal sites.	Land site/ During construction	JV	ETWB TCW No. 31/2004

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S 9.5.2	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal.	Land site/ During construction	JV	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site
S 9.5.2	Encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce.	Land site/ During construction	JV	
S 9.5.2	Any unused chemicals and those with remaining functional capacity will be recycled as far as possible.	Land site/ During construction	JV	
S 9.5.2	Use of reusable non-timber formwork to reduce the amount of C&D materials.	All area/ During construction	JV	Works Branch Technical Circular (WBTC) No. 32/92, Thus Use of Tropical Hard Wood on Construction Site
S 9.5.2	Prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill.	All area/ During construction	JV	ETWB TCW No. 31/2004
S 9.5.2	Proper storage and site practices to reduce the potential for damage or contamination of construction materials.	All area/ During construction	JV	
S 9.5.2	Plan and stock construction materials carefully to reduce	Contract mobilisation/ During	JV	

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	amount of waste generated and avoid unnecessary generation of waste.	construction		
S 9.5.3	The JV will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges.	Contract mobilisation/ During construction	JV	Waste Disposal (Charges for Disposal of Construction Waste) Regulation
S 9.5.3	A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping.	Contract mobilisation/ During construction	JV	DEVB TC(W) No. 6/2010
S 9.5.3	The project proponent will also conduct regular inspection of the waste management measures implemented on site as described in the Waste Management Plan	All area/ During construction	JV	ETWB TC(W) No. 19/2005
S 9.5.3	A recording system (similar to summary table as shown in Annex 5 and Annex 6 of Appendix G of ETWB TC(W) No. 19/2005) for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established during the construction phase.	All area/ During construction	JV	Annex 5 and Annex 6 of App
S 9.5.3	Inert C&D materials (public fill) will be reused within the Project as far as practicable.	All area/ During construction	JV	
S 9.5.3	Public fill and construction waste shall	All area/ During	JV	

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	be segregated and stored in different containers or skips to facilitate reuse or recycling of materials and their proper disposal.	construction		
S 9.5.3	Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.	All area/ During construction	JV	
S 9.5.3	To reduce the potential dust and water quality impacts of site formation works, C&D materials will be wetted as quickly as possible to the extent practice after filling.	All area/ During construction	JV	Air Pollution Control (Construction Dust) Regulation; WPCO
S 9.5.3	Open stockpiles of excavated/ fill materials or construction wastes on-site should be covered with tarpaulin or similar fabric.	Land site/ During Construction, particularly dry season	JV	Air Pollution Control (Construction Dust) Regulation
S 9.5.3	Chemical waste container shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Chemical waste container shall have a capacity of less than 450 L unless the specifications have been approved by the EPD.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes

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S 9.5.3	A label in English and Chinese shall be displayed on the chemical container in accordance with instructions prescribed in Schedule 2 of the Regulations.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall be clearly labelled and used solely for the storage of chemical waste.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall be enclosed on at least 3 sides;	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall have adequate	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General)

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	ventilation.			Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary).	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Storage areas for chemical waste shall be arranged so that incompatible materials are appropriately separated.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Chemical waste will be disposed of via a licensed waste collector; and to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	General refuse will be stored in enclosed bins or compaction units separately from construction and chemical wastes.	All area/ During construction	JV	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the

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				Packaging, Handling and Storage of Chemical Wastes
S 9.5.3	Adequate number of waste containers will be provided to avoid over-spillage of waste.	All area/ During construction	JV	WBTC Nos.6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness. Works Bureau, Hong Kong SAR Government
S 9.5.3	A reputable waste collector will be employed by the JV to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts.	All area/ During construction	JV	
S 9.5.3	The burning of refuse on construction sites is prohibited by law.	All area/ During construction	JV	Air Pollution Control Ordinance
	A Sediment Quality Report (SQR) for sampling and chemical testing of the sediment will be prepared and submitted to the EPD for approval. The approved detailed sampling and chemical testing will be carried out prior to the commencement of the dredging activities to confirm the sediment disposal method.		JV and Binnies	

8. TRIP TICKET SYSTEM

8.1 Site Procedure for Trip Ticket System

For the transportation of public fill and C&D materials, Designated Person will implement the following steps to ensure compliance with the requirements of the Trip Ticket System:

- Each vehicle load of public fill or C&D material transported off-site will be accompanied by a duly completed Chit after completion of Disposal Checklist for record (Sample of the Chit and Daily Record Summary Form are attached in *Appendix C*).
- Each truck carrying C&D materials leaving the Site for a disposal ground must bear a duly completed Chit, irrespective of the location and nature of the disposal ground; CP would be responsible for checking the Chit Ticket at dump truck departure and recording the number of Chit Ticket and time of departure in log-book and ready for inspection by the *Supervisor* at any time.
- Part A of Chit would be retained by CP for completion of Part 1 in the Daily Record Summary Form (DRS) extracted from the Contact Specification. Part B and Part C would be passed to the Truck Driver for disposal use.
- For every chit ticket issued to the truck driver, CP would check the loaded material and write the designated disposal ground on top of Part B of the Chit by hand to ensure the driver knows where to dispose of the material. The CP would also show the driver a location map indicating the route from the Site to the designated disposal ground to ensure the driver goes to the correct disposal ground.
- CP should complete Part 1 of DRS in duplicate and inform the *Supervisor* before the departure of the vehicle. Part 1 of DRS should be signed by *Supervisor* before the departure of the vehicle, or at other time to be agreed between the *Supervisor* and Site Forman to suit site operations
- Part C would be collected by the Operator of at the Disposal Facilities and a transaction record issued by the Disposal Facilities would be given to the Truck Driver at departure.
- CP would ensure the Truck Driver can return Part B and the corresponding transaction record within 2 working days after disposal for counter-check against Part A records. Warning letter would be issued to the truck service provider who does not return the Part B and corresponding transaction record on time.
- Environmental Officer shall check the information recorded in the DRS against available information including his own records and data from CEDD's website and then complete Part 2 of DRS form (attached with extract of the relevant "Construction Waste Transaction Records" posted on EPD's website) for submission to the *Supervisor* within 1 working day after the records are posted at the EPD website."
- Environmental Officer would check the information recorded in the DRS against data from the website of Civil Engineering and Development Department (CEDD) [<http://www.cedd.gov.hk/eng/services/tripticket/index.html>] on a monthly basis to

verify the disposal amount.

8.2 Recording System

The SA, with the assistance of the EO, will maintain disposal records of the following documents in the site office during the period: (See *Appendix C*)

- a. Dumping License of each dump trucks
- b. Summary of Chit tickets given to the CP
- c. Part A and Part B of the Chits and corresponding Transaction Record from Disposal Facilities.
- d. Daily Record Summary – all records of Daily Record Summary to record daily disposal of C&D material from the site should be signed and completed by EO, ES or competent person and the *Supervisor* at the departure time of dump trucks.
- e. Photos of Dump Truck at departure from site showing:
 - The Construction waste inside the truck
 - Construction waste has been covered
 - Meter/Scale showing the overall weight does not exceed 24, 30 or 38 tonnes
 - The Truck License Number

8.3 Video Recording System

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:

- a. The video camera would be high resolution, lowlight and colour type and power backup would be provided to cater for accidental breakdown of the power supply to the system
- b. The videos captured by the system would be recorded continuously without break.
- c. The registration mark of each vehicle leaving the site would be recorded and the loading conditions of dump trucks including empty trucks would be captured.
- d. The video records of the site would be kept at least 60 days.

8.4 Surveillance

The EO/SA would arrange ad-hoc site inspection (i.e. without prior notification to the site staffs) to check if the CP is following the procedure outlined in WMP and all corresponding records are properly filed.

The video camera would be setup at the site exit to monitor the in/out of truck vehicles for waste disposal. Watchman will be deployed in case of bulk volume occurs.

The video camera to continuously record all car or trucks entering or leaving the site when the site opened for working activities in the morning until the site closed for working activities.

Competent Person would be responsible for the activation and checking of CCTV/Webcam recorder and when the site is opened for working activities.

8.5 Control Measures to Prevent Overloading of Dump Trucks

All trucks should reserve at least 5% loading of its permitted gross vehicle weight as a buffer before leaving the site. Any trucks that do not meet the above requirement would not be allowed to depart. The loading buffer would regularly be reviewed and adjusted to meet the site condition.

8.6 Control Measures to Track Internal Movement of Materials

Where trucks need to exit and re-enter the Site for delivery of C&D materials generated by the Site for reuse / backfilling works, the *JV* would adapt disposal control and keep the in/out record of C&D materials.

Recyclable materials such as metal, paper, plastics and milled bituminous materials etc., which have been sorted and stored on Site for the purposes of recycling, the *JV* will keep photo records of such materials delivered before delivery to a proper recycling outlet for further processing.

8.7 Removal of C&D Materials from Unauthorised Disposal Grounds

Where C&D materials from the site have been dumped at a place other than that the possible disposed ground in this contract or directed or accepted by the *Supervisor*, the *JV* shall at his own Defined Cost undertake the following remedial action:

- a. Remove the dumped C&D materials from the unauthorised disposal ground to a possible disposed ground in this contract or direct or accepted by the *Supervisor* to his acceptance; and
- b. Reinstatement the unauthorised disposal ground to the condition before dumping of the C&D materials, or a condition considered acceptable by the Authority as required under the relevant legislation where appropriate.
- c. Where the unauthorised disposal ground is a private property, the *JV* shall be responsible for obtaining the landowner's consent before removal of the dumped C&D materials.

8.8 Informing the Dump Truck Drivers

The *JV* would write to all truck drivers whom engaged for removal of C&D materials from the Sites and draw their attention to the following points:

- a. Each truck carrying C&D materials leaving the Site for a disposal ground must bear a duly completed Chit, irrespective of the location and nature of the disposal ground; Site foreman and CP would be responsible for checking the Chit Ticket at dump truck departure and recording the number of Chit Ticket and time of departure in log-book and ready for inspection by the *Supervisor* at any time.
- b. The C&D materials must be disposed of at the disposal grounds as stipulated Public Filling Facility / Landfill in **Table 4.1**.
- 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; and
- d. Truck drivers must bear a valid Dumping License which he can apply from CEDD.

9. REAL TIME TRACKING & MONITORING

9.1 Real Time Tracking & Monitoring of Dump Truck (RTTMDT) System

RTTMDT will be installed on all dump truck. RTTMDT is able to act as automatic system for real time tracking and monitoring of the travel routings and parking locations of the dump trucks to prevent the illegal dumping and landfilling of C&D materials. KL-CW JV would access to the website provided by supplier or sub-contractor to monitor and manage the location and travel route of all dump truck transferring the C&D waste from site.

The following information shall be recorded:

- Specific location;
- Time of day;
- Dump truck license number;
- Take photographs.

KL-CW JV shall report to Resident Site Staff (RSS) if illegal dumping and landfilling of C&D materials outside the designated disposal locations is found.

9.2 Real Time Tracking & Monitoring of Vessel (RTTMV) System

Front End Mobile Unit (FEMU) will be installed on all marine dumping vessels. FEMU forms a key component of the RTTMV system to record both the barge's position and draught so as to monitor its location and loading/dumping operations. KL-CW JV would access to the free website provided by the EPD to monitor and manage the dumping fleets online through the internet. When required, the KL-CW JV would on-line instruct the aboard camera connected to the FEMU to take snapshots. It would also be co-operated with the Director of Environmental Protection (DEP) to inspect the device and retrieve the record stored in the device on a regular basis.

10. PERFORMANCE MONITORING

- All management and supervisory personnel are required to carry out continual surveillance as they go about their day to day business and take immediate steps to remedy any defects or mal-practices that they observe on-site.
- Weekly inspection/walk designed to identify defects, mal-practices, and breaches of statutory requirements will be carried out regularly by the Assigned Person, Site Agent and the *Supervisor* or his delegate.
- For all new dump truck drivers responsible for disposal of C&D from any Site, the *JV* would provide training and keep the training records. The training would stress particularly on the following points:

-
- a. Each truck carrying C&D materials leaving the Site for a disposal ground must bear a duly completed Chit, irrespective of the location and nature of the disposal ground;
 - b. The C&D materials must be disposed of at the disposal grounds as stipulated Public Filling Facility / Landfill in **Table 4.1**;
 - 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; and
 - d. Truck drivers must bear a valid Dumping License which he can apply from CEDD.
- The discussion of site management plan and implementation of TTS at every SSEC and SSEMC meetings and both the meetings act as the channel for performance monitoring.
 - Monthly summary “Waste Flow Table” (WFT) will record the quantities of C&D materials generated each month, latest estimate amount of C&D materials including inert C&D materials to public fill and C&D waste.
 - A Disposal Programme (See *Appendix E*) with the estimated quantities, types of the C&D materials and corresponding disposal grounds would be prepared to forecast the upcoming monthly disposal activities. The Disposal Programme showing above information will be updated on a monthly basis and will be submitted to the *Supervisor* for information by 15th day of each month or next working day if it is a public holiday, Sunday or Saturday.

11. SITE ENVIRONMENTAL INSPECTION AND AUDIT

11.1 Site Inspection

Site inspection provides a direct means to initiate and enforce specified environmental protection and pollution control measures. These shall be undertaken routinely to inspect construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. Site inspection is one of the most effective tools to enforce the environmental protection requirements at the works area.

Regular site inspections shall be carried out and led by the *Project Manager's* Representative and attended by the JV at least once per week during the construction phase. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site. It should also review the environmental situations outside the works area which is likely to be affected, directly or indirectly, by the construction site activities of the Project. During the inspection, the following information should be referred to:

- a. works progress and programme;
- b. individual works methodology proposals (which shall include the proposal on associated pollution control measures);

- c. contract specifications on environmental protection;
- d. relevant environmental protection and pollution control legislations;
- e. previous site inspection results;
- f. approved Waste Management Plan;
Implementation Schedule of Recommended Mitigation Measures in the
approved EIA Report & EM&A Manual.

The JV shall keep the *Project Manager's* Representative updated with all relevant environmental related information on the construction contract necessary for him to carry out the site inspections. Site inspection results and associated recommendations for improvements to the environmental protection and pollution control efforts should be followed up by the JV in an agreed time-frame.

The *Project Manager's* Representative and the JV should also carry out ad-hoc site inspections if significant environmental problems are identified. Inspections may also be required subsequent to receipt of a valid environmental complaint.

11.2 Compliance with Legal and Contractual Requirements

There are statutory and contractual requirements on environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong with which construction activities must comply.

In order that the works comply with the contractual requirements, all method statements of works should be submitted by the JV to the *Project Manager's* Representative to ensure sufficient environmental protection and pollution control measures have been included.

The *Project Manager's* Representative, shall also review the progress and programme of the works to check that relevant environmental legislations have not been violated, and that any foreseeable potential for violating laws can be prevented.

11.3 Environmental Complaints

The following procedures will be undertaken upon receipt of any environmental complaint:

- a. The JV to log complaint and date of receipt onto the complaint database and inform the *Project Manager's* Representative immediately;
- b. The JV to investigate, with the SA, the complaint to determine its validity, and assess whether the source of the problem is due to construction works of the Project with the support of additional monitoring frequency and stations, if necessary;
- c. The JV to identify remedial measures in consultation with the *Project Manager's* Representative if a complaint is valid and due to the construction works of the Project;

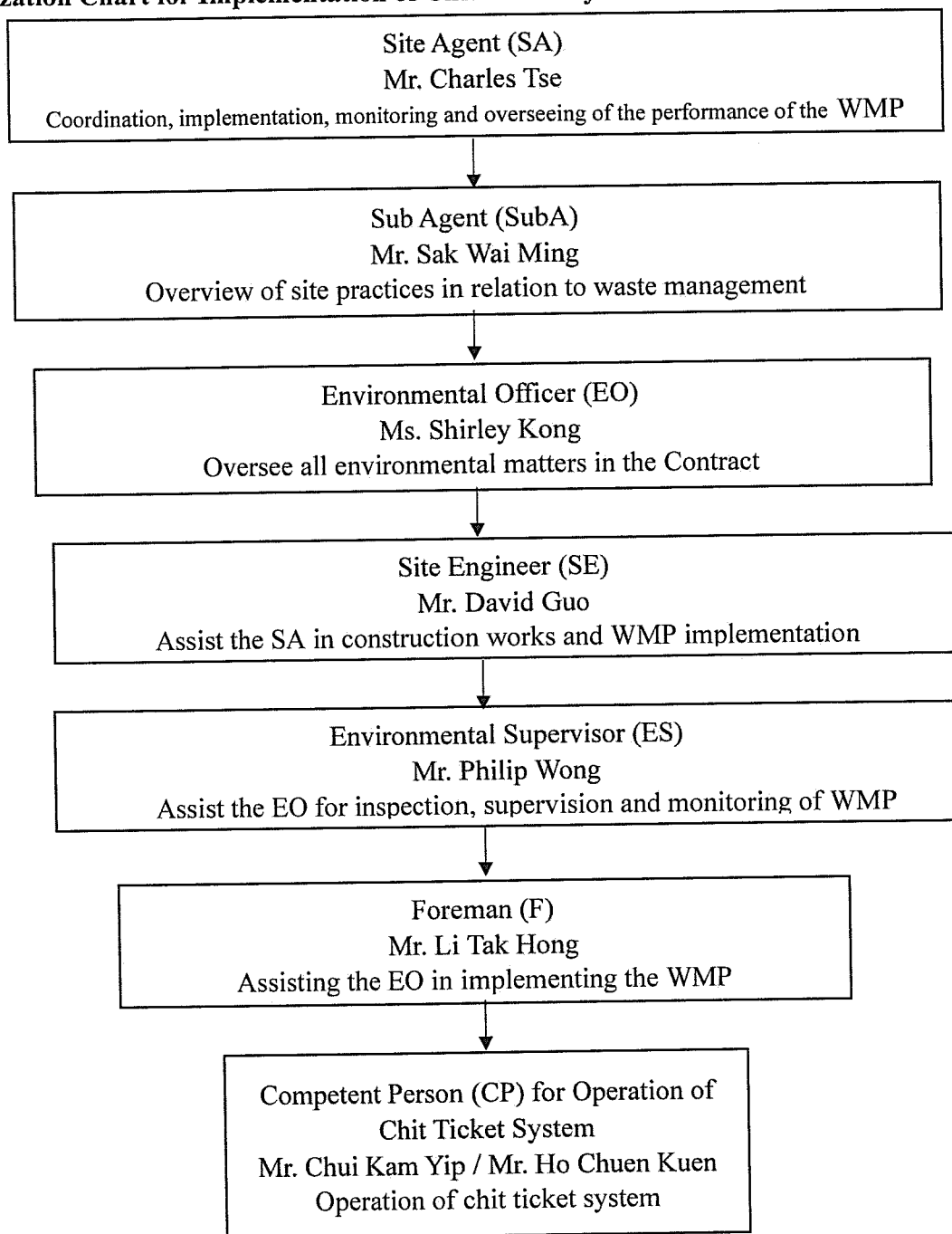
- d. The JV to implement the remedial measures as required by the *Project Manager's* Representative any additional monitoring frequency and stations, where necessary, for checking the effectiveness of the remedial measures;
- e. The *Project Manager's* Representative to review the effectiveness of the JV's remedial measures and the updated situation;
- f. Additional monitoring and audit will be conducted to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur;
- g. If the complaint is referred by the EPD, the JV to prepare interim report on the status of the complaint investigation and follow-up actions stipulated above, including the details of the remedial measures and additional monitoring identified or already taken, for submission to EPD.

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Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Waste Management Plan

Appendix A – Organisation Chart

Organization Chart for Implementation of Chit Ticket System



* COMPETENT PERSON (CP) for Chit System to be full-time on site during the entire process of soil disposal and responsible to handle the documentation related to the Chit System

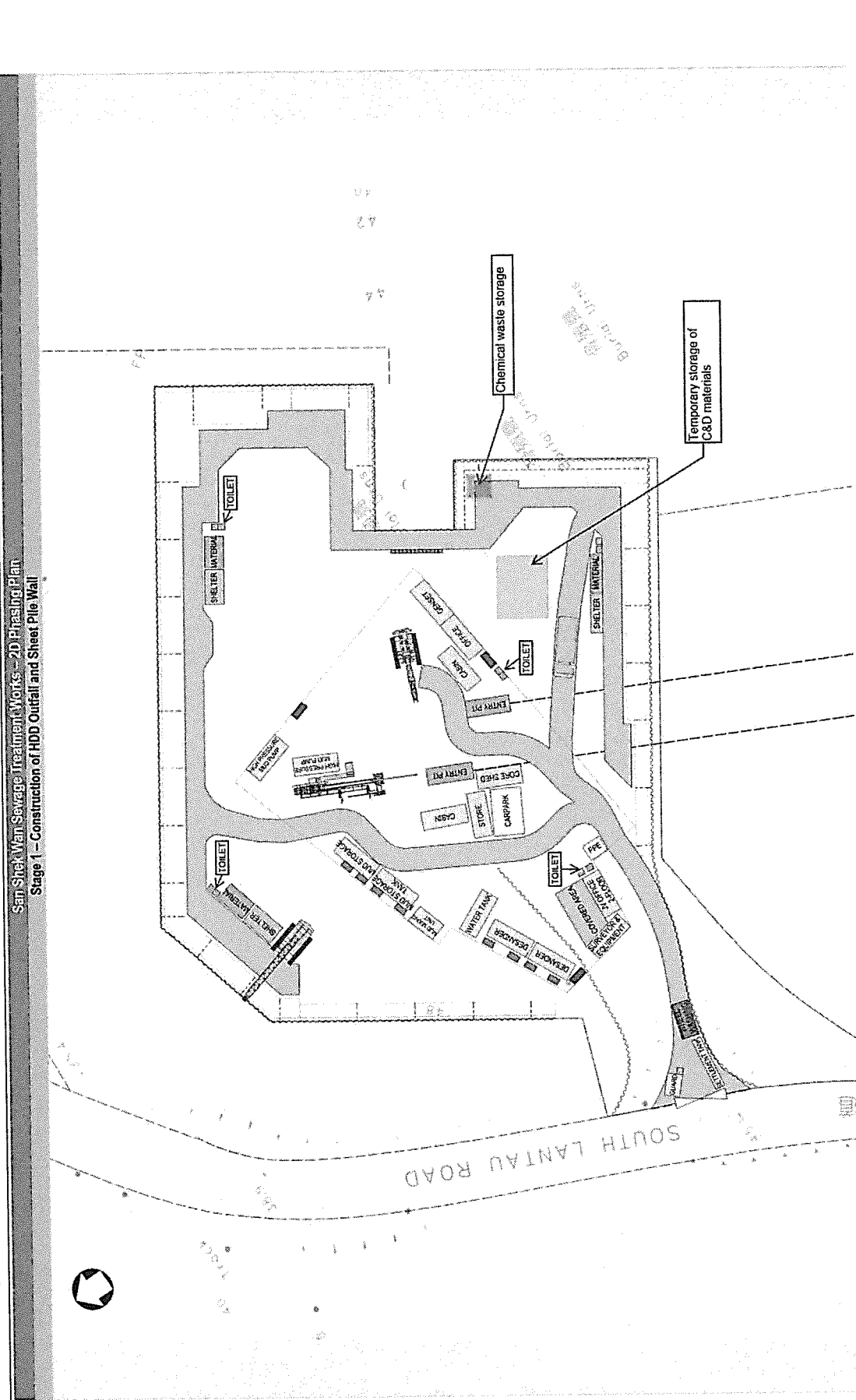
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Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Waste Management Plan

Appendix B – Site Layout

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Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Waste Management Plan



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Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Waste Management Plan

Appendix C – Sample of Chit and Daily Record Summary

入帳單編號:
Chit No.:

選擇 (✓) 一個預明設施:
Tick (✓) One Prescribed Facility:
 堆填區 Landfills 篩選分類設施 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:

入帳單編號:
Chit No.:

選擇 (✓) 一個預明設施:
Tick (✓) One Prescribed Facility:
 堆填區 Landfills 篩選分類設施 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:

帳戶名稱:
Name of the Account-holder:

香港條例第354章廢物處理條例
廢物處理(建築廢物處理費)規例
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:

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

帳戶名稱:
Name of the Account-holder:

E 199279

帳目編號:
Account No.:

甲部份: 由帳目戶主保留
Part A: retained by Account-holder

帳目編號:
Account No.:

乙部份: 由廢物承運商保留
Part B: retained by Waste Hauler

帳目編號:
Account No.:

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

Construction of San Shek Wan Sewage Treatment Works,
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Contract No. DC/2020/02
Appendix to Particular Specification

APPENDIX 25.7 TO PARTICULAR SPECIFICATION

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the "Site"
"每日運載紀錄摘要" 記錄每日由"地點"所運載的拆建物料

- (1) Contract no. & nbs 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 合約指定或經建築師工程師指示接收設施: (a) _____
(b) Others 其它 _____

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

CHIT/ DDF no. 牌照/拆建物料運送記錄號碼	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 於離開前, 承運人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 建築師工程師或其代表與承運人/建築師工程師代表同意時間, 建築師工程師簽名及簽名	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 甲部

Part 2 乙部

Submitted by 呈交: _____
Signature 簽名: _____
Date 日期: _____
Received by 接收: _____
Post 職位: _____
Date & Time 日期及時間: _____

(Name of Contractor's Designated Person
承運人的指定人姓名)

(Name and signature of the Architect/Engineer's staff
建築師工程師的簽名及簽名)

1 For term contract, if there are no full time site supervisory staff, the Architect/Engineer's supervisory staff should spot check and then sign as appropriate in accordance with paragraph 25 of DEVB TC(W) 6/2010 包辦合約, 如沒有全職地盤監管人員, 建築師 DEVB TC(W) 6/2010 約第 25 段進行巡點檢查及簽名
2 Part 1 甲部 The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's Engineer's Representative. 承運人應將甲部表格一式二份, 副本由建築師工程師代表持有
3 Part 2 乙部 The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承運人應將甲部之表格及將表格填妥之記錄單於記錄上載在環保局網頁後 1 個工作天內提交給建築師工程師代表
*Delete "Site" and substitute "Sites" for term contracts. 是項合約為 "Site" 刪去或以 "Sites" 代替

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Waste Management Plan

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

Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Waste Management Plan

Drainage Services Department
Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Monthly Summary Waste Flow Table for (Year)

Month	Actual Quantities of Inert C&D Material Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (a) (in '000m ³)	Hard Rocks and Large Broken Concrete (b) (in '000m ³)	Reused in the Contract (c) (in '000m ³)	Reused in other Projects (d) (in '000m ³)	Disposed as Public Fill (a-b-c-d) (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000kg)	Paper/cardboard packaging (in '000kg)	Plastics [see Note 3] (in '000kg)	Chemical waste (in '000kg)	Others, e.g. general refuse (in '000m ³)
Jan											
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

- Notes:
- (1) The inert C&D material except slurry and bentonite are disposed at Mui Wo Temporary Public Fill Bank (MW-PFRF)
 - (2) The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank (TKOFB)
 - (3) The non-inert waste is disposed at NENT or Outlying Islands Transfer Facilities
 - (4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

Drainage Services Department
Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Forecast of Total Quantities of C&D Materials to be Generated from the Contract										
Total Quantity Generated (a)	Hard Rock And Large Broken Concrete (b)	Reused In The Contract (c)	Reused In Other Projects (d)	Disposed as Public Fill (a-b-c-d)	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. General Refuse
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)

- Notes:
- (1) The inert C&D material except slurry and bentonite are disposed at Mui Wo Temporary Public Fill Bank (MW-PFRF)
 - (2) The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank (TKOFB)
 - (3) The non-inert waste is disposed at NENT or Outlying Islands Transfer Facilities
 - (4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

Summary Table for Work Process or Activities requiring Timber for Temporary Works (Reporting Month)					
Item No.	Description of Works Process or Activity [see note (a) below]	Justifications of Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m³)	Actual Quantities used (m³)	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
Total Estimated Quantity of Timber Used			0		

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Construction of San Shek Wan Sewage Treatment Works,
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Waste Management Plan

Appendix E – Disposal Programme

C&D Waste Disposal Programme			
Month/Year	Types of the C&D materials (Inert / Non-inert)	Estimated Quantity (tonne)	Disposal Ground