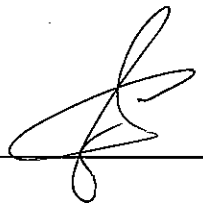
MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 706
Access Shafts At KET Praya and Hill Road

Verified by: 

Position: Independent Environmental Checker

Date: 16 October 2009

MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 706
Access Shafts At KET Praya and Hill Road

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 15 October 2009

Content

Attachment A - Master Programme (Rev D)
Attachment B - Location Plan of Temporary Waste Storage Area
Attachment C - Monthly Waste Flow Table
Attachment D - Transport route plan

REVISION HISTORY

Revision No.	Revision Date	Section/Page	Amendment
1	22 Jul 2009	Section 3.3	Estimated quantity of general refuse for disposal is added.
1	22 Jul 2009	Section 3.6, Attachment A	Temporary waste storage area is added
1	22 Jul 2009	Section 3.4	Point of disposal for general waste is added
1	22 Jul 2009	Section 5.5	Estimated volume of chemical waste is added
1	22 Jul 2009	Attachment B	Monthly waste flow table is added.
2	17 Aug 2009	Section 1.3	Description of the Work is added.
2	17 Aug 2009	Section 1.4 Attachment A	Master Programme is added.
2	17 Aug 2009	Section 3.3	Land-based transport is mentioned.
2	17Aug 2009	Section 3.5	Waste Handling Procedure and Disposal Routes is added.
3	7Oct2009	Attachment D	Transport route plan is added.

ISSUE

Controlled copies of this Waste Management Plan are to be issued by the Project Manager to the following persons/organisation:

Controlled Copy No.	Issued to
01	Engineer
02	Project Manager/Environmental Officer – Site Office
03	Safety & Environmental Department – Head Office

SECTION 1 GENERAL

1.1 Introduction

This Waste Management Plan (WMP) shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities to be carried out.

1.2 Purpose

This Waste Management Plan provides details of the measures; procedures and initiatives to be employed by the Contractor, Paul Y. Construction Company Ltd. (Hereafter PYC) to control and manage waste related environmental issues that may arise during the construction works of the project. This WMP includes detail information such as estimated volume of different types of waste, e.g. construction and demolition (C&D) material and general refuse, generated from construction activities at various works areas of the Project at different times during the construction programme, as well as the proper transportation, storage, and disposal methods and the final disposal sites for different wastes. All measures recommended in the deposited.

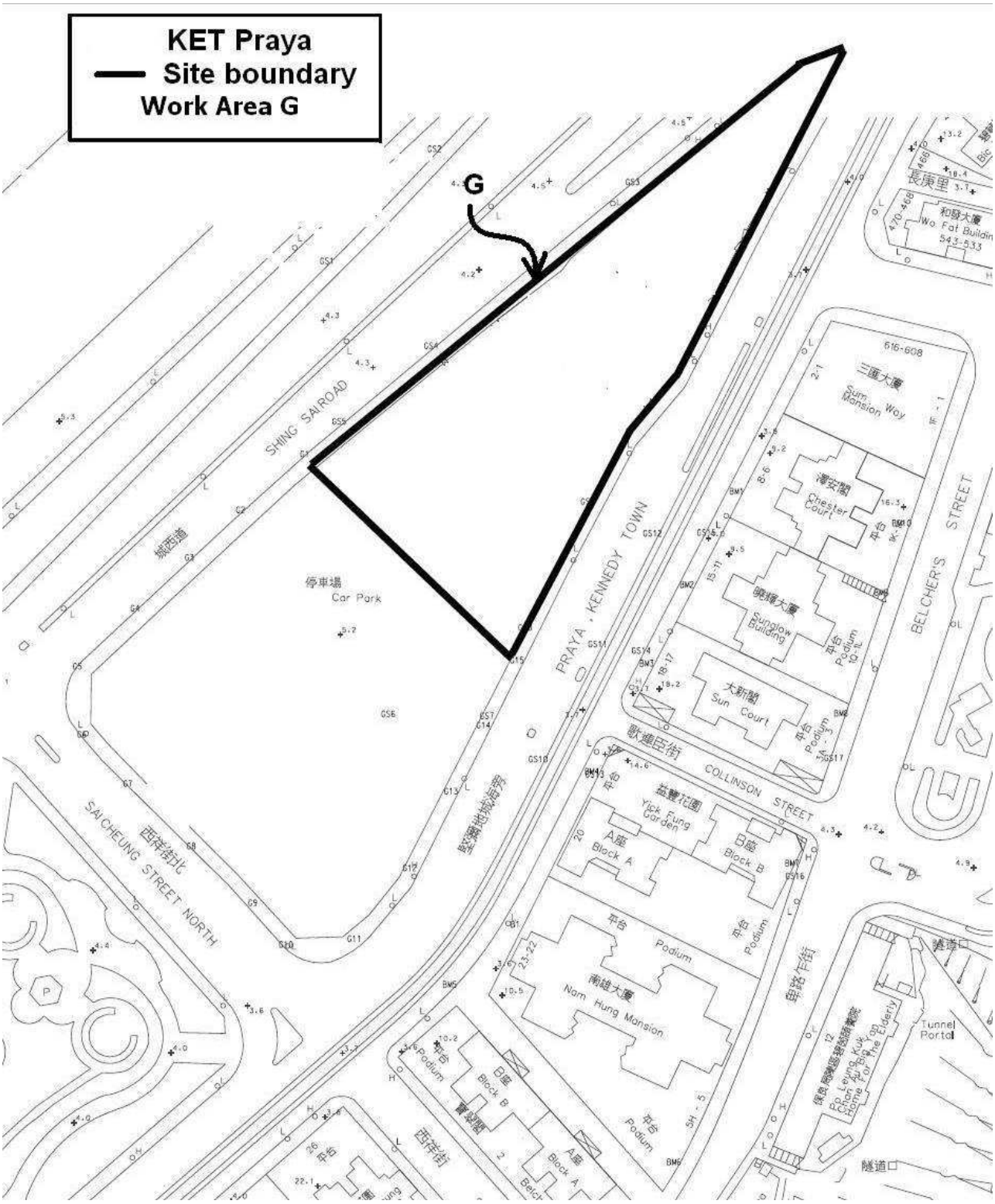
The main purpose of this Waste Management Plan is to:

(i) Make reference to statutory and contractual environmental management requirements and obligations;
(ii) Clarify responsibilities;
(iii) Describe committed mitigation measures;
(iv) Provide details of preventive actions to be taken;
(v) Provide details relating to environmental licensing requirements;
(vi) Inform PYC’s SHE Team Members and sub-contractors of PYC's management measures, systems and obligations.

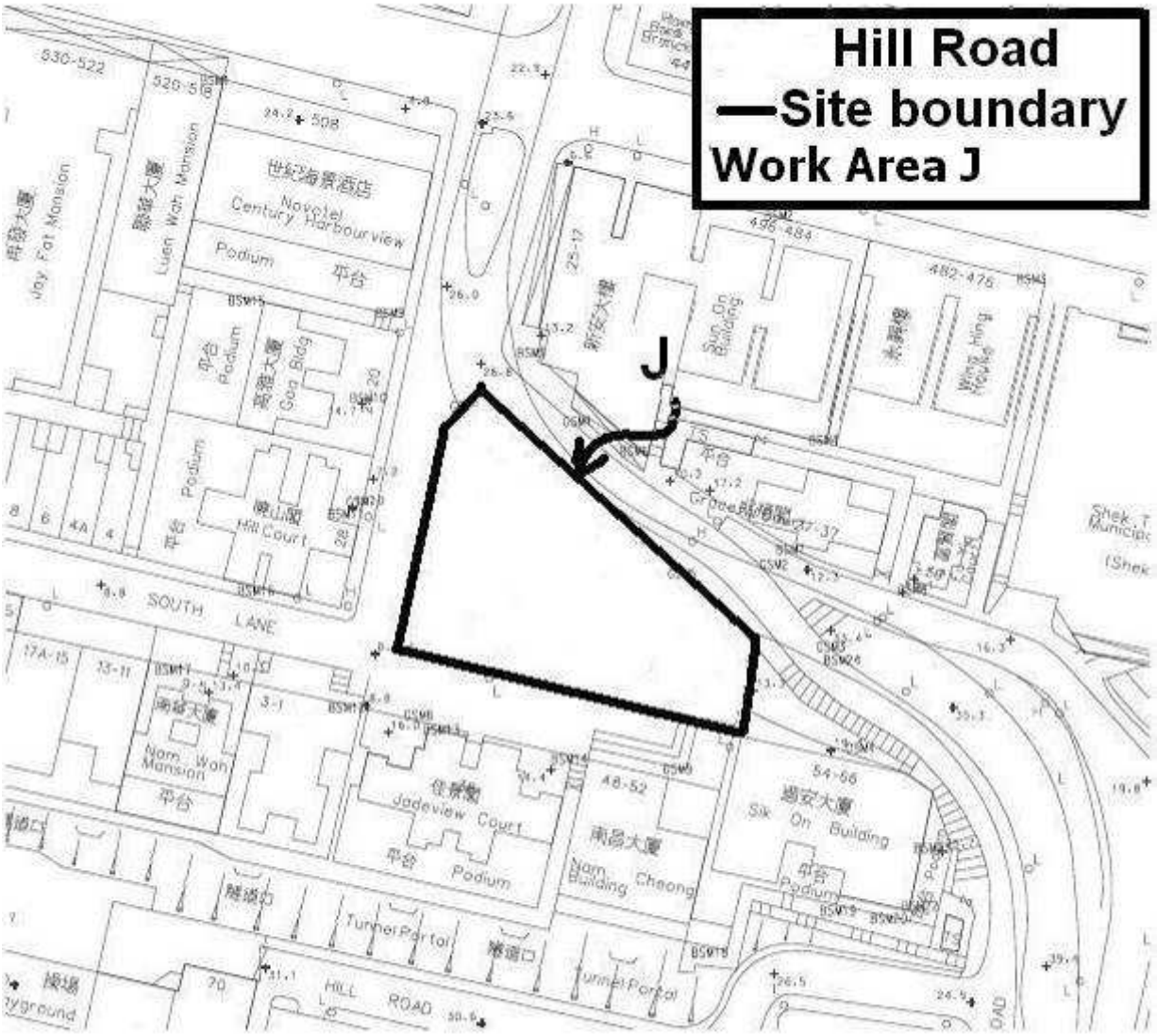
1.3 Description of the Works

Two shafts are required to be constructed, one at Kennedy Town Praya and the other at Hill Road.

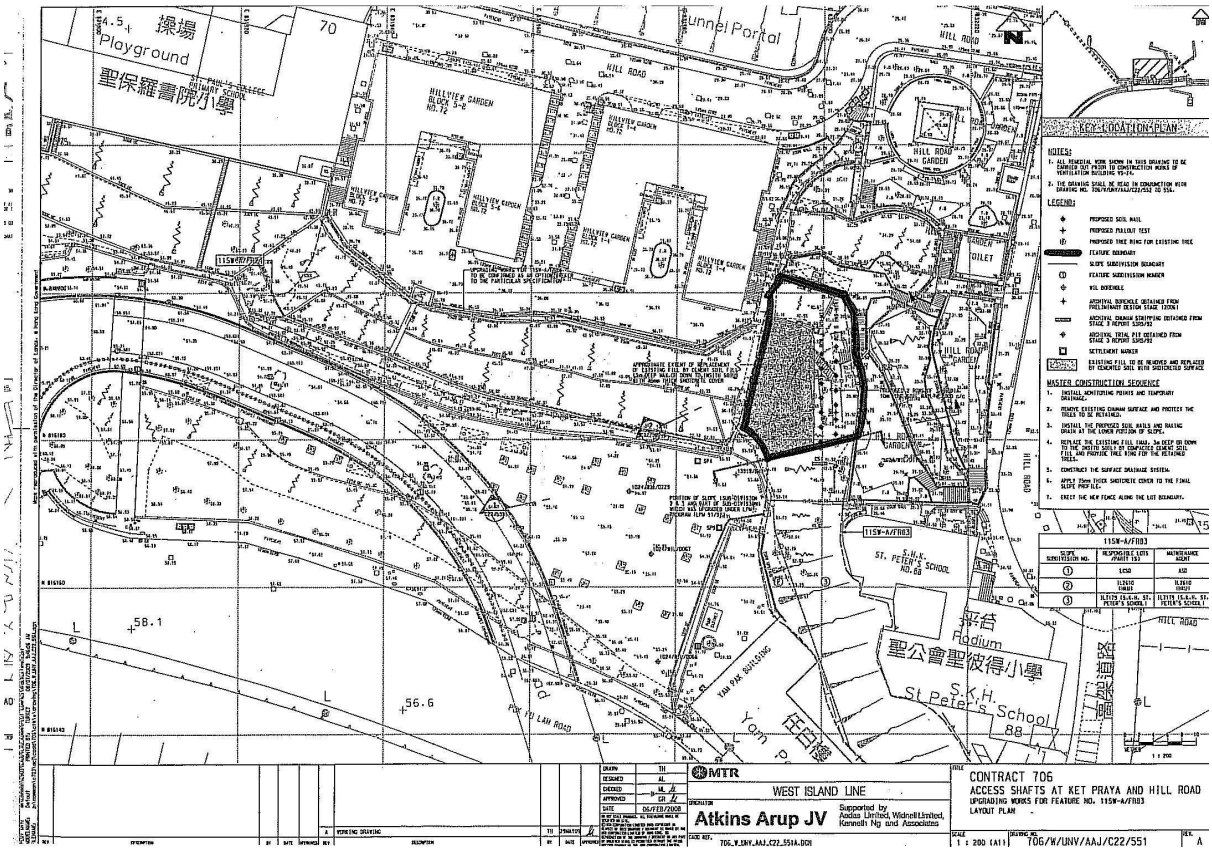
The works at Kennedy Town Praya generally comprise the construction of a circular shaft approximately 15m internal diameter to a depth of 45m through soft/mixed ground and rock.



The works at Hill Road generally comprise the construction of a rectangular shaft approximately 44m long, 12m wide and 19m deep excavated through soft/mixed ground and rock.



On completion, the shafts shall be handed over to the WIL 704 contractor.



In addition, slope modification works to Slope No.11SW-A/FR-83 will be undertaken. This slope is within the Hill Road Garden which is operated by LCSD. Re-registration of the completed slope shall be carried out by the contractor.

1.4 Works Programme

According to the submitted Master Programme (Rev D) for the Works, the works have been commenced as schedule. However, it is advised to refer the current Programme in the Monthly Progress Report for the latest and most updating information. A copy of Master Programme is enclosed in **Attachment A**.

Key Dates of the Works are as followings:
Contract Award Date: 14 July 2009
Target Completion Date: 10 May 2010
Construction Period: 10 months Approx.

1.5 Environmental Policy

PAUL Y. CONSTRUCTION COMPANY, LTD.

SAFETY, HEALTH, ENVIRONMENT & QUALITY POLICY STATEMENT

The core business of Paul Y. Construction Company, Limited includes project management, design, construction and maintenance of civil engineering works; construction of site formation, roads and drainage, waterworks and portworks; project management, design and construction of foundation and piling works; piling works including large diameter bored piles (with bell-out), barrette pile, steel H-pile, rock-socketed steel H-pile in prebored hole, minipile, handdug caisson; construction of landslip preventive and remedial works to slopes and retaining walls; project management, design and construction of building works; building activities to keep, restore and improve the facilities of buildings and surroundings; provision of decoration and fitting out works; demolition with demolition design of buildings and structures; carry out ground investigation field works; design and construction of trenchless works; construction of noise barrier; reinforced earth retaining structure and slope works; A&A works; and, construction of structural steel work. The Company recognizes that safety, health, environmental protection and quality is a matter of great social concern. Accordingly, it is the Company policy to put safety, health, environmental protection and quality as our top priority. We are committed to strictly comply with statutory requirements and contractual obligations. We are also committed taking all reasonably practicable measures to provide and maintain the workplace at higher safe and healthy standard to protect the safety and health of employees and others who may be affected and keep continuously improvement to prevent pollution, which may arise from work activities. The measures are:

- Providing adequate and appropriate resources to implement this policy;
- Promoting this policy it's understanding, implementation and maintenance at all levels;
- Providing appropriate training to employees at all levels ensuring they are competent to discharge their duties and responsibilities;
- Reviewing this policy annually to ensure its compliance, continuous suitability and effectiveness.

It is hereby stressed that management of safety, health, environment and quality is one of the prime duties and responsibilities of line management, from the most senior executive to the front-line supervisor. The Contracts Manager is assigned to overall coordinate and implement this policy. He shall clearly define the safety, health, environmental protection and quality responsibility of his subordinates, subcontractors, suppliers and workers. They are accountable for the safety, health, environmental and quality performance of their controlled areas and the implementation of this policy. At the Company Safety, Health, Environment and Quality Management Committee meeting, top management shall monitor and review the Company's safety, health, environment and quality management systems and performance as well as the safety, health, environment and quality objectives and targets as set below:

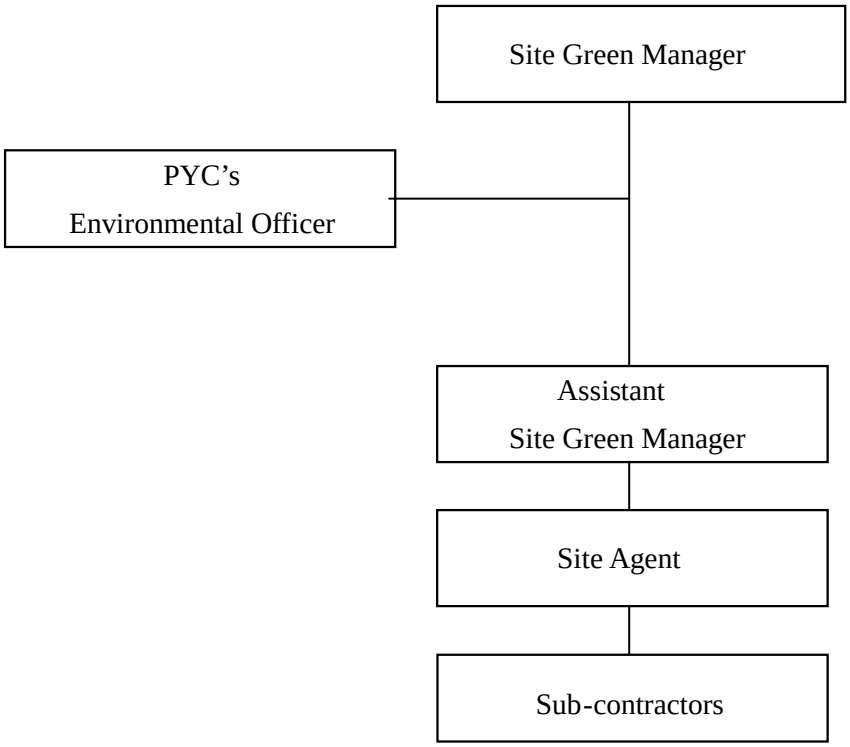
SAFETY	- accident rate <11 per 1000 workers per year (equivalent to accident frequency rate (AFR) <0.31 per 100,000 man-hours worked)
	- average internal and external audit scores >80%
ENVIRONMENT	- minimizing material wastage and reducing generation of construction waste
QUALITY	- enhancing business operation efficiency and effectiveness

For and on behalf of Paul Y. Construction Company, Ltd.
Name: YING Tsie Cheong
Title: Director
Signature:

Issuing Date: 5 May 2009

Document Number: SHEQ-2009-PYC-E Revision A

1.6 Safety, Health and Environment (SHE) Committee Organisation Structure



1.7 Function Descriptions and Responsibilities

PYC is the main contractor for this project and has the overall responsibility for the construction works including the implementation of this section. The Project Management will assemble relevant personnel to undertake waste management issues associated with this contract.

1.7.1 The Site Green Manager (SGM) is the Project Manager who is responsible for maintaining overall control of the project and implementation of waste management system. The SGM shall be responsible for ensuring that adequate resources are provided for the implementation and over viewing the site practices related to the awareness of waste control. He shall authorise Assistant Site Green Manager (ASGM) to assist him to enforce the implementation on a day-to-day basis.

1.7.2 PYC Environmental Officer shall oversee all environmental matters for the project and liaise with the Engineer during the full duration of the contract. He is responsible for ensuring that the Waste Management Plan is properly implemented. The Environmental Officer is responsible for preparing, handling, updating and

upkeeping the environmental documentation such as environmental submission, permit administration, test recording, water sample test result, trip tickets and etc. of which shall be readily available for inspection within short notice.

1.7.3 The responsibility of ASGM, the Site Agent, is to ensure that the relevant personnel with respect to waste management are carrying out their duties diligently. Due to site activities that the works are proceeded in different locations, he shall assign Sub-Agents to assist him to enforce the waste controls.

1.7.4 Each Sub-Agent is responsible for the day-to-day overview of site practices in his assigned location in relation to waste controls. He shall assign a Project Environmental Co-ordinator and a Registered Safety Officer to assist him in the day-to-day supervision on the Sub-Contractor's daily activities.

1.7.5 The Sub-contractors in different trades shall be responsible for ensuring that their workers are aware of the work activities which might affect the surrounding environment with waste controls. Under PYC's instructions, the Sub-contractors shall provide waste controls with a full co-operative manner with Engineer Representative. The Sub-contractors are also responsible for preparing their own plans which are consistent with conditions of the contract.

SECTION 2 LEGISLATIVE REQUIREMENTS

The following legislation either covers or has some bearing upon the handling, treatment and disposal of wastes in the Hong Kong SAR and will also be considered in the Plan:

(i) Waste Disposal Ordinance (Cap 354)
(ii) Waste Disposal (Chemical Waste)(General) Regulation (Cap 354)
(iii) Land (Miscellaneous Provisions) Ordinance (Cap 28)
(iv) Public Health and Municipal Services Ordinance (Cap 132) (includes mosquito control)
(v) Environmental Impact Assessment Ordinance (Cap 499)
(vi) Waste Disposal (Amendment) Ordinance 2004
(vii) Waste Disposal (Designated Waste Disposal Facility)(Amendment) Regulation 2004
(viii) Waste Disposal (Charges for Disposal of Construction Waste) Regulation

Other guideline documents that detail how the construction work should comply with the regulations include:

(i) Environment (Ch. 9), Hong Kong Planning Standards and Guidelines (2003), Hong Kong Government
(ii) Code of Practice on the Packing, Labelling and Storage of Chemical Wastes (1999), Environmental Protection Department
(iii) Works Branch Technical Circular No. 12/2000, Fill Management
(iv) ETWB/TCW6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness
(v) Works Branch Technical Circular No. 21/2002, Trip-ticket System for Disposal of Construction and Demolition Material
(vi) ETWB/TCW15/2003, Waste Management on Construction Sites
(vii) Environment, Transport and Works Bureau Technical Circular (Works) No. 33/2002, Management of Construction and Demolition Material Including Rock
(viii) A Guide to the Registration of Chemical Waste Producers by EPD
(ix) A Guide to the Chemical Waste Control Scheme by EPD
(x) ETWB/TCW19/2005, Environmental Management on Construction Sites
(xi) PNAP 71, Demolition Works Measures for Public Safety
(xii) Implementation Schedule Table 14.1 of West Island Line Environmental Impacts Assessment Final EIA Report
(xiii) Section 5.6.1 General Specification for Civil Engineering Works

SECTION 3 SITE WASTE MANAGEMENT

3.1 Waste Policy Principles (Waste Management Hierarchy)

The Implementation Schedule included in the WIL EIA provides guidance on the extent and timing of mitigation measures. All mitigation measures would be made in accordance with the Implementation Schedule of the WIL EIA Report or when superseded by the condition as specified in the WIL Environmental Permit. This WMP follows the waste management hierarchy and the requirements as specified in the EIA Report.

Waste management options can be categorised in terms of preference from an environmental viewpoint, whereby the more preferable options have the least impacts and provide for enhanced sustainability. A Waste Management Hierarchy shall be applied on site as follows:

↑ Highest Priority ↓ Lowest Priority	Avoidance & Elimination	Complete elimination of waste where possible through improving practices and design.
	Reduction at source	The avoidance, reduction or elimination of wastes, generally within the confines of the production unit, through changes in processes or procedures
	Recycling	The use, reuse and recycling of wastes for original or some other purpose such as input material or materials recovery.
	Treatment	The destruction, detoxification, neutralization, etc, of wastes into less harmful substances.
	Disposal	The release of wastes to air, water, or land in properly controlled or safe ways so as to render them harmless; land disposal may involve volume reduction, encapsulation, leachate containment and monitoring techniques.

3.2 Construction Waste Management

Waste material may include any excavation spoil, sewage, waste water or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any

adjoining land, storm drain, sanitary sewer. Waste material also includes any waste matter or refuse to be deposited anywhere within the site or onto any adjoining land (e.g. Concrete waste or used formwork etc.). Formwork will be reused/recovered/recycled as far as possible before disposal to designated area.

When handling the waste material, the following measures shall be undertaken:

(i) The strategy for management and disposal of all wastes arising from the project will be based on the principle of segregation and re-use/recover/recycle on site followed by disposal to landfill or designated outlet as appropriate;

(ii) Disposal of other inert construction wastes is governed by the Environmental Protection Department policy on the disposal of construction waste. The principles established maximise re-use/recovery/recycling of materials on site and segregation of Wastes to ensure that the minimum quantities are disposed of to landfill and that the maximum is directed for disposal to reclamation. All construction waste shall necessarily be sorted on site into inert and non-inert materials whenever practicable;

(iii) Non-inert materials such as wood and other materials including glass, plastics, steel and metals shall be disposed of to landfill. Inert materials like soil, sand, rubble, shall be separated from non-inert material and suitably disposed of;

(iv) In addition, quantities of site fencing, scaffolding and timber for the building work shall be reused/recovered/recycled where possible. Those materials that cannot be reused/recovered/recycled will require disposal at landfill;

(v) All vehicles carrying waste shall have properly fitting Side and Tail Boards, and the materials being transported shall be securely covered;

(vi) PYC shall record the amount of wastes generated, recycled and disposed of (including the disposal site);

(vii) PYC shall make use of a trip ticket system for the disposal of Construction and Demolition (C&D) Materials to any designated public filling facility and/or landfill.

3.3 Inert C&D Wastes

Inert C&D waste generated during the contract will be reused on-site at priority as considered at the project planning stage, excess inert C&D wastes will be disposed off site or transferred to the temporary storage areas where possible. It is recommended that the excavated topsoil shall be stored separately from fills and treated accordingly to avoid degradation.

In the project, the estimated total quantity of inert C&D wastes for disposal is about **27,301 ton** and the designated disposal grounds for inert C&D wastes would be on **Temporary**

Public Filling Barging Point at Chai Wan (This disposal location could be altered upon Engineer's instruction) . The disposal of inert C&D wastes in this project is solely by land-based transport to Designated Waste Disposal Facilities. The transport routes plan is shown on **Attachment D.**

3.4 Non-inert C&D Wastes

The following principles shall be adopted for Non-inert C&D Waste:

(i) All works areas shall be cleaned of general litter and refuse daily.

(ii) General refuse and litter shall be stored in enclosed bins or compaction units separate from construction or chemical wastes. A suitable waste collector shall be used to remove general waste and litter off site for disposal. The estimated volume of generation is about **175 ton**.

(iii) Refuse shall not be burned at any Construction Area.

(iv) General refuse may be generated by food service activities on site, so reusable rather than disposable dishware shall be used if feasible.

(v) Separately labelled bins shall be provided where practicable, to allow segregation of recyclable material generated by individual site staff (e.g. aluminium cans) such that recycling collectors could be assessed.

(vi) Office wastes shall be reduced through recycling of paper. If volumes are large enough to warrant collection, participation in a local collection scheme shall be considered, if available.

(vii) Where connection to the existing foul sewer main is not possible PYC will employ a licensed contractor to provide sufficient number of portable chemical toilets for handling of sewage from the construction workforce. The licensed contractor will be responsible for collecting the toilet sewage for regular disposal. An adequate number of chemical toilets will be provided in accordance with the number of staff on site.

PYC will maintain disposal records for the general waste, which will be available for inspection by the Engineer at any time. The disposal records shall contain the basic information such as; date, time, quantity, and location of dumping, name of vehicle, authorised signature, etc. The detailed information of disposed excavated materials shall be included in the latest revision of WMP.

3.5 Waste Handling Procedure and Disposal Routes

Waste Material Type	Generated from works item	Disposal	Handling
Inert C&D Waste	Shafts/adits, caverns for UNI Station and SYP Station, open cut for KET Station and demolition of existing buildings / features.	Delivered to PFRFs for beneficial uses.	Trucks to transfer inert C&D material to barging point at Chai Wan Public Fill Barging Point(This disposal location could be altered upon Engineer's instruction).
Non-inert C&D Waste	Waste paper, discarded containers, etc. generated from workforce.	Refuse transfer station for compaction and Containerization and then to landfill.	Provide on-site refuse collection points and send to Sent Landfill by lorry.
Chemical Waste	Cleansing fluids, solvent, lubrication oil and fuel from construction plant and equipment.	Chemical Waste Treatment Centre	Recycle by licensed collectors by lorry. Stored on-site within suitably designed containers.

All the grab-mounted trucks working for public works contracts should have been installed with suitable cover which can be operated safely and prevent the release of dust during transportation of construction wastes. The following two suitable covers are accepted by the Development Bureau and Environmental Protection Department:

1. **Modified butterfly type mechanical cover**
2. **Magnetic type cover**

3.6 Minimisation of C&D Materials Generation (Measures to Reduce/ Minimize Generation of C&D Materials)

The generation of C&D materials should be avoided and minimised and this can be achieved through:-

(i) Balance cut and fill

(ii) Lean Construction

(iii) Low waste technology

(iv) Use of pre-casting and pre-fabrication standardises construction activities

(v) Use of tailor-made building fixtures and fittings

(vi) Use more durable material

(vii) Better site management as well as improved material storage and handling on site

(viii) Research and implement new building materials and technology

If C&D materials generation is unavoidable, reuse and recycle should be maximised. Sorting is a good means to facilitate material reuse and recycle.

3.7 Identification of Temporary Storage Areas

In the contract commencement stage, PYC shall identify and provide sufficient space for the temporary storage of C&D materials to facilitate collection and sorting on site (see Attachment B for temporary storage area). The provided space shall be commensurate with the estimated quantity for each type of C&D materials generated. In order to optimise the storage space, except the recover/ reuse C&D materials, all other C&D materials shall be removed from site as far as practicable.

3.8 Arrangement of Recyclable Materials

PYC shall sort out the recyclable materials from C&D materials during excavation and demolition.

3.9 Recommended Mitigation Measures

The mitigation measures stated in the Implementation Schedule of the WIL EIA Report are listed in the following table:-

EIA Ref.	EM& A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
Waste Management Implications (Construction Phase)							
S7.30	S 6.5	Good site practices -Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site -Training of site personnel in proper waste management and chemical handling procedures -Provision of sufficient waste disposal points and regular collection of waste -Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers -Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. -Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre.	To reduce waste management impacts	MTRC / Contractor	All works areas	Construction phase	Practice Note for Authorized Person and Registered Structural Engineers, Building Department Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), Land (Miscellaneous Provision) Ordinance (Cap 28); Waste Disposal Ordinance (Cap354)
S7.31 & S7.32	S 6.6 – S 6.7	Waste reduction measures -Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals	To achieve waste reduction	MTRC / Contractor	All works areas	Construction phase	Practice Note for Authorized Person and Registered Structural

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
		-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 -Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force -Proper storage and site practices to minimise the potential for damage or contamination of construction materials -Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. -A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed -Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. -A Waste Management Plan shall be prepared by the Contractor prior to the commencement of construction work to provide an overall framework for waste management and reduction.					Engineers, Building Department Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), Land (Miscellaneous Provision) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
S7.34 & S7.35	S 6.9 & S6.10	C&D Waste -In order to minimise impacts resulting from collection and transportation of C&D Waste for off-site disposal, the excavated materials arising from station and tunnel construction shall be reused on-site as backfilling material and for landscaping works as far as practicable. -Surplus rock generated from the tunnelling works, shafts/adits construction and the stations cavern construction should be reused in reclamation and site formation projects either in the Mainland or Macau, or disposed of at a PFRF, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. -C&D waste generated site clearance from the proposed works areas would require disposal to the designated landfill site. -In order to monitor the disposal of inert C&D material and C&D waste at PFRFs and landfills, respectively, and to control fly-tipping, a trip-ticket system shall be established in accordance with ETWB TCW No. 31/2004. -Material delivered to PFRFs should be of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee.	To minimize environmental impacts during the handling, transportation and disposal of C&D Waste	MTRC / Contractor	All works areas	Construction phase	ETWB TCW No. 31/2004 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005
S7.36	S 6.11	Non-inert C&D Waste -General refuse shall be stored in enclosed bins or compaction units separate from C&D material and chemical wastes.	To minimize environmental impacts during the handling, transportation and disposal of general	MTRC / Contractor	All works areas	Construction phase	Public Health and Municipal Services Ordinance (Cap. 132)

EIA Ref.	EM& A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Locatio n of the measure	When to implement the measure?	EIA Requirements
		-A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material and chemical wastes. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material.	refuse				
S7.37	S 6.12	Chemical waste -Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. -Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. -Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. -The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.	To minimize environmental impacts during the handling, transportation and disposal of chemical refuse	MTRC / Contractor	All works areas	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

SECTION 4 "CHIT" SYSTEM

4.1 The "CHIT" System

PYC as main contractor of construction work with value of $1 million of above, will open a billing account solely for this project. This billing account shall be applied within 21 days after the contract is awarded.

Once the application is accepted, "CWCS" of EPD will issue CHITs for using the prescribed disposal facilities. Each CHIT is made up of three parts that Part A will be retained by Main Contractor, while Part B by Waste Hauler and Part C by Prescribed Facility.

4.2 Prescribed Facilities

There are four prescribed facilities rendering disposal service, landfills, sorting facilities, public fill reception facilities and outlying islands transfer facilities. Except the outlying islands transfer facilities, the other facilities able to receive the construction wastes from this project. Where should the wastes dispose under the required condition is subjected to the table below:

Designated Waste Disposal Facility	Type of Construction Waste Accepted	Criteria to be adopted
Landfills	Construction waste containing not more than 50% by weight of inert construction waste	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle.
Sorting Facilities	Construction waste containing more than 50% by weight of inert construction waste	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle.
Public Fill Reception	Construction waste consisting	-

Facilities	entirely of inert construction waste	
Outlaying Islands Transfer Facilities	Construction waste containing any percentage of inert construction waste	-

4.3 Inert and Non-inert Waste

By Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Schedule 5), the definition of inert construction waste is any object that make-up with "Rock, rubble, boulder, earth, soil, concrete, asphalt, brick, tile, masonry or used bentonite" wholly or in mixture.

4.4 Alternative Disposal Grounds Proposed by Contractor and Approval Procedures

In order to make use of C&D materials generated by the Site, PYC shall use his best endeavours to identify other construction projects where such materials can be used. Where PYC has identified such a project which can be used as an alternative disposal ground, he shall obtain the written approval of the Engineer, who will process PYC's request expeditiously. In support of the request for such approval PYC shall provide relevant information including:

(i) A detailed description of the alternative disposal ground, including location, lot number (where appropriate) and location plan;

(ii) Where the alternative disposal ground is a private construction project, submit a letter from the Authorised Person of the development (as defined under the Buildings Ordinance) to confirm that:

  (a) The C&D materials for use in the development is acceptable;

  (b) The use of land so formed by the C&D materials is in conformity with the statutory town plan/ lease conditions;

  (c) The Engineer's staff are allowed to enter the alternative ground to conduct inspections where necessary; and

  (d) The estimated quantity and type of C&D materials to be used in the construction works and the approximate delivery programmed, together with the name, post and specimen signature of the competent person to sign the Disposal Delivery Form.

(iii) Where the alternative disposal ground is a private land but not a construction site, submit a letter from the relevant authorities, such as the Lands Department and Planning Department, to confirm 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.

(iv) Where the alternative disposal ground is a government construction project, 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.

(v) A system for transmitting disposal records from the alternative disposal ground to the Engineer's Representative.

(vi) Where the disposal ground is proposed by PYC and has been approved by the Engineer. PYC shall also maintain a daily record with details of each disposal trip from the Site to the disposal ground.

4.5 Implementation

PYC shall prepare a site management plan for implementation of the CHIT system (CS):

Recording System and Transaction Records

PYC shall maintain a comprehensive register of the CHIT issued, and make it available for inspection by Engineer's Representative upon requests whenever practicable. With due consideration to the overall surveillance efficiency, the transaction records can be viewed 24 hours after using disposal services at EPD's website.
【http://www.epd.gov.hk/epd/misc/cdm/scheme.htm#i】.

SECTION 5 MEASURES FOR GOOD SITE MANAGEMENT

5.1 Training & Communication of this Plan

PYC shall review relevant statutory regulations and waste management practice and identify training needs for different levels of staff as well as subcontractors. Relevant contractual requirements shall also be discussed during the training.

PYC shall conduct orientation and specific training for workers about the concepts of waste management and appropriate waste control procedures including waste reduction, handling and sorting, reuse and recycling of C&D materials, as well as site cleanliness and housekeeping, by the Environmental Engineer/ Registered Safety Officer.

At regular intervals, PYC shall provide tool-box training to all workers or labours at regular intervals to promote environmental awareness and to communicate updated issues regarding waste management practices. All Foremen and subcontractor's representatives shall obtain the information and technique through in-house training organised by PYC's Environmental Department.

5.2 Avoidance/ Minimisation to use Timber for Temporary Works

Reasonably practicable steps shall be planned for works so as to change or improve design and practices through liaison, planning and site management including but not limited to:

(i) Precast concrete units produced at a casting yard with high degree of quality control;

(ii) Standard wooden panels for high reuse level if timber formworks are unavoidable;

(iii) Purchase materials in a manner that minimises waste and unnecessary costs with consideration such as matching size of materials purchased with the dimensions of structure to avoid excessive cut offs;

(iv) Check consistency of drawings and specifications to avoid unnecessary hacking-off of concrete or unwanted work;

(v) Avoid use of 'sensitive material' such as use of hardwood for shuttering and strutting;

(vi) Implement measures to minimise over-ordering and then wastage of materials such as concrete, mortars and cement grouts;

(vii) Maximise potentials reuse, namely durable, reusable hoarding to replace timber hoarding and use of metal in place of wood for formwork;

(viii) Minimise total quantities required, such as use of gondola in place of bamboo scaffold;

(ix) Whenever possible, consider alternative processes that reduce or preferably avoid

entirely C&D waste generation.

Nevertheless, the use of sensitive resources such as timber may be not totally eliminated but certainly it can be reduced significantly. Whenever there is an use of timber over 5m^3 for any activity, a method statement should be submitted for the justification. A summary of use shall be prepared and submitted monthly.

5.3 Raw Material Storage to Avoid Unneeded Wastage

Apart from good intention to avoid and minimise the waste at the stages of design and work execution, however, in the process between two these stages the handling and treatment of raw material storage is another potential area able to reduce the wastage as well by way of site tidiness and cleanliness.

PYC shall adopt the guidelines to properly handle the raw material storage with suitable protective measures on site as listed in below (Extracted from Ciria, 1997, Waste Minimisation in Construction: Site Guide):

Material	Store under cover	Store in secure area	Store in pallets	Store material bound	Special Requirements
Sand, gravel, rock, crushed concrete					Store on hard standing base to reduce wastage. Store in bays if large quantities
Plaster, cement	✓		✓		Avoid material getting damp
Concrete, paviors				✓	Store material in original packaging until used, and protect from vehicle movements
Bricks			✓	✓	Store material in original packaging until used, and protect from vehicle movements
Clay pipes, concrete pipes			✓	✓	Use stoppers and spacers to prevent rolling, and store in original packaging until used
Wood	✓	✓		✓	Protect all types of wood from rain
Metals	✓	✓			Store in original packaging until used
Any internal fittings	✓	✓			Store in original packing until used
Cladding	✓	✓			Wrap in polythene to prevent scratches

Material	Store under cover	Store in secure area	Store in pallets	Store material bound	Special Requirements
Sheet glass, glazing units		✓	✓		Protect glass from breakage due to bad handling or vehicle movements
Paints		✓			Protect from theft
Bituminous felts	✓	✓			Usually store in rolls and protect with polythene
Insulating material	✓	✓			Store under polythene
Ceramic tiles	✓	✓		✓	Store in original packaging until required
Glass fibre	✓			✓	
Iron mongery	✓	✓			
Oils		✓			Store in bowsers, tanks or cans according to quantity - protect container from damage to reduce likelihood of spillage - use a bund
Kerbstones				✓	Protect from vehicle movements & tar spraying to reduce damage
Clay & slate tiles		✓	✓	✓	Keep in original packaging until use
Topsoil, subsoil					Store on hardstanding base to reduce wastage and keep segregated from potential contaminants
Precast concrete units					Store in original packaging, away from vehicular movements

5.4 Sorting Facilities

Waste sorting shall be implemented in the following manner:-

(i) The site shall designate area(s) for temporary waste storage and subsequent segregation for ease of handling.

(ii) The storage and sorting area(s) for waste and recyclable materials shall be clearly marked and labelled.

(iii) The checking of C&D waste generation shall be incorporated into the daily inspection programme to ensure that they are not mixed into the general refuse area but are stored in a designated area for collection by subcontractors for recycling as appropriate.

5.5 Chemical Waste Control

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers. The estimated volume of chemical produced is about **400L**. Whenever possible alternative processes shall be considered that reduce or preferably avoid entirely chemical waste generation. Chemical waste shall be identified through following steps:-

(i) Examine the MSDS (Material Safety Data Sheet) of the chemical(s) to be in the used process/activity,

(ii) Check the MSDS against Schedule 1 of Waste Disposal Ordinance to determine whether the material(s) in question is/are chemical waste.

A Waste Producer License shall be applied for and the guidelines stated in the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" shall be followed.

Disposal of chemical waste shall be regulated to involve :

(i) Communication with Environmental Protection Department prior to waste generation; in case of Part A chemical waste under Section 17 of the Waste Disposal Ordinance, notification to Environmental Protection Department shall be made before at least 10 working days ;

(ii) Use of a licensed waste collector;

(iii) Disposal to a facility licensed to receive chemical wastes, such as the Chemical Waste Treatment Centre or other approved facility (which offers both collection service and supply of suitable storage containers);

Any non-conformance identified by the Engineer, will follow an additional action reporting procedures if required by the Representative. In case of emergency such as chemical spill, the flowchart procedure is described in Chemical Spillage Handling Method.

5.6 Site Cleaning and Tidying, Control of Mosquitoes

The Safety Officer shall ensure that strict cleaning and tidying of the site is carried out on a daily basis. Standing water shall be cleared as soon as practicable, or be treated with approved oil at least once per week. The Safety Officer shall ensure that the anti-mosquito measures outlined in Site Safety Plan are implemented on site. All the control measures are properly

enforced including disposal of any surplus water holding containers, checking that no possible breeding areas for mosquitoes exist. The notice including "Cover any water tanks and remove any stagnant water containers, fill ends of bamboo scaffolding or fill them with holes, drain away accumulated water to rainwater drains after sedimentation" shall be prominently displayed on site and workers are briefed in toolbox talks on the importance of anti-mosquito measures. Effective mosquito control and removal of stagnant water shall be addressed during all Site Safety Committee Meetings. Spraying of pesticide or lavicidal oil to kill adult mosquitoes and prevent breeding should only be employed as the last resort where removal of stagnant water would be impossible or the drainage cannot be done effectively.

5.7 Records and Updating of the WMP

The PEC shall ensure that proper and adequate records are maintained on site in relation to the requirements of this plan. This shall include records such as; delivery tickets, photographs, measurement records, cleaning checklists, truck visit records and etc. These shall be submitted to the Engineer every month.

(i) Records associated with the Chit System.

(ii) Quantities of different types of waste generated and their disposal method (see Attachment B – Monthly Waste Flow Table).

This Waste Management Plan will be reviewed on time required for internal reference only and shall take into consideration any audit or other findings. The Project Environmental Co-ordinator is responsible for ensuring that this review is carried out regularly. Any findings will be communicated to the site team in accordance with Training & Communication principles outlined.

5.8 Inspection Programme (Waste Monitoring and Audit)

The Site Green Manager shall ensure that the ASGM/ Sub-Agents always monitor the generation and disposition of wastes throughout the construction period and the Sub-contractors always properly handle and dispose the wastes in conforming with this WMP. This shall be achieved by routine checking to ensure a satisfactory performance on compliance with this WMP.

5.9 Corrective Actions in Response to Non-conformance

The efficiency of site practices to minimise construction waste associated impacts will be assessed and any deficiencies or areas requiring improvement will be reported to PYC's

Environmental Engineer. PYC's SHE Team will advise on additional waste minimisation and management procedures as necessary.

Any incidents of illegal dumping of construction wastes, emergency such as chemical spill or any major Non-conformance will be reported immediately to the Environmental Engineer and Engineer. Further, where called upon, the SGM and Environmental Engineer will advise on any required remedial works.

The PEC shall undertake regular site inspections to determine that the requirements of the WMP are met. The Project Environmental Management will also undertake regular six monthly site audits under their Environmental Site Audit programme. In the event that any non-compliance of environmental management procedures is identified by any party, an Environmental Action Note (EAN) shall be completed by any observer and notify the SGM and Environmental Engineer immediately.

On receipt of the EAN, the Assistant Site Green Manager shall review the observations and submit to the Site Green Manager who shall:

(i) Investigate the cause of the non-conformance;
(ii) Recommend the appropriate corrective action and/or preventative actions;
(iii) Estimate the time needed to implement the measures; and
(iv) Complete the EAN and file for record.

On completion of the corrective or preventative action the Environmental Engineer shall complete the EAN and record all necessary details in the logbook for corrective and preventative action.

ATTACHMENT A

Master Programme (Rev D)

PAUL Y. CONSTRUCTION CO., LTD.

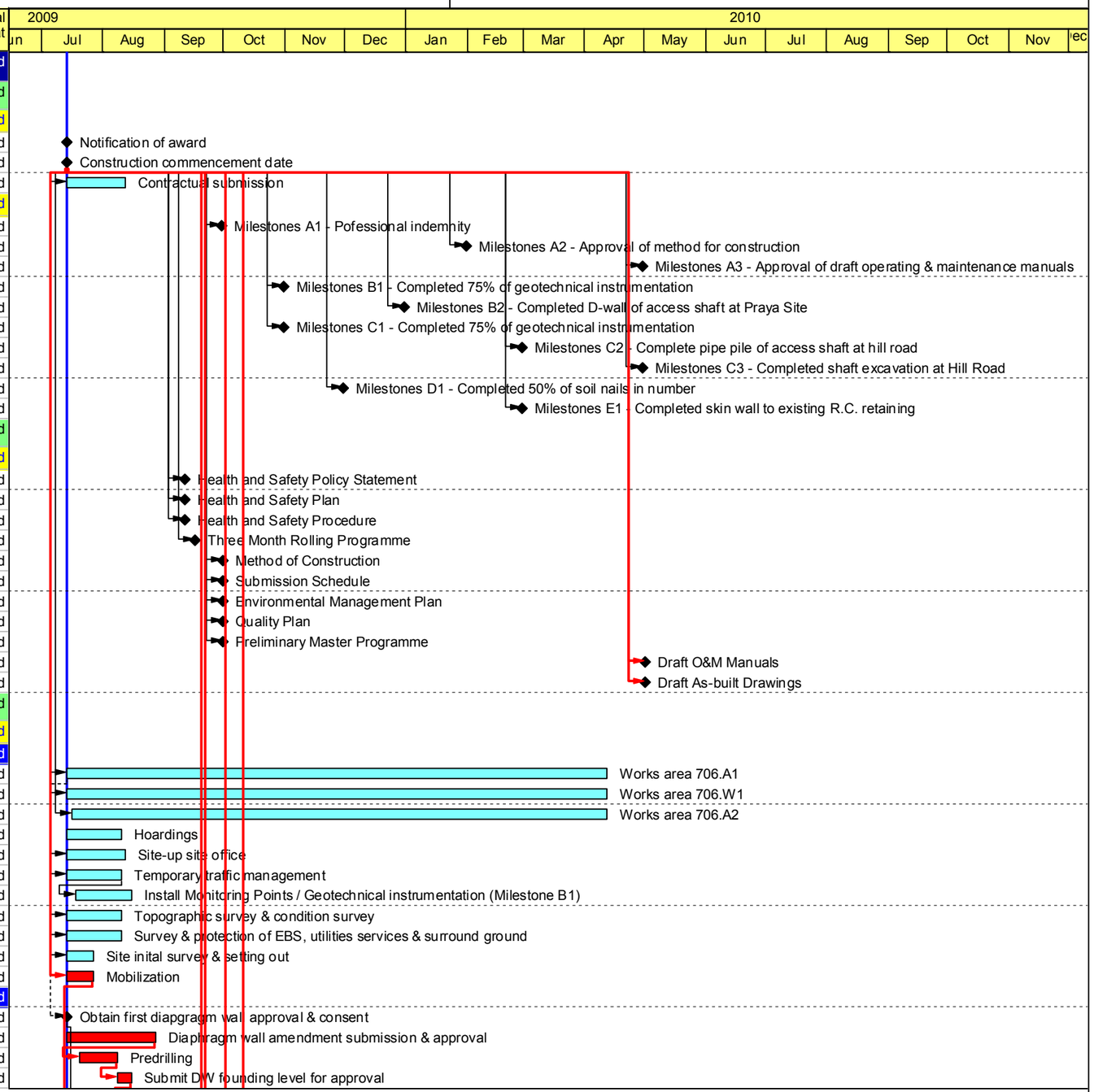
Preliminary Master Programme for

MTR WIL C706 Acess Shaft at KET Praya and Hill Road

Rev. C

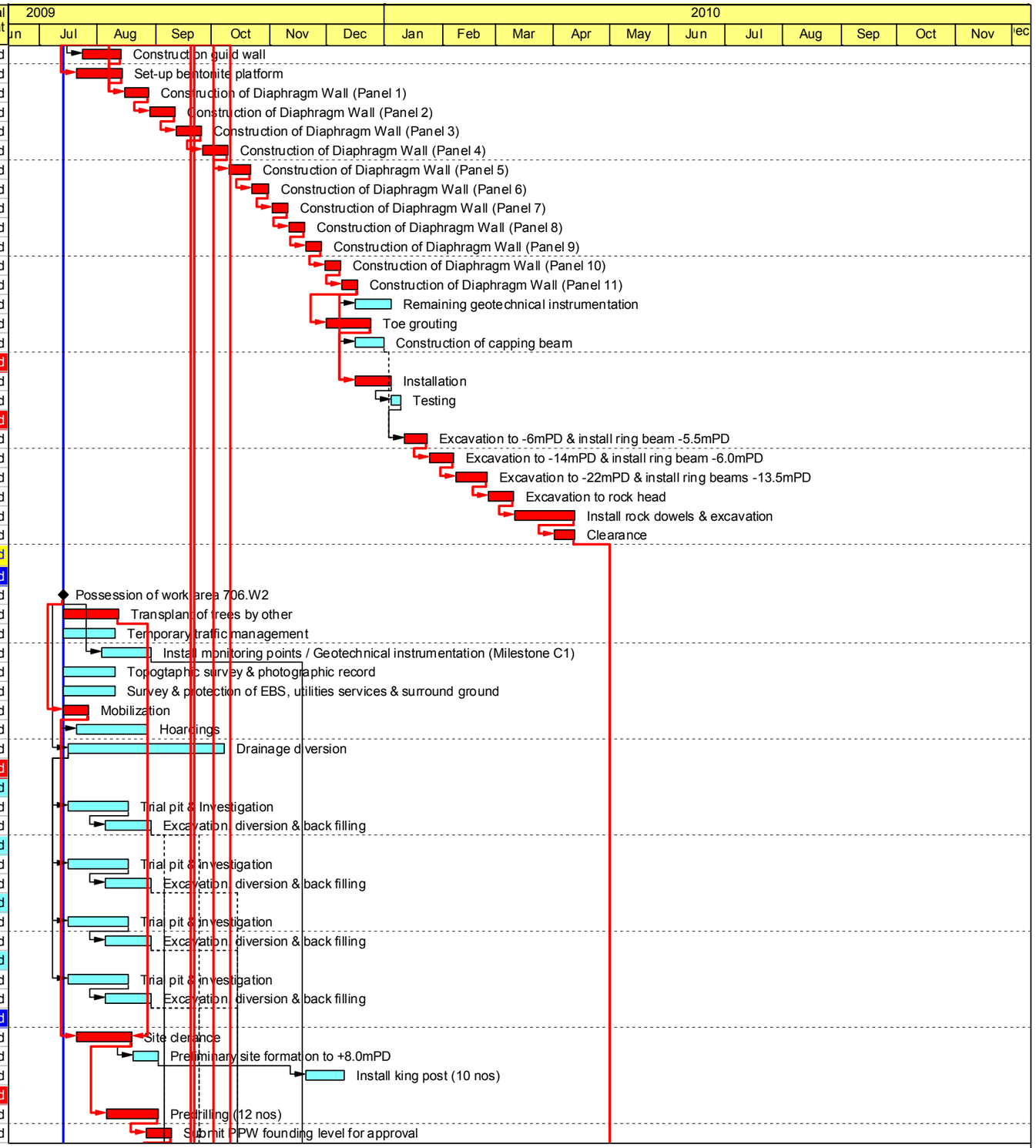
15-September-2009

Activity ID	Activity Name	Duration	Start	Finish	Total Float
MTR West Island Line Contract 706		168d	14-Jul-09	10-May-10	0d
Date of Commencement of Works		162d	14-Jul-09	30-Apr-10	6d
Key Date		18d	14-Jul-09	12-Aug-09	150d
7060KD010	Notification of award	0d	14-Jul-09		241d
7060KD020	Construction commencement date	0d	14-Jul-09*		0d
7060KD030	Contractual submission	21d	14-Jul-09	12-Aug-09	174d
Milestones		118d	30-Sep-09	30-Apr-10	5d
7060MS010	Milestones A1 - Pofessional indemnity	0d	30-Sep-09		178d
7060MS020	Milestones A2 - Approval of method for construction	0d	31-Jan-10		80d
7060MS030	Milestones A3 - Approval of draft operating & mainte...	0d	30-Apr-10		9d
7060MS040	Milestones B1 - Completed 75% of geotechnical inst...	0d	31-Oct-09		154d
7060MS050	Milestones B2 - Completed D-wall of access shaft at...	0d	31-Dec-09		105d
7060MS060	Milestones C1 - Completed 75% of geotechnical inst...	0d	31-Oct-09		154d
7060MS070	Milestones C2 - Complete pipe pile of access shaft a...	0d	28-Feb-10		58d
7060MS080	Milestones C3 - Completed shaft excavation at Hill R...	0d	30-Apr-10		9d
7060MS090	Milestones D1 - Completed 50% of soil nails in number	0d	30-Nov-09		130d
7060MS100	Milestones E1 - Completed skin wall to existing R.C. ...	0d	28-Feb-10		58d
Submission		129d	11-Sep-09	01-May-10	5d
Major Submission		129d	11-Sep-09	01-May-10	5d
7060SUB010	Health and Safety Policy Statement	0d	11-Sep-09		134d
7060SUB020	Health and Safety Plan	0d	11-Sep-09		134d
7060SUB030	Health and Safety Procedure	0d	11-Sep-09		134d
7060SUB040	Three Month Rolling Programme	0d	16-Sep-09		131d
7060SUB050	Method of Construction	0d	30-Sep-09		123d
7060SUB060	Submission Schedule	0d	30-Sep-09		123d
7060SUB070	Environmental Management Plan	0d	30-Sep-09		123d
7060SUB080	Quality Plan	0d	30-Sep-09		123d
7060SUB090	Preliminary Master Programme	0d	30-Sep-09		123d
7060SUB100	Draft O&M Manuals	0d	01-May-10		8d
7060SUB110	Draft As-built Drawings	0d	01-May-10		8d
Construction for the Works		168d	14-Jul-09	10-May-10	0d
Construction Works for Access Shaft at KET Praya		152d	14-Jul-09	12-Apr-10	16d
Preliminary		152d	14-Jul-09	12-Apr-10	16d
7060CNP	Works area 706.A1	177d	14-Jul-09	12-Apr-10	17d
7060CNP	Works area 706.W1	177d	14-Jul-09	12-Apr-10	18d
7060CNP	Works area 706.A2	175d	16-Jul-09	12-Apr-10	18d
7060CNP	Hoardings	19d	14-Jul-09	10-Aug-09	176d
7060CNP	Site-up site office	21d	14-Jul-09	12-Aug-09	174d
7060CNP	Temporary traffic management	22d	14-Jul-09	10-Aug-09	213d
7060CNP	Install Monitoring Points / Geotechnical instrumentati...	20d	18-Jul-09	15-Aug-09	172d
7060CNP	Topographic survey & condition survey	22d	14-Jul-09	10-Aug-09	218d
7060CNP	Survey & protection of EBS, utilities services & surro...	22d	14-Jul-09	10-Aug-09	218d
7060CNP	Site inital survey & setting out	11d	14-Jul-09	27-Jul-09	230d
7060CNP	Mobilization	10d	14-Jul-09	27-Jul-09	8d
Diaphragm Wall		152d	14-Jul-09	12-Apr-10	16d
7060CND	Obtain first diapgragm wall approval & consent	0d	14-Jul-09		10d
7060CND	Diaphragm wall amendment submission & approval	31d	14-Jul-09	27-Aug-09	8d
7060CND	Predrilling	14d	20-Jul-09	08-Aug-09	8d
7060CND	Submit DW founding level for approval	6d	08-Aug-09	15-Aug-09	8d



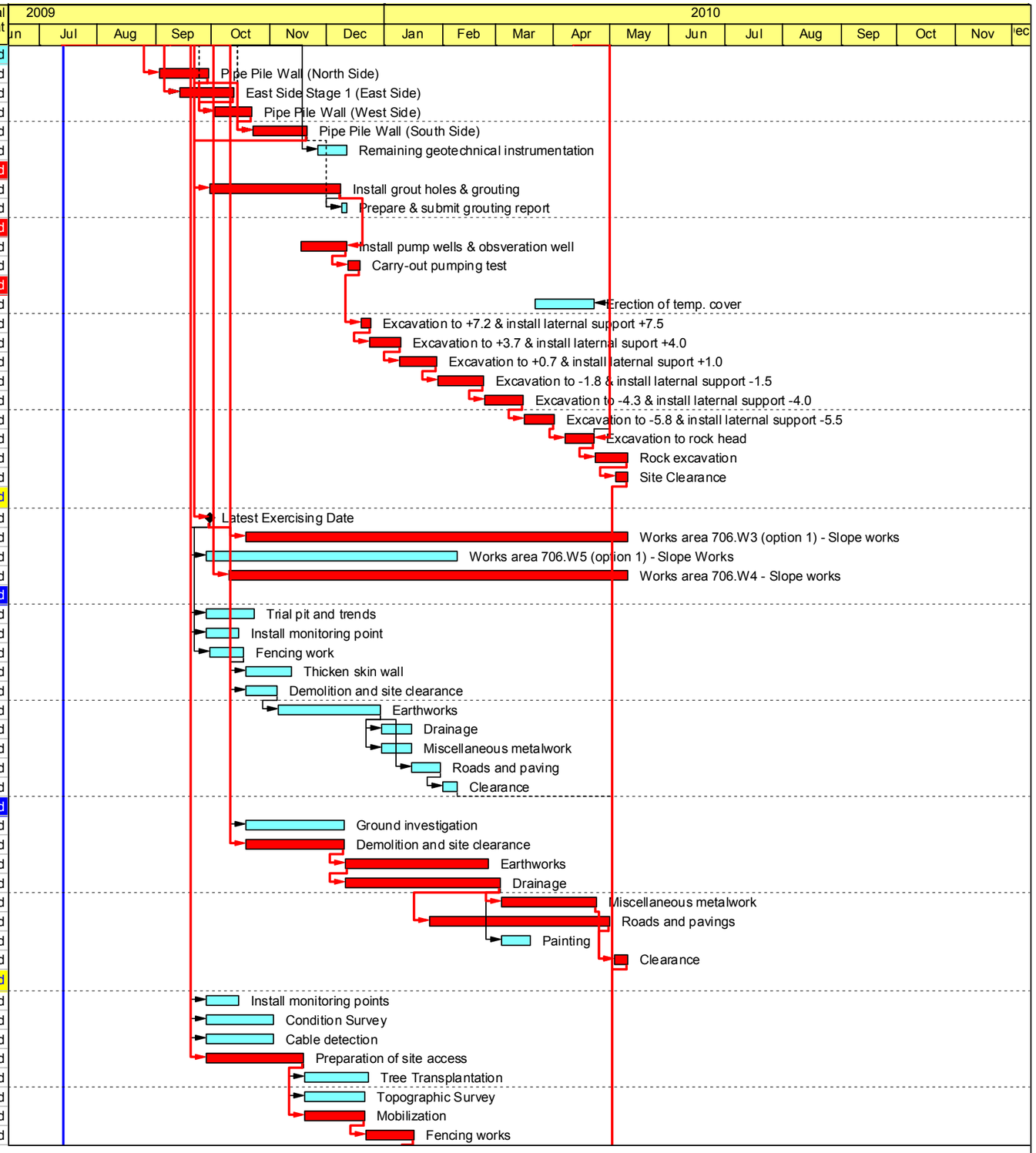
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Activity ID	Activity Name	Duration	Start	Finish	Total Float
7060CND	Construction guild wall	14d	24-Jul-09	13-Aug-09	8d
7060CND	Set-up bentonite platform	18d	21-Jul-09	14-Aug-09	8d
7060CND	Construction of Diaphragm Wall (Panel 1)	10d	15-Aug-09	28-Aug-09	8d
7060CND	Construction of Diaphragm Wall (Panel 2)	10d	29-Aug-09	11-Sep-09	8d
7060CND	Construction of Diaphragm Wall (Panel 3)	10d	12-Sep-09	25-Sep-09	8d
7060CND	Construction of Diaphragm Wall (Panel 4)	8d	26-Sep-09	09-Oct-09	8d
7060CND	Construction of Diaphragm Wall (Panel 5)	8d	10-Oct-09	21-Oct-09	8d
7060CND	Construction of Diaphragm Wall (Panel 6)	6d	22-Oct-09	31-Oct-09	8d
7060CND	Construction of Diaphragm Wall (Panel 7)	6d	02-Nov-09	10-Nov-09	8d
7060CND	Construction of Diaphragm Wall (Panel 8)	6d	11-Nov-09	19-Nov-09	8d
7060CND	Construction of Diaphragm Wall (Panel 9)	6d	20-Nov-09	28-Nov-09	8d
7060CND	Construction of Diaphragm Wall (Panel 10)	6d	30-Nov-09	08-Dec-09	8d
7060CND	Construction of Diaphragm Wall (Panel 11)	6d	09-Dec-09	17-Dec-09	8d
7060CND	Remaining geotechnical instrumentation	11d	16-Dec-09	04-Jan-10	80d
7060CND	Toe grouting	17d	01-Dec-09	24-Dec-09	8d
7060CND	Construction of capping beam	10d	16-Dec-09	31-Dec-09	13d
Pumping Test		13d	16-Dec-09	09-Jan-10	6d
7060D	Installation	11d	16-Dec-09	04-Jan-10	8d
7060D	Testing	5d	04-Jan-10	09-Jan-10	9d
ELS		53d	11-Jan-10	12-Apr-10	6d
7060D	Excavation to -6mPD & install ring beam -5.5mPD	10d	11-Jan-10	23-Jan-10	7d
7060D	Excavation to -14mPD & install ring beam -6.0mPD	10d	25-Jan-10	06-Feb-10	7d
7060D	Excavation to -22mPD & install ring beams -13.5mPD	10d	08-Feb-10	24-Feb-10	7d
7060D	Excavation to rock head	10d	25-Feb-10	10-Mar-10	7d
7060D	Install rock dowels & excavation	19d	11-Mar-10	12-Apr-10	7d
7060D	Clearance	5d	01-Apr-10	12-Apr-10	7d
Construction works at Access Shaft at Hill Road		168d	14-Jul-09	10-May-10	0d
Preliminary		49d	14-Jul-09	07-Oct-09	119d
7060CN0	Possession of work area 706.W2	0d	14-Jul-09		0d
7060CN0	Transplant of trees by other	21d	14-Jul-09	12-Aug-09	5d
7060CNP	Temporary traffic management	22d	14-Jul-09	10-Aug-09	218d
7060CNP	Install monitoring points / Geotechnical instrumentati...	19d	03-Aug-09	29-Aug-09	94d
7060CNP	Topogtaphic survey & photographic record	22d	14-Jul-09	10-Aug-09	218d
7060CNP	Survey & protection of EBS, utilities services & surro...	22d	14-Jul-09	10-Aug-09	218d
7060CNP	Mobilization	10d	14-Jul-09	27-Jul-09	0d
7060CNP	Hoardings	26d	21-Jul-09	27-Aug-09	164d
7060CNP	Drainage diversion	56d	16-Jul-09	07-Oct-09	10d
Utility Diversion Works		26d	16-Jul-09	29-Aug-09	7d
HKE		26d	16-Jul-09	29-Aug-09	7d
706I	Trial pit & Investigation	22d	16-Jul-09	17-Aug-09	10d
706I	Excavation, diversion & back filling	17d	05-Aug-09	29-Aug-09	10d
Cable TV		26d	16-Jul-09	29-Aug-09	7d
706I	Trial pit & investigation	22d	16-Jul-09	17-Aug-09	10d
706I	Excavation, diversion & back filling	17d	05-Aug-09	29-Aug-09	10d
Highway control panel manhole & cables		26d	16-Jul-09	29-Aug-09	7d
706I	Trial pit & investigation	22d	16-Jul-09	17-Aug-09	10d
706I	Excavation, diversion & back filling	17d	05-Aug-09	29-Aug-09	10d
Town gas diversion		26d	16-Jul-09	29-Aug-09	7d
706I	Trial pit & investigation	22d	16-Jul-09	17-Aug-09	10d
706I	Excavation, diversion & back filling	17d	05-Aug-09	29-Aug-09	10d
Excavation and Lateral Support		164d	21-Jul-09	10-May-10	0d
7060CNE	Site clerance	21d	21-Jul-09	19-Aug-09	0d
7060CNE	Preliminary site formation to +8.0mPD	10d	20-Aug-09	02-Sep-09	94d
7060CNE	Install king post (10 nos)	14d	20-Nov-09	10-Dec-09	94d
Construction Pipe Pile Wall		71d	06-Aug-09	11-Dec-09	83d
7060EI	Predrilling (12 nos)	19d	06-Aug-09	02-Sep-09	0d
7060EI	Submit PPW founding level for approval	10d	27-Aug-09	09-Sep-09	0d



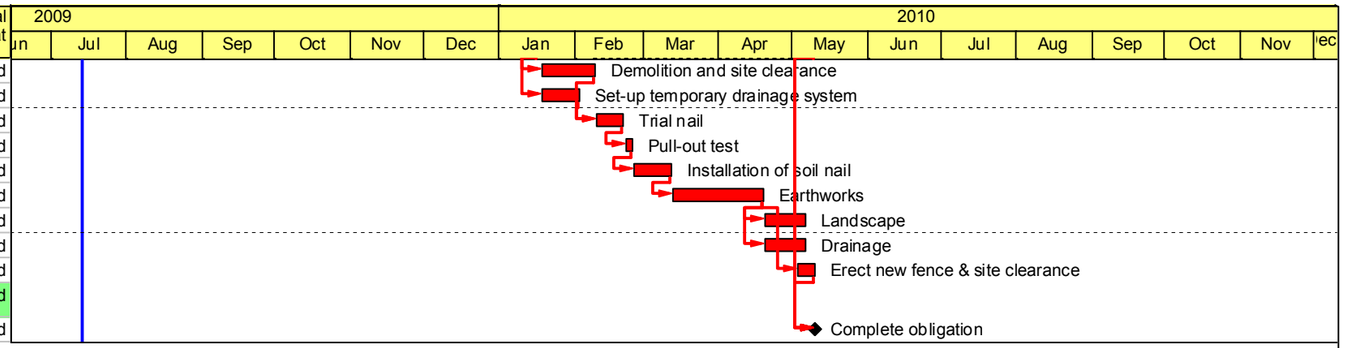
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Activity ID	Activity Name	Duration	Start	Finish	Total Float
Install Pipe Pile Walls (274 nos. average 11m)		55d	03-Sep-09	11-Dec-09	83d
706(	Pipe Pile Wall (North Side)	18d	03-Sep-09	29-Sep-09	1d
706(	East Side Stage 1 (East Side)	18d	14-Sep-09	12-Oct-09	0d
706(	Pipe Pile Wall (West Side)	14d	02-Oct-09	22-Oct-09	0d
706(	Pipe Pile Wall (South Side)	19d	23-Oct-09	20-Nov-09	0d
706(	Remaining geotechnical instrumentation	11d	26-Nov-09	11-Dec-09	94d
Grouting Works		41d	30-Sep-09	11-Dec-09	83d
7060 El	Install grout holes & grouting	46d	30-Sep-09	08-Dec-09	0d
7060 El	Prepare & submit grouting report	2d	09-Dec-09	11-Dec-09	120d
Pumping Test		18d	17-Nov-09	18-Dec-09	0d
7060 El	Install pump wells & obsveration well	18d	17-Nov-09	11-Dec-09	0d
7060 El	Carry-out pumping test	5d	12-Dec-09	18-Dec-09	0d
Excavation and Lateral Support		79d	19-Dec-09	10-May-10	0d
7060 El	Erection of temp. cover	19d	22-Mar-10	22-Apr-10	11d
7060 El	Excavation to +7.2 & install laternal support +7.5	4d	19-Dec-09	24-Dec-09	0d
7060 El	Excavation to +3.7 & install laternal suport +4.0	10d	24-Dec-09	09-Jan-10	0d
7060 El	Excavation to +0.7 & install laternal suport +1.0	14d	09-Jan-10	28-Jan-10	0d
7060 El	Excavation to -1.8 & install laternal support -1.5	14d	29-Jan-10	22-Feb-10	0d
7060 El	Excavation to -4.3 & install laternal support -4.0	14d	23-Feb-10	15-Mar-10	0d
7060 El	Excavation to -5.8 & install laternal support -5.5	12d	16-Mar-10	01-Apr-10	0d
7060 El	Excavation to rock head	11d	07-Apr-10	22-Apr-10	0d
7060 El	Rock excavation	11d	23-Apr-10	10-May-10	0d
7060 El	Site Clearance	5d	04-May-10	10-May-10	0d
11SW-A/FR24 Slope		126d	28-Sep-09	10-May-10	0d
7060SPE010	Latest Exercising Date	0d	30-Sep-09		0d
7060SPE020	Works area 706.W3 (option 1) - Slope works	130d	19-Oct-09	10-May-10	0d
7060SPE030	Works area 706.W5 (option 1) - Slope Works	87d	28-Sep-09	08-Feb-10	56d
7060SPE040	Works area 706.W4 - Slope works	136d	10-Oct-09	10-May-10	0d
Work Area 706.W5 (Option 1)		74d	28-Sep-09	08-Feb-10	52d
7060W510	Trial pit and trends	17d	28-Sep-09	23-Oct-09	126d
7060W520	Install monitoring point	11d	28-Sep-09	15-Oct-09	132d
7060W530	Fencing work	11d	30-Sep-09	17-Oct-09	56d
7060W540	Thicken skin wall	17d	19-Oct-09	12-Nov-09	114d
7060W54	Demolition and site clearance	11d	19-Oct-09	04-Nov-09	56d
7060W550	Earthworks	36d	05-Nov-09	29-Dec-09	56d
7060W560	Drainage	11d	30-Dec-09	15-Jan-10	72d
7060W570	Miscellaneous metalwork	11d	30-Dec-09	15-Jan-10	72d
7060W580	Roads and paving	11d	15-Jan-10	30-Jan-10	56d
7060W590	Clearance	6d	01-Feb-10	08-Feb-10	56d
Work Area 706.W3 (Option 1)		114d	19-Oct-09	10-May-10	0d
7060W310	Ground investigation	36d	19-Oct-09	10-Dec-09	94d
7060W320	Demolition and site clearance	36d	19-Oct-09	10-Dec-09	0d
7060W330	Earthworks	48d	11-Dec-09	25-Feb-10	0d
7060W340	Drainage	52d	11-Dec-09	03-Mar-10	0d
7060W350	Miscellaneous metalwork	32d	04-Mar-10	23-Apr-10	5d
7060W360	Roads and pavings	61d	25-Jan-10	30-Apr-10	0d
7060W370	Painting	11d	04-Mar-10	19-Mar-10	31d
7060W380	Clearance	6d	03-May-10	10-May-10	0d
Work Area 706.W4		126d	28-Sep-09	10-May-10	0d
7060W410	Install monitoring points	11d	28-Sep-09	15-Oct-09	132d
7060W410A	Condition Survey	22d	28-Sep-09	02-Nov-09	121d
7060W410B	Cable detection	22d	28-Sep-09	02-Nov-09	121d
7060W410C	Preparation of site access	34d	28-Sep-09	18-Nov-09	0d
7060W420	Tree Transplantation	24d	19-Nov-09	23-Dec-09	86d
7060W420A	Topographic Survey	22d	19-Nov-09	21-Dec-09	87d
7060W420B	Mobilization	22d	19-Nov-09	21-Dec-09	0d
7060W420C	Fencing works	16d	22-Dec-09	16-Jan-10	0d



Actual Work
Remaining Work
Critical Remaining Work
Milestone

Activity ID	Activity Name	Duration	Start	Finish	Total Float
7060W430	Demolition and site clearance	16d	18-Jan-10	09-Feb-10	0d
7060W430A	Set-up temporary drainage system	11d	18-Jan-10	02-Feb-10	5d
7060W440	Trial nail	6d	10-Feb-10	20-Feb-10	0d
7060W450	Pull-out test	2d	22-Feb-10	24-Feb-10	0d
7060W460	Installation of soil nail	11d	25-Feb-10	12-Mar-10	0d
7060W470	Earthworks	22d	13-Mar-10	19-Apr-10	0d
7060W480	Landscape	11d	20-Apr-10	06-May-10	2d
7060W480A	Drainage	11d	20-Apr-10	06-May-10	2d
7060W490	Erect new fence & site clearance	6d	03-May-10	10-May-10	0d
Completion of Works		0d	10-May-10	10-May-10	0d
7060COM010	Complete obligation	0d		10-May-10*	0d



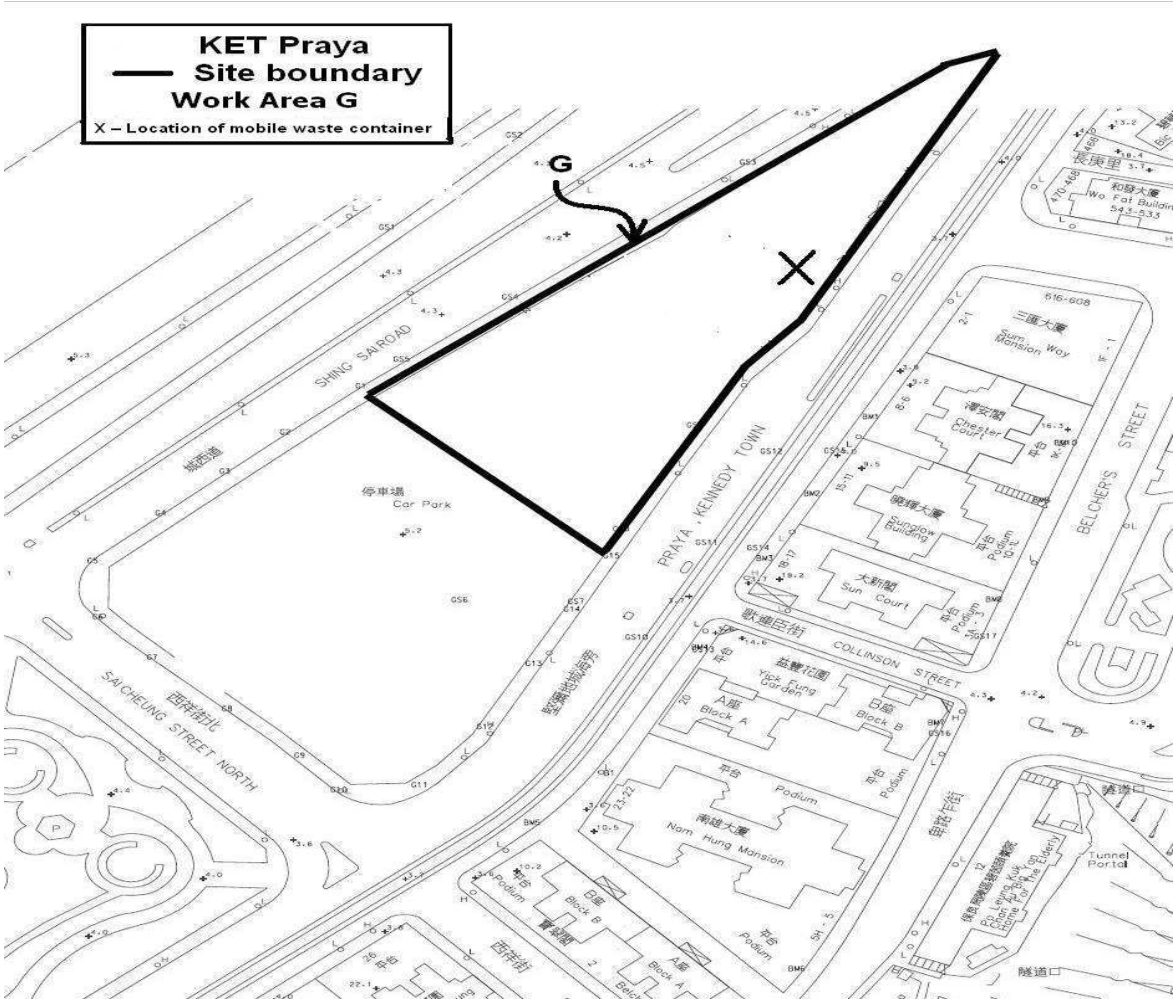
Actual Work
Remaining Work
Critical Remaining Work
Milestone

ATTACHMENT B

LOCATION PLAN OF TEMPORARY

WASTE STORAGE AREA

Kennedy Town Praya



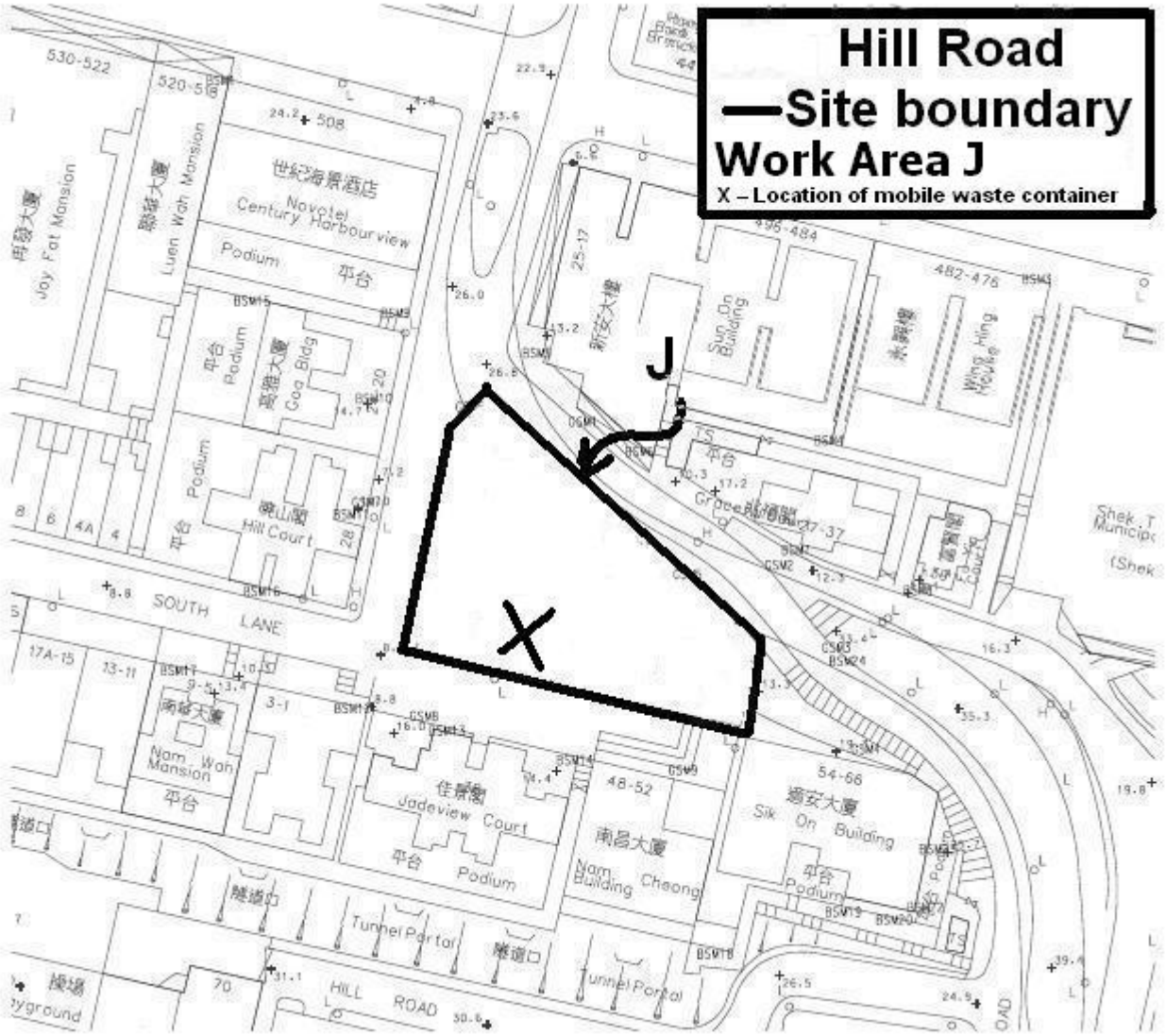
Note:

X – Location of mobile waste container [size: 2m(W)x6m(w)x2m(H)]
(Mobile waste container move from location to location)

There are totally 5 to 6 no. of such mobile waste container available on-site.

This contract will be completed May of 2010. therefore there will be not much Waste Generation and Recycling activities after the middle of 2010.

Hill Road



Note:

X – Location of mobile waste container [size: 2m(W)x6m(w)x2m(H)]
(Mobile waste container move from location to location)

There is at least one mobile waste container available on-site

ATTACHMENT

C

Monthly Waste Flow Table

WASTE MANAGEMENT PLAN

Contract No.: Wil 706

Estimated Volume of Monthly Waste Flow Table for 2009 and 2010

Month	Estimated Quantities of Inert C&D Materials Generated Monthly					Estimated Quantities of C&D Wastes Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed in Public Fill	(f) Metals	(g) Paper/cardboard packaging	(h) Plastics	(i) Chemical Waste	(j) Others, e.g. general refuse disposed at Landfill
	ton	ton	ton	ton	ton	ton	ton	ton	L	ton
Jul*	150	0	0	0	150	0	0	0	0	5
Aug	1100	0	0	0	1100	0	0	0	0	10
Sep	950	0	0	0	950	0	0	0	100	15
Oct	987	0	0	0	987	0	0	0	0	15
Nov	2038	0	0	0	2038	0	0	0	0	20
Dec	2038	0	0	0	2038	0	0	0	100	20
Sub-total	7263	0	0	0	7263	0	0	0	200	85
Jan	3533	0	0	0	3533	0	0	0	0	15
Feb	6403	0	0	0	6403	0	0	0	0	20
Mar	6403	0	0	0	6403	0	0	0	100	20
Apr	3549	0	0	0	3549	0	0	0	0	20
May	150	0	0	0	150	0	0	0	100	15
Jun										
Sub-total	20038	0	0	0	20038	0	0	0	200	90
Total	27301	0	0	0	27301	0	0	0	400	175

* Site clean up

ATTACHMENT

D

Transport Route Plan

WASTE MANAGEMENT PLAN

Response to comments

- **According to the comment from EPD, a transport route plan has been setup. Refer to Attachment D – Transport Route Plan is added.**

- **The Target Completion Date is revised under Section 1.4 Works Programme**

MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 708
Underground Magazine

Verified by: _____

Position: Independent Environmental Checker

Date: 16 October 2009

MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 708
Underground Magazine

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 15 October 2009

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(1 of 2)

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(2 of 2)

FIGURES

APPENDICES

1 INTRODUCTION

1.1 Requirement for an WMP

This WMP has been prepared in response to the requirements of General Specification for Civil Engineering Works Section 5 – Environmental Requirements and Appendix D – MTR Corporation's Environmental Policy Statement, Appendix I – Environmental Requirement, Environmental Permit, Environmental Impact Assessment Report and Environmental Management and Audit Manual of West Island Line. The document aims at presenting the following information:

– identify the quantity of waste generation from construction;
– assess the environmental impacts that may occur;
– propose options for mitigating the impacts of waste disposal, and
– set out procedures for implementation of the plan.

1.2 Project Description

The West Island Line (WIL) will extend the full Island Line service to Kennedy Town via Sai Ying Pun (SYP) and University, adding approximately 3.3km of underground route length to the Island Line. West of Sheung Wan (SHW), the WIL alignment runs in a westerly direction along the railway reserve until Des Voeux Road West where it swings to run in a south-westerly direction towards SYP. A new tunnel between SHW and SYP will be constructed to form the eastbound tunnel, while the existing overrun tunnel west of SHW will be modified to form the westbound tunnel. To meet the predicted construction programme for drill and blast activities throughout the WIL excavation works, a temporary explosives magazine will be constructed at the western flank of Mount Davis passing underneath Victoria Road. The location plan for the MTRC WIL 708 contract is shown in **Figure 1**.

The works to be executed under this Contract include the following major items:

- Site formation and slope upgrading works required to provide a level platform below Victoria Road where the portals to the underground magazine are located and a vehicular access road connecting Victoria Road and the level platform;
- Two tunnel portals and a connecting tunnel through soft and mixed ground and rock;
- Two barricade walls in front of the tunnel portals;
- Eight explosives storage chambers and one detonator chamber alongside the connecting tunnel;
- Building facilities required to support the operation of the Magazine including a manager's office, a main guard house with arms locker, a gate guard house and two car parks; and
- Associated ancillary works including fire services installation, ventilation system, communication system, building services works, safety and security provisions, utilities and any other facilities deemed necessary to ensure the safe operation of the Magazine.

The commencement of construction of the Underground Magazine is scheduled for August 2009. The project is due for completion in Jul 2010. The construction programme is given in **Appendix A**.

Environmental protection and sustainable development are part and parcel of the daily operations of the Gammon Construction Limited (GCL). GCL will initiate

appropriate actions in order to minimize, and where possible eliminate, the environmental impact arising from the construction of this Project.

2 Environmental Legislation and Guidelines

This Waste Management Plan (WMP) is prepared in view of the current environmental legislation related to construction activities and specific contractual requirements and expectations relevant to waste management as described in contract documents. This WMP addresses the potential impacts and necessary mitigation measures in the light of GCL's proposed construction methodology and programme.

GCL will comply with all current relevant legislation, regulations and guidelines, which include, but not limited to, the following sections.

2.1 Statutory Obligations

2.1.1 Environmental Impact Assessment (EIA) Ordinance (Cap 499)

The ordinance requires MTRC, the permit holder of the Environmental Permit EP-313/2008/C, under Condition 2.12, to prepare and deposit the Waste Management Plan to the Environmental Protection Department.

All measures recommended in the WMP shall be fully and properly implemented by the contractor and any person working on the project throughout the construction period.

2.1.2 Waste Disposal Ordinance (Cap 354)

This ordinance prohibits any person from using any land or premises for the disposal of waste unless one has been authorized by or has obtained a license from the waste-disposal authority, the Environmental Protection Department.

2.1.3 Waste Disposal (Chemical Waste) (General) Regulation, Enacted Under Waste Disposal Ordinance

This regulation has provisions to require any person who produces chemical waste to register with the Environmental Protection Department as well as to control the processing, storage, collection, transport and disposal of chemical waste. In additional, the regulation also provides for the licensing of waste collection, transport and disposal activities.

Chemical waste includes any scrap materials, or unwanted substances specified under Schedule 1 of this Regulation, if such a substance or chemical occurs in such a form, quantity or concentration that causes pollution or constitutes a danger to health or risk of pollution to the environment.

A person shall not produce, or cause to be produced, chemical wastes unless he is registered with EPD. Any person who contravenes this requirement commits an offence and is liable to a fine and/or imprisonment. Chemical wastes must be treated, utilising on-site plant licensed by EPD or have a licensed collector to transport the wastes to a licensed facility. For each consignment of wastes, the waste producer, collector and disposer of the wastes must sign all relevant parts of a computerised trip ticket. The system is designed to trace wastes from production to disposal.

This regulation also prescribes the storage facilities to be provided on site including labelling and warning sign. To minimise the risks of pollution and danger to human health or life, the waste producer is required to prepare and make available written emergency procedures for spillage, leakage or accidents arising from storage of chemical wastes, and provide employees with training for such procedures.

2.1.4 Waste Disposal (Charges for Disposal of Construction Waste) Regulation

Construction waste means any substance, matter or thing that is generated from construction work and abandoned, whether or not it has been processed or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any desludging, desilting or dredging works.

Construction waste producers, such as construction contractors, renovation contractors or premises owners, prior to using government waste disposal facilities, need to open a billing account with the Environmental Protection Department and pay for the construction waste disposal charge.

Through the Charging Scheme, construction waste producers are encouraged to reduce, sort and recycle construction waste so that their disposal costs can be minimised and the valuable landfill space can be preserved.

2.1.5 Land (Miscellaneous Provisions) Ordinance (Cap 28)

Inert construction waste may be taken to public dumps. The Land (Miscellaneous Provisions) Ordinance requires that a dumping licence be obtained by individuals, or companies, who deliver suitable construction waste to a public filling facility. The licence is issued by the Civil Engineering Development Department. When public dumping of such material is required, Gammon shall apply for the licence prior to disposal.

2.1.6 Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances Regulation

This ordinance has provisions on the control of the discharge of hazardous material to sewers and for the control of littering. The ordinance prohibits placing or throwing any solid matter, mud or waste into public sewers or drains and also placing those substances in a location where they may fall into public sewers and drains. The ordinance also has provisions to require the owner or occupier of the land adjoining any street or place that is situated near a public sewer to exercise measures to prevent obstruction of sewers and drains caused by soil and waste.

2.2 Additional References and Guidelines

This Waste Management Plan has been prepared with reference to:

- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat (5 November 1998);
- 2001 Review of the Waste Reduction Framework Plan, Waste Reduction Committee;
- Site Practice for Waste Reduction in Construction Industry (2001), Environmental Protection Department;
- Environmental Guidelines for Planning in Hong Kong (1990), Hong Kong Planning and Standards Guidelines, Hong Kong Government;

- New Disposal Arrangements for Construction Waste (1992), Environmental Protection Department & Civil Engineering Department;
- A Guide to Chemical Waste Control Scheme and A Guide to the Registration of Chemical Waste Producer, Environmental Protection Department;
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), Environmental Protection Department;
- A Guide to the Control on Import and Export of Waste (1999), Environmental Protection Department;
- Works Branch Technical Circular 32/92, The Use of tropical Hard Wood on Construction Sites, Works Branch;
- Works Bureau Technical Circular No. 2/93, Public Dumps, Works Bureau;
- Works Bureau Technical Circular No. 2/93B, Public Filling Facilities, Works Bureau;
- Works Bureau Technical Circular No. 16/96, Wet Soil in Public Dumps, Works Bureau;
- Works Bureau Technical Circular No. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects, Works Bureau;
- 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;
- Works Bureau Technical Circular No 12/00, Fill Management; Works Bureau;
- Works Bureau Technical Circular No 19/01, Metallic Site Hoardings and Signboards, Works Bureau;
- Works Bureau Technical Circular No 6/02 and 6/02A, Enhancement Specification for Site Cleanliness and Tidiness, Works Bureau;
- Works Bureau Technical Circular No 12/2002, Specification Facilitating the Use of Recycled Aggregates, Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 33/2002, Management of Construction and Demolition Material including Rock, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 15/2003, Waste Management on Construction Sites, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 31/2004, Trip Ticket System for Disposal of Construction & Demolition Materials, Environment, Transport and Works Bureau;
- Memo Ref. (15) in FM PF/GEN/18.01 Pt.4 dated 22 December 2004 on "Enhancement of Trip Ticket System for Disposal of Construction and Demolition Materials – Commencement of Implementation of Using Bar-coded Disposal Delivery Form (DDF) on 15.1.2005", Secretary, Public Fill Committee, Civil Engineering & Development Department;
- Civil Engineering and Development Department Technical Circular No 05/2005, Management of Construction and Demolition Materials, Environment, Civil Engineering and Development Department;
- West Island Line, Environmental Impact Assessment Report, Oct 2008;
- Environmental Permit No. EP-313/2008, Environmental Protection Department

3 ENVIRONMENTAL POLICY

3.1 Principles

The management of GCL is committed to the planning, implementation and maintenance of an effective environmental management system. In this regard, GCL has implemented an Environmental Management System in accordance with ISO 14001 standards and has been certified by HKQAA on 31 August 2001.

GCL is committed to high standards of environmental management and the highest practicable priority will be given to environmental protection during the implementation of the Works. The Health, Safety and Environmental Policy of GCL is presented in **Appendix B**.

4 ORGANISATION FOR WASTE MANAGEMENT

The project organisation with respect to waste management works is outlined in the following section. The organisational structure for waste management is presented in **Appendix C**, which shows the arrangement for the organization and lines of communication for waste-management issues. Contacts of key waste management personnel are listed in Table 4.1.

Table 4.1 Contacts of Key Waste Management Personnel

Name	Position	Organization	Telephone	Facsimile	E-mail
Alan Gibson	Project Director	Gammon Construction Limited	25168721	25593410	Alan.Gibson@balfourbeattyem.com.hk
Brian Gowran	Contract Manager	Gammon Construction Limited	9865 0100	25593410	Brian.Gowran@gammonconstruction.com
Jason Cheng	Project Manager	Gammon Construction Limited	9837 9323	25593410	Jason.Cheng@gammonconstruction.com
M K Cheung	Environmental Engineer *	Gammon Construction Limited	9096 7254	25593410	mingkai.cheung@gammonconstruction.com
John Wai	Tunnel Engineer	Gammon Construction Limited	60839220	25593410	John.Wai@gammonconstruction.com

* Contact for environmental protection issues

5 INDIVIDUAL RESPONSIBILITIES

5.1 Project Director

The project director shall:

– be responsible for overall project management and shall have the day-to-day authority and responsibility for time, cost, safety, environmental and quality management;

– be responsible for the provision of sufficient resources and facilities for the implementation of the Waste Management Plan.

5.2 Contract Manager

The Contract Manager has the following duties in relation to waste management control:

– Assist the Project Director in implementing the WMP;

– Monitor and control the works including those of subcontractors to ensure compliance of WMP;
– Report to the Project Manager regarding non-compliance of any waste management issues;
– Ensure the remedial actions or mitigation measures are carried out as planned; and
– Supervise and arrange the maintenance of waste management facilities.

5.3 Project Manager

The Project Manager is responsible to the Contract Manager for overall planning, site operations, appoint of committee members for waste management, staff supervision control co-ordination and external liaison. He is ultimately responsible for all aspects of waste management issues within the Project, which they achieve by implementation of the WMP.

He is also responsible for provision of necessary support to the environmental engineer for the preparation and review of WMP and arrangement of site staff to attend environmental training with regard to waste management organised by other bodies or the environmental engineer.

He shall ensure the recommendations from the Client, Independent Environmental Consultant (IEC), Engineer, Environmental Team (ET), environmental engineer or Gammon's internal audit team are implemented to improve the waste management practices and carry out immediate action to rectify the non-compliance of waste management requirements. The Project Manager has the following responsibilities in relation to waste management:

(a) Keep abreast of the requirements of the statutory regulations in relation to waste management;
(b) Ensure works are executed in accordance with the WMP;
(c) Arrange routine joint site inspection with environmental engineer and review environmental inspection report submitted by the environmental engineer;
(d) Ensure works are undertaken in accordance with the recommendations made by the Client, IEC, Engineer, ET and environmental engineer;
(e) Monitor and control the works including those of subcontractors to ensure compliance with specified requirements;
(f) Ensure appropriate waste management mitigation measures are properly implemented;
(g) Ensure follow up actions are properly undertaken in the event of non-compliance of the WMP;
(h) Review method statement to ensure appropriate mitigation measures are implemented prior to execution of work;
(i) Liaise with Client, IEC, Engineer, ET and environmental engineer on waste management issues;
(j) Monitor records of all trained personnel in the site offices; and
(k) Monitor the following documents.
    - any statutory required waste management permits/licenses including dumping licence, chemical waste producer, admission ticket and etc.;
    - C&D material disposal delivery record; and
    - waste reuse / recycle / disposal summary.

5.4 Site Agent /Superintendent/ Engineer/ Foreman/Administrator & Survey Team

They are responsible for the following duties in relation to environmental control:

(a) Assist the Project Manager in implementing the WMP;
(b) Control the works including those of subcontractors to fulfil the requirement of waste management issues;
(c) Report to the Project Manager any non-compliance of any waste management issues;
(d) Maintain the on-site waste management facilities including sorting area, temporary storage area, general refuse bins, recycling bins and etc;
(e) Carry out remedial actions or mitigation measures to rectify the non-compliance;
(f) Conduct environmental toolbox talks with respect to waste management to labourers and workers regularly; and
(g) Carry out routine maintenance of waste management facilities. Maintenance records shall be kept in site office.

5.5 Subcontractors and other Employees

Every employee and subcontractor has the duty to carry out agreed waste management practices as instructed by the Site Agent/Superintendent/Engineer /Foreman /Administration & Survey Team.

Every employee and subcontractor shall report promptly to the Site Agent/Superintendent/Engineer/Supervisor/Administration & Survey Team any non-compliance of waste management issues.

On-site supervisor of each subcontractor shall conduct environmental toolbox talks with respect to waste management to their labourers and workers on a regular basis.

5.6 Environmental Engineer

The environmental engineer shall be responsible for:

(a) Reviewing works programmes, method statements, licence application and other relevant documentation so as to ensure the best practice would be implemented to generate no unacceptable impacts with respect to waste management to the established guidelines/standards;
(b) Identifying any potential unanticipated or greater than expected waste impacts;
(c) Formulating any necessary preventative or remedial measures to be taken for these potential impacts;
(d) Liaising with the Engineer, IEC, ET and Contractors on waste management both regularly and as necessary;
(e) Carrying out complaint investigation, evaluation and identification of preventive and corrective actions
(f) Assisting ET in undertaking regular and ad hoc environmental site inspection and audit, including waste management issues, and supplying the IEC with Corrective Action Reports for any deficiencies after completion of the inspection or audit;
(g) Liaising and consulting with all relevant parties during the implementation of the WMP;
(h) Preparing training material for environmental toolbox talks with regard to waste management and provide dissemination of guidance notes to operatives; and
(i) Assist the Project Manager in preparing waste flow table and monthly summary of the implementation of WMP.

5.7 Environmental Team

The ET shall not be in any way an associated body of the Contractor and it should be managed by the ET leader. The ET leader shall be a person who has at least 7

years' experience in EM&A and has relevant professional qualification. The appointment of ET Leader should be subject to approval of EPD. The ET should:

(a) Review the EIA Report and the detailed designs to ensure that the EIA recommendations and any other measures identified during the reviews are incorporated into the designs;
(b) Review works programmes, method statements, licence application and other relevant documentation so as to ensure the best practice would be implemented to generate no unacceptable impacts with respect to waste management to the established guidelines/standards;
(c) Identify any potential unanticipated or greater than expected waste impacts; (d) Formulate any necessary preventative or remedial measures to be taken for these potential impacts;
(d) Liaise with the Engineer and Contractor on waste management both regularly and as necessary;
(e) Carry out complaint investigation, evaluation and identification of preventive and corrective actions
(f) Undertake environmental site inspection and audit with respect to waste management both regularly and on ad hoc basis at a frequency appropriate to the intensity of the works;
(g) Liaise and consult with all relevant parties during the implementation of the WMP;
(h) Address waste management issues in the EM&A Report for submission to the – Engineer and EPD; and
(i) Report the findings of the site inspections and other environmental performance reviews to the ER, IEC and Contractor.

5.8 Independent Environmental Checker (IEC)

The IEC shall advise the Engineer on environmental issues related to the project. The role of the IEC shall be independent from the management of construction works; but the IEC shall be empowered to audit the environmental performance of construction.

The main duties of the IEC include the followings:

(a) Audit the overall waste management programme including the implementation of all waste management mitigation measures and submissions relating to WMP;
(b) Conduct random site inspection;
(c) Report the findings of the site inspections and other environmental performance reviews to the Engineer; and
(d) Review and verify the monthly EM&A reports.

6 WASTE MANAGEMENT

6.1 Potential Sources of Impact

The Works will involve the following activities that may potentially give rise to waste issues on the Site:

- Construction and Demolition Materials generated from construction activities
- Chemical wastes arising from maintenance of plants;
- Packaging waste;
- General refuse from workers and site office

The predicted monthly disposal schedule of different categories of waste is summarised in the Disposal Schedule in **Appendix D**. The Disposal Schedule shall be reviewed regularly, by taking into account of the permanent work design and site work planning/programme/progress to reflect actual quantity of waste materials arising.

6.1.1 Construction and Demolition Materials

Construction and Demolition (C&D) materials refer to both inert and non-inert materials generated from construction activities of the Works. The inert portion of the C&D materials include materials such as soil, building debris, broken rock, concrete, and the non-inert portion comprises tree debris, vegetation, timber, paper, plastics, general refuse and the like.

6.1.2 Chemical Waste

Chemical waste, as defined under the *Waste Disposal (Chemical Waste) (General) Regulation*, includes any substance being scrap material, or unwanted substances specified under Schedule 1 of the Regulation. A complete list of such substances is provided under the Regulation, however substances likely to be generated by construction activities include, but need not be limited to the following:

- Scrap batteries or spent acid/alkali from maintenance;
- Used paint, engine oils, hydraulic fluids and waste fuel;
- Spent material oils/cleaning fluids from mechanical machinery; and,
- Spend solvents/solutions.

6.1.3 Packaging Waste

Many types of material and components are delivered to site in cardboard, plastic or timber packaging.

6.1.4 General Refuse

The presence of a construction site with large numbers of workers and site office will result in the generation of a variety of general refuse requiring disposal. General refuse will mainly consist of food wastes, aluminium cans and waste paper.

6.2 Waste Reduction Measures

6.2.1 Waste Reduction through proper planning and good site management

As presented in the Waste Management Hierarchy, GCL accords the highest priority to managing waste through reduction at source. To this end, the following measures shall be implemented.

- Management of construction materials such that over-ordering, poor storage and maintenance, mishandling as well as improper operation procedures shall be avoided;
- Restriction on use of hardwood such that softwood, metal props and/or proprietary steel system shall be considered for false work and the shoring of trenches and pits;
- The formwork shall be designed to maximize the use of standard wooden panels so that high reuse levels can be achieved. More durable alternatives such as steel formwork or plastic facing shall be considered for repetitive areas to increase the potential for reuse;
- C&D materials shall be, as much as possible and practicable, separated into reusable items and materials to be disposed of or recycled. It shall be conducted at the immediate working area to avoid loss/leakage and cross contamination during handling;
- All C&D materials arising from or in connection with the construction and demolition work shall be sorted on-site and be separated into different categories for disposal at landfills, public filling areas, or reuse and recycling as appropriate. The sorting area may be revised from time to time in order to suit the construction activities;
- Useful materials such as timber, rubble and steel/metal shall be segregated for reuse. For example formwork and timber shall be cleaned for reuse, off-cuts of reinforcement shall be sorted into usable lengths and short off cuts stacked for scrap metal. Where it is no longer reusable, scrap steel and metal items will be collected by recycling companies;
- Segregated materials shall be temporarily stored at designated areas for reuse on site. Steel will be stored at the reinforcement yards, timber at the formwork yard and rubble in a stockpile (either covered or sprayed to control dust). Cardboard and paper packaging recovered from site shall be properly stockpiled in dry condition and covered;
- The remaining non-reusable C&D materials shall be sorted on-site into the inert portion (e.g. rock, brick, bituminous material, concrete and soil, etc.) as the “public fill” and the non-inert portion (e.g. timber, vegetation and paper, etc.) as the “C&D waste”. All inert C&D materials shall be broken down according to the Dumping License conditions prior to disposal to government approved public filling outlets. The hard inert construction and demolition (C&D) materials, such as broken rock and concrete which can be recycled into aggregates for reuse in construction works, shall be delivered to the C&D material dumping facility at Chai Wan Barging Point. The non-recyclable portion of C&D waste (containing no more than 30% by weight of inert content) shall be tipped at the landfill such as SENT Landfill. Recycling companies will be arranged to collect the recyclable portion of C&D waste;
- In order to avoid over-order of concrete, accurate calculation shall be made prior to concrete pouring. Close supervision shall also be arranged during concrete pouring to avoid over-cast; and
- Surplus concrete shall be used for paving of temporary road or cast of concrete blocks for bunding etc. as far as practicable. In case immediate use of surplus concrete cannot be identified, the surplus concrete will be temporarily poured into

designated surplus concrete pouring areas on site for further disposal to public filling areas.

6.2.2 On-site Sorting of Construction and Demolition Materials and Reusing of Construction and Demolition Materials at other Gammon project

All Construction and Demolition (C&D) materials arising from or in connection with the Works will be sorted on the Site to recover reusable and/or recyclable materials such as using as backfilling materials and for landscaping works for other WIL contracts as far as possible. All sorted and processed surplus materials arising from or in connection with the Works from the Site will be promptly removed to minimise temporary stockpiling on the Site.

A system will be devised for on-site sorting of C&D materials. The system will include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/or collection, temporary storage areas, frequency of collection by recycling contractors or frequency of removal off the Site, etc.

GCL will sort the materials at source into the following categories:

- hard rock and large broken concrete suitable for reuse on the Site or recycling at a designated location;
- metals;
- paper and plastics;
- chemical waste; and
- materials suitable for disposal at public fill reception facilities and landfills.

Subject to the approval of Engineer, surplus Construction and Demolition Materials will propose to deliver to other Gammon Construction Limited project site, such as Tuen Mun Highway Eastern Section for backfilling. It can enhance the recycling rate of construction and demolition materials.

Other materials to be disposed of at public fill reception facilities and landfills facilities, will comply with their respective requirements under Schedule 6 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354).

Sufficient space for temporary storage of C&D materials will be identified and provided to facilitate collection and/or sorting on the Site. Except for those inert C&D materials to be reused on the Site, all other C&D materials off the Site will be removed as soon as practicable to optimise the use of the on-site storage space.

A system for proper handling and storage of chemical waste generated from the Site will be established in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation* and *the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Arrangements will be made with specialist contractors for the collection and disposal of chemical waste.

The temporary on site sorting facilities for C&D materials is presented in **Figure 2**.

6.2.3 Recycling

To minimise the amount of waste disposal to landfills, the general refuse or C&D waste shall be reused and recycled as much as practical. Waste sorting and segregation shall be carried out in accordance with the following categories for recycling:

- Plastic (i.e. plastic bag, plastic bottle, plastic packaging, etc.)
- Rubber;
- Paper;
- Wood/ timber;
- Glass;
- Textile; and
- Metal (i.e. aluminium can, steel metal, ferrous metal, and non-ferrous metal).

Equipment and material packaging (ie paper and cardboard) will be recovered, properly stockpiled in dry and covered condition to prevent cross contamination by other C&D materials. Particular attention will be paid to avoid cross contamination in the course of collecting paper for recycling. Arrangements will be made with recycling contractors to ensure that recyclable materials sorted from the Site are collected with reasonable care.

GCL shall employ waste recycling collector - Confidential Materials Destruction Service Ltd or Fok Woo Group to collect the recyclable material which include paper, metal and plastic waste. The volume of collected recyclable will be reported in the quarterly waste flow table.

The location for collection of recyclable materials is presented in **Figure 2**.

6.2.4 Management of Chemical Waste

Containers used for the storage of chemical waste 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 specification have been approved by the EPD; and
- display a label in English and Chinese in accordance with instruction prescribed in *Schedule 2* of the Waste Disposal (Chemical Waste)(General) Regulation.

The storage area for chemical wastes will:

- be clearly labelled and used solely for the storage of chemical waste;
- be enclosed on at least three sides;
- have an impermeable floor and 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;
- have adequate ventilation;
- be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
- be arranged so that incompatible materials are adequately separated.

The location of the chemical waste store is presented in **Figure 2**.

Disposal of chemical waste will:

- be via a licensed waste collector; and
- be to an off site facility licensed to receive chemical waste, such as a recycling facility located in Yuen Long Industrial Estate or the Chemical Waste Treatment Facility located in Tsing Yi; or
- to be a reuser of the waste, under the approval from the EPD.

When a chemical spill has been discovered one shall take the following actions:

- Alert all persons in the vicinity and inform the person in-charge of the site.
- Assess the situation and if the spill is serious which will cause danger to nearby people, water bodies, natural habitats, etc., the Fire Service Department shall be informed and the affected area shall be fenced off.
- All personnel shall evacuate from the area and wait for the Fire Services Department to arrive.
- The work area supervisor shall be present at the scene to provide the details of the chemical used and the occurrence of the incident.
- If safe to do so, take the following actions:

  (i) Where available, follow the emergency procedure as stipulated in the label on the container,
  (ii) Put on personal protective equipment;
  (iii) Stop the spillage;
  (iv) Confine the spill with earth barriers;
  (v) Contain the spill inside the work area and prevent it from entering water ways and drainage systems, etc.;
  (vi) Switch off all heat and ignitable sources.

6.2.5 Management of General Refuse

General refuse generated on site will be stored in enclosed bins separate from construction and chemical wastes. A reputable waste collector will be employed by the contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts. The burning of refuse on construction site is prohibited by law.

Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible, so separate, labelled bins for their deposit will be provided if feasible.

Office wastes will be reduced through the recycling of paper. Participation in a local collection scheme will be considered if one is available. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided.

The location of the general refuse collection bins is presented in **Figure 2**.

6.3 Estimated Quantities and Disposal of Waste by Type

The estimated quantities of C&D materials requiring disposal are presented in **Appendix D**.

Table 6.1 provides a summary of the various waste types likely to be generated during the construction activities for the Project, together with the handling and disposal methods.

Table 6.1 Summary of Waste Handling Procedures and Disposal Routes

Waste Material Type	Generated from works item	Total Quantity Generated	Quantity to be disposed off-site	Disposal	Handling
C&D Material	Construction of underground Magazine site	22,375 m^3	22,375 m^3 (11,000 m^3 to Tuen Mun Area 38 & 11,375 m^3 to be reused in other projects or Mainland)	Surplus inert C&D material to be reused in other projects or in Mainland, or delivered to PFRFs for beneficial uses.	Segregate rock to avoid contamination from other wastes. Trucks to transfer inert C&D material to Tuen Mun Area 38 Fill Bank, or other projects or Mainland
C&D Waste	Site clearance at works areas	180 ton	180 ton	To be disposed of to the designated landfill site	Trucks to transfer non-inert C&D material to SENT Landfill
General Refuse	Waste paper, discarded containers, etc. generated from workforce	11 ton	11 ton	Refuse transfer station for compaction and containerisation and then to landfill	Provide on-site refuse collection points.
Chemical Waste	Cleansing fluids, solvent, lubrication oil and fuel from construction plant and equipment	1000 L (liquid) & 1000 kg (solid)	1000 L (liquid) & 1000 kg (solid)	Chemical Waste Treatment Centre	Recycle and collect by licensed collector. Stored on-site within suitably designed containers

The inert portion of the C&D materials will generally be transported by trucks and disposed of at the Tuen Mun Area 38 Fill Bank or other disposal outlets as directed by the Engineer. For details of the designation of the public fill reception facility, please refer to the letters from MTRC and CEDD in **Appendix H**. The trucks will be tentatively undertaking a routing in the following directions to Tuen Mun Area 38 Fill Bank:

Route A

- Starting from Victoria Road construction site
- Connaught Road West
- Western Harbour Tunnel
- West Kowloon Expressway
- Cheung Tsing Tunnel
- Tuen Mun Road
- Lung Mun Road
- Finishing at Tuen Mun Area 38 Fill Bank

OR

Route B

- Starting from Victoria Road construction site
- Connaught Road West & Connaught Road Central
- Harcourt Road
- Gloucester Road
- Cross Harbour Tunnel

- Hong Chong Road
- West Kowloon Expressway
- Cheung Tsing Tunnel
- Tuen Mun Road
- Lung Mun Road
- Finishing at Tuen Mun Area 38 Fill Bank

The above routing is only indicative and shall be subject to change according to traffic conditions.

The non-inert portion of the C&D materials that are not recyclable will be transported by trucks and disposed of at SENT Landfill.

Alternative disposal ground may also be explored to ensure reuse of the inert C&D materials to the fullest extent but prior approval from the Engineer will be sought before any disposal at alternative locations.

6.3.1 Recording the quantities of Reused, Recycled and Disposed Construction and Demolition Materials

For the purpose of facilitating the Employer's Sustainability Reporting, the quantities of wastes reused, recycled and disposed relating to construction activities will be submitted on a quarterly basis. The quarterly summary for waste flow table (WFT) is shown in **Appendix E**.

6.4 Procedure for Trip-Ticket System Implementation

GCL shall provide a Construction and Demolition Material Disposal Delivery Form (refer to **Appendix F** for an example of the trip-ticket to be used) for each and every vehicular trip transporting construction-and-demolition material, ie, public fill or construction-and-demolition waste, off site. GCL shall complete all relevant details on the form in duplicate except for the time of departure.

Prior to the vehicle leaving the site, GCL shall present the completed Form to the Engineer 's Representative. The Engineer's Representative shall insert the Time of Departure and stamp the Form. The Engineer's Representative shall retain a copy of the Form and return the original to GCL. The form shall be carried on board the vehicle at all times throughout the vehicular trip.

For each vehicular trip, GCL shall present to the operator of the designated public filling facility/landfill (the operator) the stamped form prior to the disposal of the construction-and-demolition material. The operator shall stamp and return the form to GCL together with a computer print-out receipt to acknowledge the disposal of public fill/construction and demolition waste. GCL shall keep record of the stamped form and the original receipt for inspection by the Engineer's Representative within two working days of the vehicular trip.

GCL shall maintain a daily record of disposal of C&D materials from the Site including details of the C&D materials, the truck number, departure time, etc, using the Daily Record Summary (DRS), a sample of which is given in **Appendix G**.

For each trip of off-site disposal of chemical waste, trip tickets issued for every chemical waste collection made by the licensed waste collector shall be copied to the Engineer and the original be maintained on site for future references.

6.5 Site Tidiness

The site shall be kept in a tidy manner at all times. The site establishment shall be planned with areas allocated for containers, plant, storage of material and waste skips. Direct and subcontract labour shall be responsible for making sure that the site is kept in a tidy manner. All labour involved on the site shall be responsible for making sure that tools are cleaned and put away, equipment is stored away after use, and un-used material is neatly stacked or stored in areas provided. All areas of the site shall be kept clean and tidy, access/egress points shall be swept, and passageways shall be kept free from material and plant or equipment. Waste material shall be stored in the receptacles provided, which shall be emptied regularly.

7 SURVILLANCE SYSTEM

The Contractor shall establish a surveillance system within the Site and at any alternative disposal grounds to check that the disposal activities comply with the requirements.

7.1 Informing the Truck Drivers

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

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

- The C&D materials must be disposed of at the disposal grounds as stipulated in the CHIT;
- Any loaded dump truck, which is rejected by the disposal grounds as stipulated in the CHIT (i.e either Public Fill Reception Facility or Landfill), the truck drivers should deliver the unacceptable mixed waste back to the site for further sorting;
- Each truck carrying a load from the construction site should not be overloaded;
- Each truck should be covered with an impervious sheet when carrying dusty materials off-site;
- What constitutes an improper disposal where the Public Fill Committee (PFC) will consider revoking the Dumping Licence from the holder of the offending trucks; and
- Truck drivers must bear a valid Dumping Licence which he can apply from the Civil Engineering and Development Department (CEDD).

7.2 Enhanced Measures

The following measures will be implemented continuously to improve C&D waste materials sorting on-site.

Training
Ongoing training sessions on waste handling, sorting and disposal, in the form of induction training and tool box talk, is continued to provide to the frontline workers, project team members, subcontractor and dump truck subcontractor's representative to enhance their awareness.

Waste Facilities
Waste facilities to facilitate on-site sorting, collection and temporary storage of waste materials is continued to maintain. The waste facilities including the following:

1. Designated area for temporary storage of Inert C&D Material
2. Designated area for temporary storage of non-inert C&D Material
3. Recycling area for collection of waste metal, plastic and paper.
4. Recycling bins for collection of waste papers, cans and plastic bottles
5. Designated storage area for chemical waste

Administrative Control
To ensure there is no waste to be disposed to sorting facility in future, we have mandated any loaded dump truck, which is rejected by either Public Fill Reception Facility or Landfill, to deliver the unacceptable mixed waste back to the site for further sorting.

GCL will closely monitor the efficiency and effectiveness of on site sorting and ensure that no waste is allowed to dispose to the sorting facility and are obliged to fully comply with the trip ticket system and the requirements as stipulated in the Employer's Requirement.

7.3 Routine Inspection and Audit

The environmental engineer shall be responsible for auditing of the waste management practice during the weekly site inspection in order to ensure that appropriate control measures are properly implemented.

Should deficiency of waste control measures are identified during the site inspection, the environmental engineer shall discuss with the Project Manager for formulation of

remedial measures and the Project Manager shall implement the remedial measures promptly to rectify the situation. If deficiency persists, alternatives and/or addition control measures shall be proposed. The environmental engineer shall also assist the ET in undertaking regular and ad hoc environmental site inspection and audit, including waste management issues, and supplying the IEC with Corrective Action Reports for any deficiencies after completion of the inspection or audit.

In addition to the weekly site inspection, actual quantities of waste produced and disposed of shall be determined on a monthly basis and recorded on the Waste Flow Table. A sample of the form to be used is included as **Appendix E**. The table shall be submitted to the Engineer no later than the 15th day of each month.

7.4 Record System

GCL shall keep adequate and proper records such as delivery dockets, records and reports relating to the implementation of WMP. The records shall include trip-tickets, completed inspection checklists and training records.

For disposal at government disposal facilities which is managed by CEDD or landfills which is managed by EPD, GCL will check the information recorded in the Daily Record Summary (DRS) against available information including our own records and data from the following websites and make it available for inspection by the Engineer‘s Representative upon request.

CEDD’s website (For Inert Materials)
www.cedd.gov.hk/eng/services/tripticket/index.html

EPD’s website (For Non-inert Waste)
www.epd.gov.hk/epd/misc/cdm/trip.htm

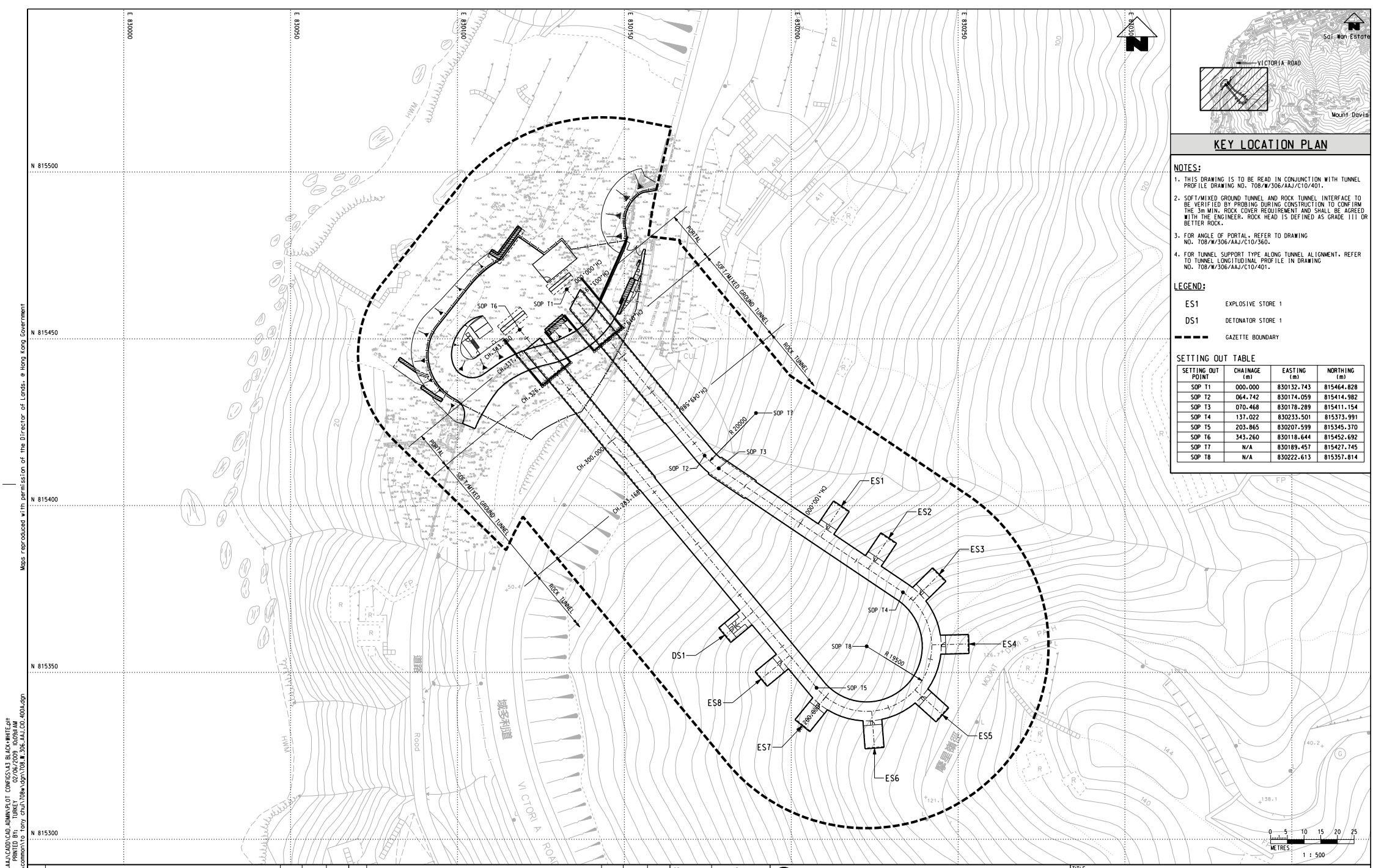
7.5 Performance Monitoring

The following item will be discussed at every Site Safety and Environmental Management Committee meeting, and Site Safety and Environmental Committee meeting or other established channels as agreed:

1. review the waste management plan; including the quantities and types of construction and demolition material generated, re-used and disposed off-site;
2. review incidents of non-compliance and discuss the necessary follow-up actions; and
3. monitor the follow-up action on defects and deficiencies identified.

Figure 1

Site Boundary



KEY LOCATION PLAN

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH TUNNEL PROFILE DRAWING NO. 708/W/306/AAJ/C10/401.
2. SOFT/MIXED GROUND TUNNEL AND ROCK TUNNEL INTERFACE TO BE VERIFIED BY PROBING DURING CONSTRUCTION TO CONFIRM THE 3m MIN. ROCK COVER REQUIREMENT AND SHALL BE AGREED WITH THE ENGINEER. ROCK HEAD IS DEFINED AS GRADE III OR BETTER ROCK.
3. FOR ANGLE OF PORTAL, REFER TO DRAWING NO. 708/W/306/AAJ/C10/360.
4. FOR TUNNEL SUPPORT TYPE ALONG TUNNEL ALIGNMENT, REFER TO TUNNEL LONGITUDINAL PROFILE IN DRAWING NO. 708/W/306/AAJ/C10/401.

LEGEND:

ES1	EXPLOSIVE STORE 1
DS1	DETONATOR STORE 1
- - -	GAZETTE BOUNDARY

SETTING OUT TABLE

SETTING OUT POINT	CHAINAGE (m)	EASTING (m)	NORTHING (m)
SOP T1	000.000	830132.743	815464.828
SOP T2	064.742	830174.059	815414.982
SOP T3	070.468	830178.289	815411.154
SOP T4	137.022	830233.501	815373.991
SOP T5	203.865	830207.599	815345.370
SOP T6	343.260	830118.644	815452.692
SOP T7	N/A	830189.457	815427.745
SOP T8	N/A	830222.613	815357.814

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REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING	CWY	27MAY09	

DRAWN	CWY
DESIGNED	DL
CHECKED	SJ
APPROVED	GR
DATE	14/MAY/2009

MTR

WEST ISLAND LINE

ORIGINATOR

Atkins Arup JV

Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates

CADD REF. 708_W_306_AAJ_C10_400A.DGN

TITLE

CONTRACT 708
UNDERGROUND MAGAZINE
TUNNEL LAYOUT PLAN

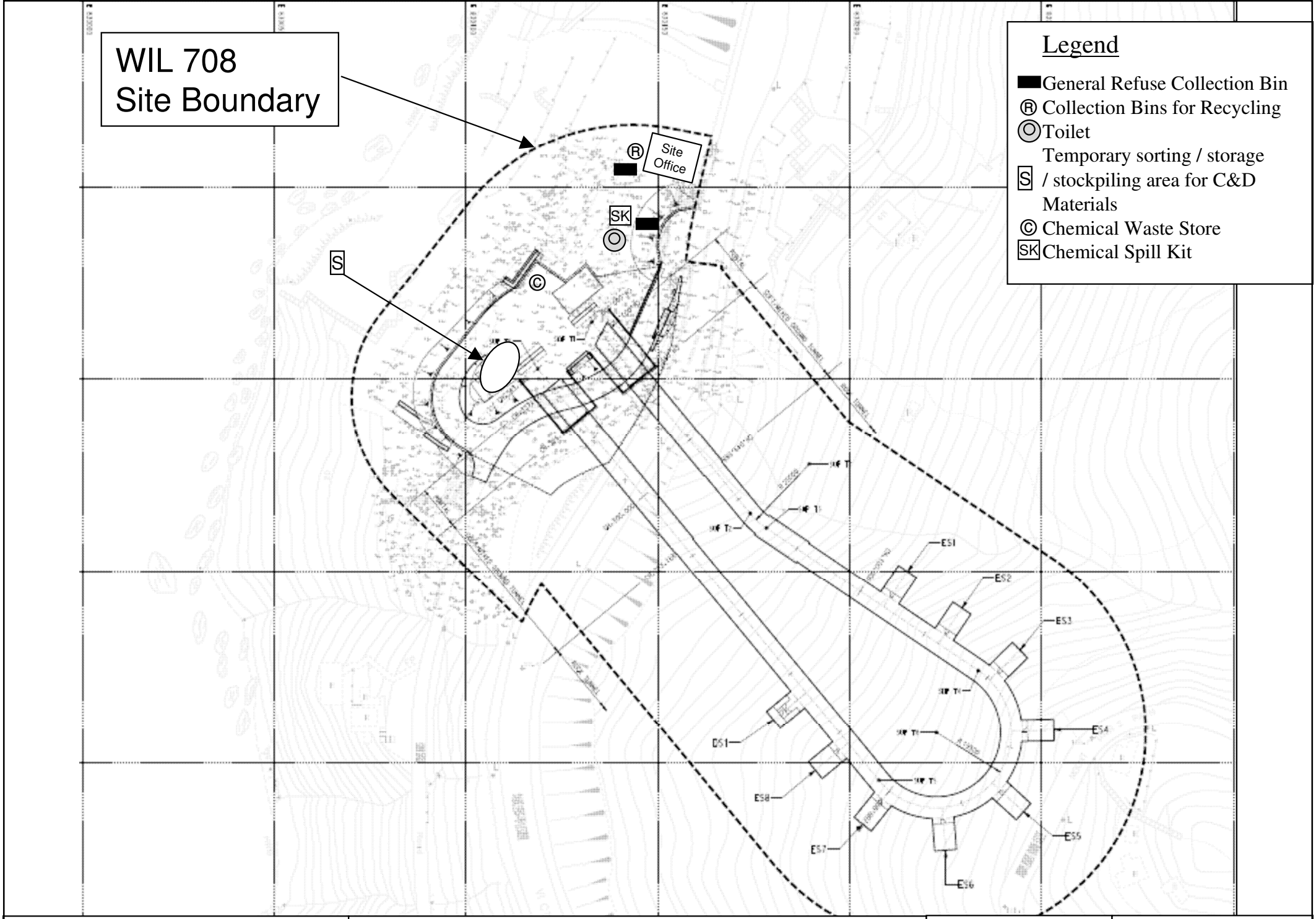
SCALE 1 : 500 (A1)

DRAWING NO. 708/W/306/AAJ/C10/400

REV. A

Figure 2

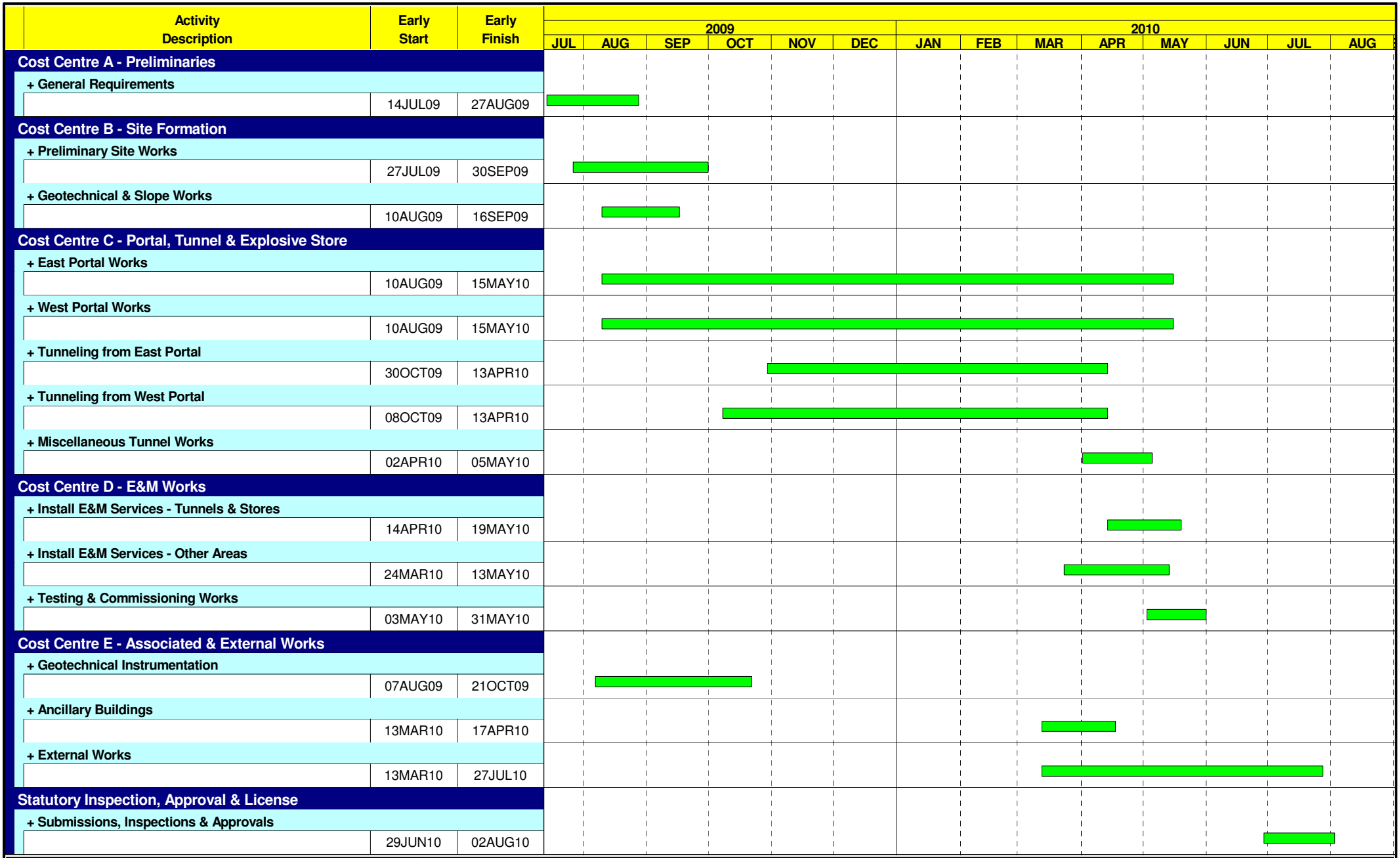
Temporary On-site Waste Sorting Facilities



MTRC WIL Contract No. 708 Magazine Tunnel	**Figure 2 –** **Temporary On-site Waste Sorting Facilities**	Drawn by: YCT Checked by: MKC Date: 7 Sep 09	Scale: NTS Drawing No.: WMP-002

APPENDIX A

Construction Programme



Early Bar

Progress Bar

708F

Sheet 1 of 1

MTR West Island Line
Contract No. 708 - Underground Magazine
Works Programme Summary

Gammon Construction Limited

Date	Revision	Checked	Approved
02SEP09	C708 Works Programme		

APPENDIX B

The Gammon's Health, Safety and Environmental Policy

Gammon

POLICY ON HEALTH, SAFETY AND THE ENVIRONMENT

The environment, health & safety and well being of everyone employed on Gammon projects, members of the public, and those who may be affected by our activities are afforded the highest concern within Gammon.

We fully recognise the importance of identifying and minimising the risks and impacts that may arise from our activities and believe that no task is so important or urgent as to exclude the prior consideration of health, safety, environmental and community concerns in our decision-making.

We regard excellence in health, safety & environmental performance, the incorporation of sustainability principles and positive engagement with our stakeholders as critical to our success.

We are fully committed to being a company that is Environmentally Responsible and Community Engaged. Further, we commit to demonstrate we are "World Class in Health and Safety" by achieving "Zero Harm" by 2012.

In this regard it is Gammon's policy to:

- Place health and safety as our number one priority over all other Business considerations;
- Require the highest standards of health, safety and environmental leadership from all our managers who should ensure that effective systems of control are in place for all operations;
- Treat compliance with legislation and contractual requirements as a fundamental minimum requirement in delivering Health, Safety and Environmental excellence;
- Allocate sufficient resources to implement a managed system of controls which will deliver our health, safety and environmental objectives;

- Raise the awareness of health, safety, the environment and Gammon's commitment to sustainable development by providing information, training, instruction and supervision to our employees and business partners;
- Pursue innovation and constantly re-examine our design and construction approach so as to remove risk and enhance the health and safety of our workers, prevent pollution and afford better protection to the environment;
- Engage with our industry and challenge ourselves to continually "raise the bar" by improving standards for health, safety and environmental performance;
- Frequently engage with local communities to find ways in which we can minimize impacts and add value to the quality of life of those affected by our operations;
- Seek continual improvement through regular performance monitoring, systematic audits and reviews, and by setting challenging objectives and targets.

The responsibility and accountability for implementing this policy and achieving our "Zero Harm" and Environmental Objectives rests with each and every employee. At stake is your future well-being, your company and your community. Please join me, and lets all ***"Make Safety Personal"***.

Thomas Ho
Chief Executive
Gammon Construction Limited

July 2009

Gammon

健康、安全及環保政策

環保、健康、安全，以及員工、公眾以至受我們業務運作影響人士的福祉，都是金門最優先關注的事項。

我們完全認同，識別和降低風險以及妥善處理因建造過程可能引起的影響極為重要，而且沒有任何工作比優先處理健康、安全、環保及社群福祉的事項更為緊急和重要。

因為我們確信，只有在健康、安全和環保工作方面表現出色，將可持續發展的原則融入工作，以及與持份者積極互動，才是金門的成功關鍵。

我們致力成為一家對環保盡責和積極服務社群的公司，並矢志要在二零一二年達致「零傷害」，及在健康和安全方面達致世界級水平。

為實踐此承諾，我們在安全、健康和環境保護的政策是：

- 視健康和安全為比任何業務考慮更為重要的優先事項；
- 要求所有經理為員工建立最高準則的健康及安全領導，並確保所有工程遵守有效的管理程序；
- 以遵從法律及合約條款為金門的最基本要求，從而達致卓越的健康、安全及環保成效；
- 投放足夠資源推行一套達致健康、安全和環保目標的管理系統；
- 為員工和業務夥伴提供有關法例和良好作業守則的資訊、培訓、指導和監督，

  從而提升對健康、安全、環保的關注，以及金門對持續發展的承諾；
- 追求創新及持續複檢建造設計和方法，從而消除風險和加強保障員工的健康和安全，預防污染，或更有效地保護環境；
- 與建造行業融合及透過不斷提升健康、安全和環保的表現挑戰自己；
- 繼續與本地社群合作，為可能受我們業務運作影響的人士尋求改善方案或提升生活質素的方法；以及
- 定期跟進工作表現，檢討及訂定具挑戰性的目標，持續改進，精益求精。

每一位員工都有責任推行零傷害和環保目標及以上所有政策，因為它們關乎您

的福祉、您的機構和您的社群。讓我們一起視「安全為己任」！

何安誠

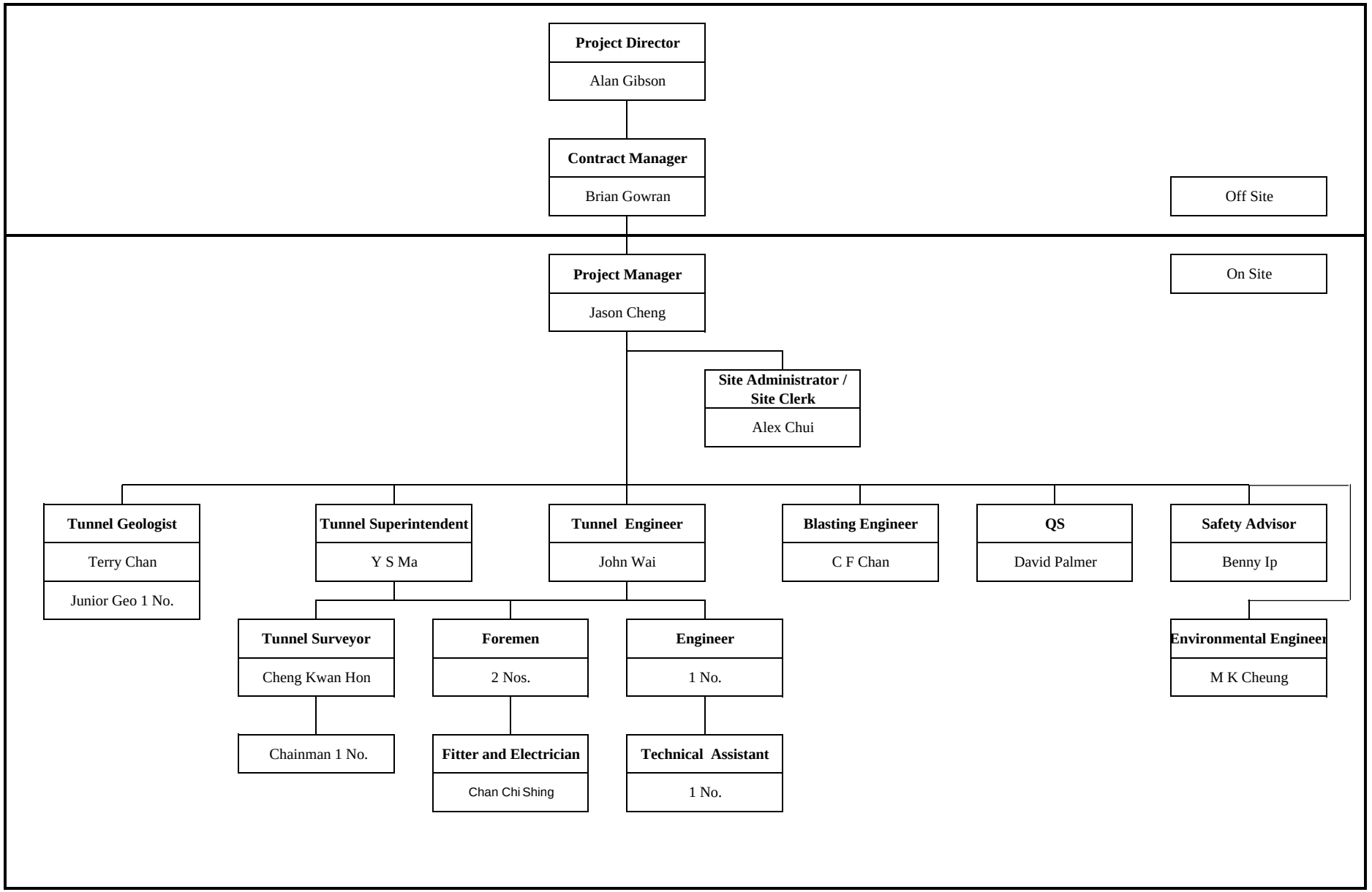
金門建築有限公司
總裁
何安誠
二零零九年七月

APPENDIX C

Organisation Structure for Environmental Management

WEST ISLAND LINE CONTRACT NO 708 - UNDERGROUND MAGAZINE

ORGANISATION CHART (Rev. 1)



APPENDIX D

Predicted Waste Quantities from the Project

Prediction of Waste Generation & Recycling										Year:	2009		
										Division:	Civil	GAMMON	
Project Title:	MTRC WIL 708									**Job No:**		**Responsible Person:**	

Month	Inert Waste Management				Recycling & Reuse					Off-site Waste Disposal			
	Excess Concrete (as wastage or overbreak)[1]		Inert Waste Reuse on site[2]	Inert Waste Reuse at	Metal, Steel & Rebar	Cardboard Packaging	Timber Recycling[5]	Plastics Recycled[6]	Others[7]	Public Fill[8] Disposal	Chemical Waste Disposal[9]		C&D Waste[10] Disposed
											Solid	Liquid	
	(tonnes)	%	(cu m)	(cu m)	(kg)	(kg)	(kg)	(kg)	(kg)	(cu m)	(kg)	(litres)	(tonnes)
January													
February													
March													
Q1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
April													
May													
June													
Q2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
July	0		0	0	0	0	0	0	0	0	0	0	180[11]
August	0		0	0	0	0	0	0	0	0	0	0	1
September	0		0	0	0	0	0	0	0	0	0	0	1
Q3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**182**
October	2		0	0	0	0	0	30	0	3441	100	100	1
November	2		0	0	0	0	0	35	0	3458	150	150	1
December	2		0	0	0	0	0	35	0	1564	150	150	1
Q4	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**0**	**8463**	**400**	**400**	**3**
TOTAL	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**0**	**8463**	**400**	**400**	**185**

Notes:

1. Excess concrete - the volume of concrete wastage, overbreak and/or over-ordered concrete. Data should be presented as both m^3 and as a percentage of total amount of concrete
2. Reuse includes for infill, grading etc
3. Other projects include other Gammon sites, other construction sites and third-parties such as quarries.
4. Cardboard packaging - recycling must be by a confirmed recycling company. Include supplier take-back only if the supplier can confirm recycling or reuse of the packaging.
5. Insert data where timber used for formwork or falsework is reused for other purposes on site rather than disposed to landfill.
6. Plastic refers to plastic bottles/containers, plastic sheets/foam from packaging material
7. Examples of other waste recycled may include tyres and computer equipment
8. Public fill, is the inert portion of C&D material including debris, rubble, earth and concrete which is taken to a Government Public Fill facility such as Tuen Mun Area 38.
9. Chemical waste is split into 2 components: liquid waste (eg spent lubricating oil) and solid waste (eg spent batteries).
10. C&D waste includes bamboo, timber, vegetation, packaging waste, organic materials and general refuse which will be disposed of at landfills.
11. The C&D waste shall be generated from site clearance prior to commencement of construction works.

Prediction of Waste Generation & Recycling										Year:	2010		
										Division:	Civil	GAMMON	
Project Title:	MTRC WIL 708									**Job No:**		**Responsible Person:**	

Month	Inert Waste Management				Recycling & Reuse					Off-site Waste Disposal			
	Excess Concrete (as wastage or overbreak)[1]		Inert Waste Reuse on site[2]	Inert Waste Reuse at	Metal, Steel & Rebar	Cardboard Packaging	Timber Recycling[5]	Plastics Recycled[6]	Others[7]	Public Fill[8] Disposal	Chemical Waste Disposal[9]		C&D Waste[10] Disposed
											Solid	Liquid	
	(tonnes)	%	(cu m)	(cu m)	(kg)	(kg)	(kg)	(kg)	(kg)	(cu m)	(kg)	(litres)	(tonnes)
January	2		0	640	0	30	0	30	0	2337	100	100	1
February	2		0	9620	0	30	0	30	0	0	100	100	1
March	2		0	1115	0	30	0	30	0	0	100	100	1
Q1	**6**	**0**	**0**	**11375**	**0**	**90**	**0**	**30**	**0**	**2337**	**300**	**300**	**3**
April	2		0	0	0	30	0	30	0	100	100	100	1
May	2		0	0	0	30	0	30	0	100	100	100	1
June	0		0	0	0	30	0	40	0	0	100	100	1
Q2	**4**	**0**	**0**	**0**	**0**	**90**	**0**	**100**	**0**	**200**	**300**	**300**	**3**
July													
August													
September													
Q3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
October													
November													
December													
Q4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL	**10**	**0**	**0**	**11375**	**0**	**180**	**0**	**130**	**0**	**2537**	**600**	**600**	**6**

Notes:

1. Excess concrete - the volume of concrete wastage, overbreak and/or over-ordered concrete. Data should be presented as both m^3 and as a percentage of total amount of concrete
2. Reuse includes for infill, grading etc
3. Other projects include other Gammon sites, other construction sites and third-parties such as quarries.
4. Cardboard packaging - recycling must be by a confirmed recycling company. Include supplier take-back only if the supplier can confirm recycling or reuse of the packaging.
5. Insert data where timber used for formwork or falsework is reused for other purposes on site rather than disposed to landfill.
6. Plastic refers to plastic bottles/containers, plastic sheets/foam from packaging material
7. Examples of other waste recycled may include tyres and computer equipment
8. Public fill, is the inert portion of C&D material including debris, rubble, earth and concrete which is taken to a Government Public Fill facility such as Tuen Mun Area 38.
9. Chemical waste is split into 2 components: liquid waste (eg spent lubricating oil) and solid waste (eg spent batteries).
10. C&D waste includes bamboo, timber, vegetation, packaging waste, organic materials and general refuse which will be disposed of at landfills.
11. The C&D waste shall be generated from site clearance prior to commencement of construction works.

APPENDIX E

Waste Flow Table (WFT)

WASTE FLOW TABLE									**Year:**	2009			
									Division:	CIVIL			
Project Title:	MTRC WIL 708								**Job No:**		**Responsible Person:**		

Month	**Inert Waste Management**				**Recycling & Reuse**					**Off-site Waste Disposal**			
	Excess Concrete (as wastage or overbreak)[1]		**Inert Waste Reuse on site[2]**	**Inert Waste Reuse at**	**Metal, Steel & Rebar**	**Cardboar d Packaging**	**Timber Recycling [5]**	**Plastics Recycled[6]**	**Others[7]**	**Public Fill[8] Disposal**	**Chemical Waste Disposal[9]**		**C&D Waste[10] Disposed**
											Solid	**Liquid**	
	(tonnes)	**%**	**(tonnes)**	**(tonnes)**	**(kg)**	**(kg)**	**(kg)**	**(kg)**	**(kg)**	**(tonnes)**	**(kg)**	**(litres)**	**(tonnes)**
January													
February													
March													
Q1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
April													
May													
June													
Q2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
July													
August													
September													
Q3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
October													
November													
December													
Q4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:

1. Excess concrete - the volume of concrete wastage, overbreak and/or over-ordered concrete. Data should be presented as both m^3 and as a percentage of total amount of concrete
2. Reuse includes for infill, grading etc
3. Other projects include other Gammon sites, other construction sites and third-parties such as quarries.
4. Cardboard packaging - recycling must be by a confirmed recycling company. Include supplier take-back only if the supplier can confirm recycling or reuse of the packaging.
5. Insert data where timber used for formwork or falsework is reused for other purposes on site rather than disposed to landfill.
6. Plastic refers to plastic bottles/containers, plastic sheets/foam from packaging material
7. Examples of other waste recycled may include tyres and computer equipment
8. Public fill, is the inert portion of C&D material including debris, rubble, earth and concrete which is taken to a Government Public Fill facility such as Tuen Mun Area 38.
9. Chemical waste is split into 2 components: liquid waste (eg spent lubricating oil) and solid waste (eg spent batteries).
10. C&D waste includes bamboo, timber, vegetation, packaging waste, organic materials and general refuse which will be disposed of at landfills.

APPENDIX F

Disposal Delivery Form


Part A: retained by Account-holder
Chit No. 00000688
Public Fill Reception Facilities
Vehicle Registration Mark: AB 1234
Date of Use: 28/06/2005
Issued by: JONG
Construction Waste Generated Site:
88 Victoria Road, Kennedy Town, Hong Kong
Name of the Account-holder:
ABC Construction Company
Account No.: 5000025
SAMPLE
Part B: retained by Waste Hauler
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation
CHIT
Valid Until: XX/XX/XXXX
Part C: retained by Government
Part A: retained by Account-holder
Part B: retained by Waste Hauler
Part C: retained by Government

APPENDIX G

Daily Record Summary

A sample of "Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the Site

(1) Contract no. & title: _____

(2) Date of disposal: _____

(3) Designated disposal ground(s): (a)
(b)
(c)
others _____

(4) Approved alternative disposal grounds: _____

DDF Serial no.	Vehicle registration no.	Departure time from site	Approx. vol. (e.g. Full/Three Quarter/Half/ One quarter	C&D material type (e.g. inert or non inert)	Actual disposal ground	Arrival time at disposal ground	Acceptance time at disposal ground	Acceptance by designated facility [3]	Chit no./ time of facility operator's stamp	Time of facility operator's stamp on DDF	Remark

←----------Part 1 [1] ----------→			←----------Part 2 [2] ----------→		
Submitted by:		{Name of Contractor's Designated Person}	Submitted by:		Name of Contractor's Designated Person
Signature:			Signature:		
Date:			Date:		
Received by:		{Name and signature of the Engineer's Representative }	Received by:		Name and Signature of the Engineer's Representative }
Post:			Post:		
Date & Time:			Date & Time		

Remark:

1) Part 1 - The Contractor shall complete Part 1 and submit it to the Engineer'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 Engineer's Representative within 3 working days of the disposal trip.

3) The Contractor shall fill in "Accepted", or "Rejected", or "Diversion to alternative facility". If the disposal is diverted to alternative facility, the Contractor shall record details in the "Remarks" column.

APPENDIX H

Letters from MTRC and CEDD

MTR Corporation Limited
香港鐵路有限公司
www.mtr.com.hk

R 0127

17 SEP 2009

MTR

Gammon Construction Ltd.
28/F Devon House
TaiKoo Place
979 King's Road
Hong Kong

Our Ref.: 708-COR-CM(WIL704)-CS-000040

16 September 2009

Attn: Mr. Jason Cheng - Project Manager

Dear Sir,

West Island Line
Contract 708 - Underground Magazine
Re: Spoil Disposal Reception Facilities

Please find attached a copy of CEDD (Public Fill Committee) self-explanatory letter ref. (78) in FM PF/GEN/01 Pt. 76 dated 7th September 2009 regarding spoil disposal reception facilities for inert construction waste for the WIL Site Magazine Contract.

Please note the following:

1. Notwithstanding the spoil reception location for the Underground Magazine identified in the EIA, as noted in PS 17.3, the Public Fill Committee have designated the public fill reception facility for inert waste disposal on this Contract is the Tuen Mun Area 38 Fill bank.
2. Please liaise with the EPD and advise MTRC of the appropriate designated fill bank for non-inert waste.
3. Please also submit an updated Waste Management Plan including details of disposal locations for various waste types and traffic routing to the fill banks, in accordance with PS 17.5. Any subsequent changes to routing or disposal locations should also be reflected in the WMP.
4. Should other arrangements for spoil disposal locations be proposed, please advise the receiving construction project, fill types, quantities on a schedule basis and interim & final disposal locations for this fill.

Yours faithfully,

Gareth Page
Construction Manager – WIL(704)

GP/KM/PL/RL/hw

Encl.

MTR Headquarters Building, Telford Plaza, Kowloon Bay,
Kowloon, Hong Kong. GPO Box 9916, Hong Kong
Tel (852) 2993 2111 Fax (852) 2798 8822

香港九龍灣德福廣場港鐵總部大樓
香港郵政總局信箱9916號
電話 (852) 2993 2111 傳真 (852) 2798 8822

Please reply to:
MTR Corporation Limited
Unit 1001-03, 118 Connaught Road West Bldg.
118 Connaught Road West , Hong Kong
Tel (852) 3921-1688 Fax (852) 3921-1699

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

土木工程處
Civil Engineering Office

Web site 網址 : http://www.cedd.gov.hk
E-mail 電子郵件 : chihunglam@cedd.gov.hk
Telephone 電話 : (852) 2762 5545
Facsimile 傳真 : (852) 2714 0113
Our reference 本署檔號 : (78) in FM PF/GEN/01 Pt. 7
Your reference 來函檔號 :

香港九龍公主道 101 號
土木工程拓展署大樓
Civil Engineering and Development Building,
101 Princess Margaret Road,
Kowloon, Hong Kong

MTRC - WIL Design Management			
Rec'd 8 Sept. 09		Encl.	✓
File Ref. C [03-COR-(CED)-CS-165]			
Name	Act.	Info.	c.d.
SH			

7 September 2009

Fax No. 39213311

MTR Corporation Ltd
20/F Kwun Tong Rd
Kwun Tong
Kowloon
(Attn: Mr S Hamill / Mr D M Wong)

Dear Sirs,

West Island Line
MTRCL Contract No. 708
Underground Magazine
Designation of Public Fill Reception Facility

With reference to your LN message of 2.9.09 requesting for designated public fill reception facility for disposal of inert construction waste generated from the captioned contract, we note that about 11000m^3 of inert construction waste will be disposed of up to August 2010.

In consideration of the above, I would like to inform you that **Tuen Mun Area 38 Fill Bank** is designated as the public fill reception facility for disposing of inert construction waste generated from the contract. The location plan of the public fill reception facility is enclosed for your reference. Please note that inert construction waste is the *inert* portion of Construction Waste (i.e. Rock, rubble, boulder, earth, soil, sand, concrete, asphalt, brick, tile, masonry or used bentonite). For disposal of *non-inert* portion of Construction Waste (e.g. timber, bamboo, plastic) at Landfills, please contact Environmental Protection Department for an appropriate designation in accordance with ETWB TC(W) No. 31/2004.

Your particular attention is drawn to the requirements of on-site sorting of Construction and Demolition (C&D) materials [known as Construction Waste under the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L)] to facilitate recycling as set out in ETWB TC(W) No. 19/2005. Please ensure the following measures are adequately implemented in your contract:

(i) Employment of appropriate sequential demolition to facilitate recovering all reusable and recycled material;
(ii) On-site sorting of C&D materials to facilitate recycling;
(iii) Temporary storage area to facilitate collection and/or sorting of C&D materials on the Site; and
(iv) Appropriate arrangement for handling recyclable material.

Please also ensure that your contractor will comply with the following criteria as stipulated in the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap 354L) when delivery of Construction Waste to public fill reception facilities and landfills

Designated Waste Disposal Facility	Criteria to be adopted
Public Fill Reception Facilities	Entirely of inert construction waste. * (Schedule 5)
Landfills	For a load of construction 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 be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle. (GN4274)

...p2

Note * : Please note that public fill reception facilities will not accept broken reinforced concrete with protruding reinforcement bars.

As the capacity of the public fill reception facilities for the accommodation of inert construction waste in Hong Kong is running out, the designated public fill reception facilities may be filled to its capacity or closed for unforeseen circumstances before the completion of the works contract. ***In this circumstance, other public fill reception facilities if available may be designated. Nevertheless, your contractor shall use his best endeavours to identity other construction projects where the public fill generated can be used (see paragraph 2 of the Particular Specifications (PS) at Appendix A to ETWB TC(W) No. 31/2004).*** Please also be reminded of the provisions as set out in the PS for the disposal of public fill at an alternative disposal grounds proposed by your contractor. The purpose is to guard against illegal dumping.

Please observe the following for using the public fill reception facility:

(a) Draw up a site management plan for implementation of a Trip-Ticket System in accordance with ETWB TC(W) No. 31/2004. A bar-coded disposal delivery form (DDF) is required for each truckload of inert construction waste disposed of at the public fill reception facility. The disposal location should be consistently indicated on the 'CHIT' applied under the construction waste disposal charging scheme from EPD. ***Under normal circumstances, the ER/AR or his site staff should not request the Contractor/truck driver to return the stamped DDF after disposal. The latest 14 days' disposal records can be checked in CEDD's webpage*** http://www.cedd.gov.hk/eng/services/tripticket/index.html. Please inform the undersigned the details of dump trucks immediately in case of non-compliance in disposal location as indicated on the 'CHIT' issued.

(b) Please make request to our Mr F K Cheng at e-mail address fkcheng@cedd.gov.hk for the soft copy of the contract bar code. Please contact the undersigned for collection of the pre-printed DDFs [Form No. CEDD(CEO)84]. Please also take particular note of the auditing requirements as stipulated in paragraph 22 & 23 of ETWB TC(W) No. 31/2004.

(c) Each dump truck should have a valid Dumping License issued by CEDD. A dump truck without a Dumping License will be rejected. The application form for a Dumping License and the associated conditions can be downloaded from CEDD homepage http://www.cedd.gov.hk/eng/forms/doc/f83a.pdf.

(d) Any over-sized inert construction waste shall be broken down to less than 250mm so as to facilitate its reuse in reclamation or earth filling projects.

(e) The dump trucks delivering inert construction waste will not be overloaded.

(f) Every endeavour will be made to minimise the generation of inert construction waste and maximise its reuse on site; thus helping to relieve the burden on the public fill reception facility.

(g) The waste load will be delivered by truck with power-operated cover, if ETWB TC(W) No. 19/2005 is applicable to your contract.

(h) All protruded rebars, pipes, fittings, etc should be cut off from concrete.

Whenever you find that the programme or the total quantity of inert construction waste to be disposed of at public fill reception facilities is likely to be different from the estimates in paragraph 1 above, please immediately report to me in accordance with paragraph 18 of ETWB TC(W) No. 31/2004. I shall then advise on whether inert construction waste capacity is available for the changes, and refer the case to the Public Fill Committee for decision if necessary.

To maintain a list of active projects using the public filling facility, ***please take note of the requirements of notification at contract commencement and completion as set out under paragraph 17 of ETWB TC(W) No. 31/2004.***

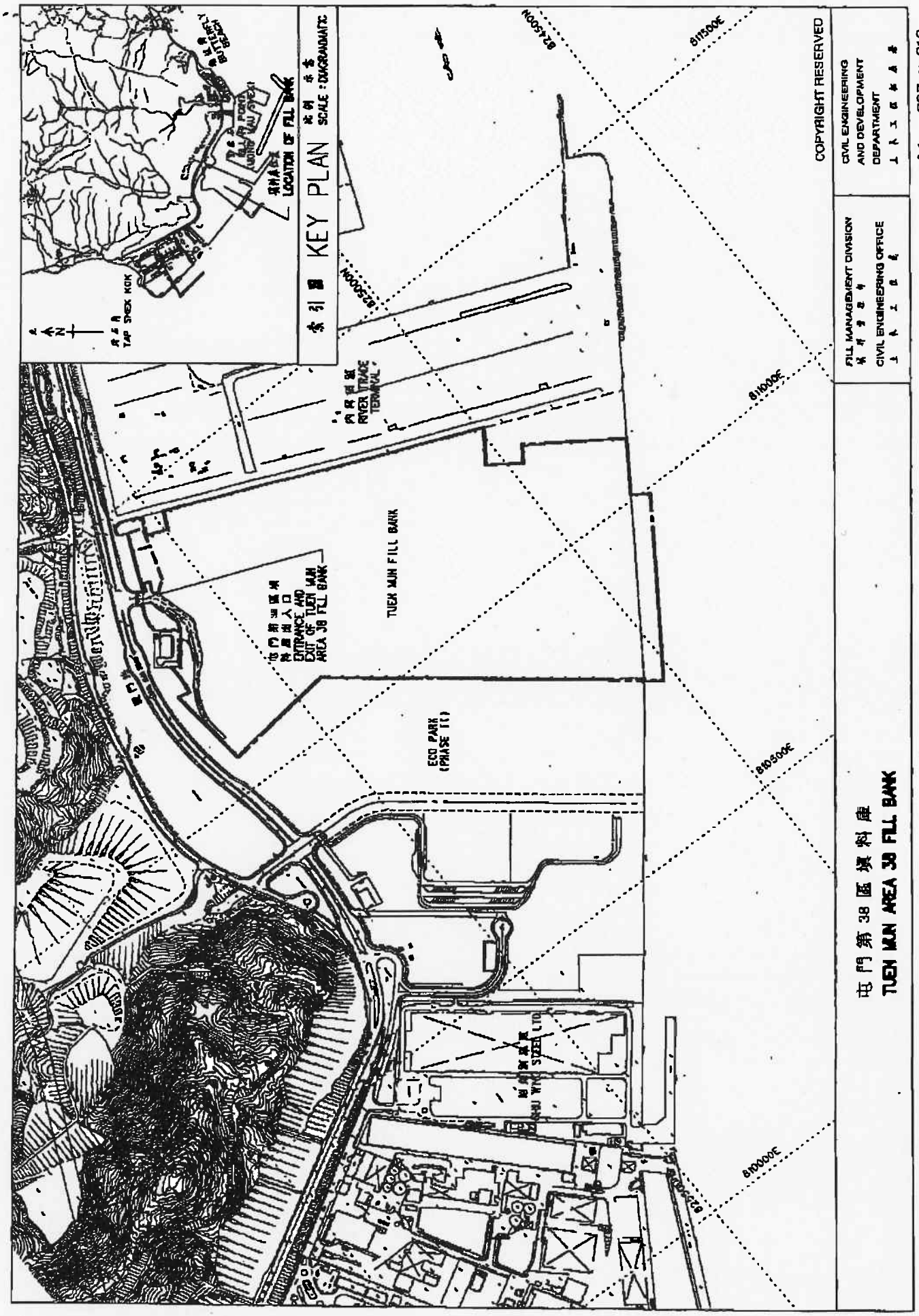
Yours faithfully,

(C H Lam)
for Secretary, Public Fill Committee
Civil Engineering and Development Department.

b.c.c. w/o encl.

c.c.
CE/RD1-1, HyD (Attn : Mr H L Lam) fax. 2761 1508
Drawing Office (Attn : Mr F K Cheng) - With a copy of LN message from MTR, please update the records for public fill outlets

C:\My documents\Designation of Public Filling Facility\TM38\HAD 15 2 09.doc


KEY PLAN
SCALE : DIAGRAMATIC
LOCATION OF FILL BANK
TAP SHEK KOK
TUEN MUN FILL BANK
ENTRANCE AND EXIT OF TUEN MUN AREA 38 FILL BANK
ECO PARK (PHASE II)
RIVER TRADE TERMINAL
COPYRIGHT RESERVED
FILL MANAGEMENT DIVISION
CIVIL ENGINEERING OFFICE
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
A4 297 x 210
DATE : 19-FEB-2009
屯門第38區填料庫
TUEN MUN AREA 38 FILL BANK
q:\Cont2\PUBLIC_DUMP\TUENMUN_A38\tm_fa_filbank_lm_1.dgn

Item No.	EPD Comments 18/9/09	Responses 2/10/2009
(a)	Please provide more details and definite description of transportation route for waste disposal based on best available information. Reference should be made to S7.16 to 7.18 and Tables 7.2 & 7.3 in the approved WIL EIA report and elaborate on the transport (barge/lorry) routes, with at least a tentative or indicative route leading to the major/trunk roads (if by lorry) given for our record to cater for answering potential public concern / enquiry.	The details of the transport routes for waste disposal are updated and described in Section 6.3.
Others		Table 6.1 and Appendix H are also updated due to the updated designation of public fill reception facility from CEDD.

MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 714
Project Site Office and Works Areas

Verified by: _____

Position: Independent Environmental Checker

Date: 16 October 2009

MTR Corporation Limited

West Island Line Project

Waste Management Plan (Rev B)

Contract No. 714
Project Site Office and Works Areas

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 15 October 2009

Table of Contents

1. Introduction

1.1 Background

Sun Fook Kong Construction Limited was awarded for the MTR West Island Line (WIL) – Project Site Office and Works Areas. The Works include the establishment of works areas for various WIL contracts within the Site; including the capping slab, site drainage and necessary retaining walls, utilities supplies to those works areas; and the construction and maintenance of a fully serviced Project Site Office providing accommodation for the Employer's and various contractors' staff. The Works will encompass geotechnical, civil, structural, ABWF, BS, E&M, built-in furniture and other works.

The project commences on 10 August 2009 and will be completed by 6 April 2010.

As stipulated in Clause G5.6.2 of the General Specification and Clause P17 of the Particular Specification for the Project, a Waste Management Plan (WMP) shall be submitted for the Engineer's approval before commencement of any works. This WMP is written to fulfil this requirement.

1.2 Objectives of the Waste Management Plan

The purpose of the Waste Management Plan (WMP) is to identify activities that will generate waste and set out the measures for avoidance, minimization, handling, recycling, storage, transportation, and disposal of waste from the works.

2. Organizational Structure for Waste Management

2.1 Waste Management Structure

A Team has been set up to manage and control waste issues for the construction. The following paragraphs outline the primary responsibilities and duties of the key participants with respect to waste management.

Responsibilities and duties of the key parties involved in waste management for the Project are provided below:

The Engineer/ Engineer's Representative

- Monitor the Contractor's compliance with contract specifications, including the effective implementation and operation of the WMP; and
- Instruct the Contractor to follow the agreed protocols or those in the contractual specifications, if necessary.
- Comply with the agreed follow-up action in the event of any non-conformance or complaint.

Contractor

- Ensure compliance with the procedures and recommendations set out in this WMP;
- Work within the scope of the Contract and other statutory requirements;
- Participate in the site inspections undertaken by the Environmental Team; and
- Take responsibility and strictly adhere to the guidelines of the Project Specification and all statutory requirements.

2.2 Duties and Responsibilities

Several key personnel within the Contractor's organization are responsible for waste management. Roles and responsibilities of these key personnel are as follows:

Project Manager

The Project Manager is the Management Representative of the Contractor. His responsibilities include:

- Oversee the implementation of the WMP; and
- Assign adequate resources for the implementation of the WMP.

Assistant Project Manager

The Assistant Project Manager is the Site Representative of the Contractor. He is resident on site and is the point of contact for the day-to-day waste management issues. His responsibilities include:

- Ensure all workers (including sub-contractors) comply with the mitigation measures stipulated in the WMP by checking on site at regular intervals;
- In the event of unacceptable work practice or infringements of the WMP requirements, inform the workers (including sub-contractors) the correct procedures and ensure that they understand and agree to follow, and afterwards check whether they have followed the correct procedures;
- In the event of recurring non-compliance or unwillingness of site workers (including sub-contractors) to follow correct procedures, inform and discuss with the Project Manager and carry out necessary actions;
- Follow the procedures stipulated in the agreed follow-up action in the event of non-compliance or complaint;
- Discuss waste management concerns with the Engineer and other staff of the Contractor.

Site Engineer/ Environmental Engineer

Site Engineer and Environmental Engineer are resident on site and will assist the Assistant Project Manager to perform day-to-day waste management issues. Their responsibilities include:

- Provide waste management training to the relevant staff;
- Accompany the Engineer's representative at the site waste management monitoring and audits;
- Maintain all relevant waste management records stipulated in the WMP;
- Arrange the documentation of trip ticket system such as set up of system, application of necessary chits and keep contemporary record.

Environmental Supervisor

Environmental Supervisors are resident on site and will assist the Assistant Project Manager to perform day-to-day waste management issues. Their responsibilities include:

- Assist the Environmental Engineer carrying out his duties;
- Carry out daily site inspections to ensure that follow-up action have been taken promptly against defects and deficiencies identified;
- Advise the Environmental Engineer on the upkeeping of performance and standards of the site;
- Supervise and promote the execution of waste management by the workers on site;
- Implement the trip ticket system as set out by the Environmental Engineer, distribute and collect and chits.

2.3 Organization Chart

Table 1 Contact Information of Key Personnel

Name	Position	Tel.
Howard Kong	Project Manager	9330 6897
Alice Leung	Assistant Project Manager	6123 2859
Henry Lai	Site Engineer	9325 5537
Ryan Yu	Environmental Engineer	9783 0010
T.W Leung	Environmental Supervisor – Sub-agent	6856 2360
P.K. So	Environmental Supervisor – Foreman	9300 3559

2.4 Regular Information Flow

Several means of communication are developed to promote the flow of information among the different parties. They are summarized in Table 2.

Table 2 Means of Communications on Waste Management Issues

Means	Frequency	Purpose/Action	Responsible Party
Waste Management correspondence	As required	Written communication among the MTR, SFK and EPD	Assistant Project Manager, Site Engineer, Environmental Engineer
Notice of non-compliance , complaint	As required	Written notification to different members of the SFK requesting appropriate actions	Assistant Project Manager, Site Engineer, Environmental Engineer
Licenses and permits	As required	On receipt of a license or permit, the original shall be kept at the site office and a copy shall be sent to Engineer and Project Manager.	Assistant Project Manager, Site Engineer, Environmental Engineer
Site inspection	Continually	Promote awareness of environmental procedures among workers and sub-contractors via continual, casual conversations	Environmental Engineer, Environmental Supervisor
Waste Management records	Continually	Records of waste disposal, permits, communications, etc.	Environmental Engineer, Environmental Supervisor

3. Waste Targets and Waste Management

3.1 Statutory Requirements

Waste would be disposed in accordance with the following statutory requirements: -

- Waste Disposal Ordinance (Cap. 354)
- Waste Disposal (Chemical Waste) (General) Regulation
- Waste Disposal (Permits and Licenses) (Forms and Fees) Regulation
- Dumping At Sea Ordinance (Cap. 466) (Not Applicable for this Project)
- Waste Disposal (Amendment) Ordinance 1991
- Waste Disposal (Amendment) Ordinance 1995
- Waste Disposal (Amendment) Ordinance 1997

3.2 Types of Waste Material

- General Refuse
- Construction & Demolition (C&D) Material
- Chemical Waste
- Municipal Waste

3.3 Source of Waste Material

- General Refuse

General refuse will be produced from the labour force on site and mainly consists of office waste, food and packaging wastes.

- Construction & Demolition (C&D) Material

The C&D Material can be divided as Non-Inert (C&D Waste) & Inert (C&D Waste).
Non-inert C&D material will be arisen from the steel and wood from hoarding; steel bars from concrete reinforcement activities; tress and plants from site clearance; timber from temporary work (formwork & falsework) as well as wrapping material such as paper and plastics.
All metals as well as cardboard and paper packing will be recovered by recycling contractors.

Inert C&D material will be generated from general earthwork, concrete from construction and demolition work, rocks form site clearance and formation, unusable surplus concrete/grouting mixes as well as damaged / surplus construction materials.
Broken concrete from demolition or road improvement works that are suitable for recycling will be used as material for recycling.

- Chemical Waste

Chemical wastes are commonly generated from maintenance and servicing activities of plant / machines and vehicles. Chemical waste can be classified into 2 statuses: Solid & Liquid.

Solid waste includes empty fuel / lubricant drums and used oil / air filter, etc. Liquid waste includes spent mineral oils, cleaning fluids waste oil, grease, spent solvent, detergent produced from cleaning activities, paint application, surplus paint, used engine oil, hydraulic fluid, waste fuel and shutter release agents, etc.

- Municipal Waste

Municipal waste (including sewage waste) is produced from the composition of food waste, packaging and waste paper that has potential to cause odor that negatively affects air and water quality as well as health.

3.4 Waste Targets

Targets set for this project should cover the followings:

- All waste materials to be sorted for recovering the inert portion of C&D materials, e.g. hard special fill and broken concrete, for reuse on the Site or disposal to designated outlets;
- All metallic waste to be recovered for collection by recycling contractors;
- All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
- All chemical wastes to be collected and properly disposed of by specialist contractors;
- All demolition debris to be sorted to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fittings/materials that have established recycling outlets.

The target set for reducing and controlling the use of timbers in the Temporary Works.

3.5 Estimated Amount of Waste

Detailed information such as estimated volume of different types of waste, e.g. construction and demolition (C&D) material and general refuse, generated from construction activities at various works area of the Project at different times during the construction programme, as well as the proper transportation, storage, and the disposal methods and the final disposal sites for different wastes. All measures recommended in the deposited WMP shall be fully and properly implemented. There are no waste generations before project commencement date of 10 August 2009.

Table 3 Estimated Amount of Waste

Waste Type	Examples	Source	Estimated Amount	Generation Period
Inert Portion of C&D materials				
Reused in the Contract	Rock, concrete, brick, soil	Construction of structure	50 m^3	10 Aug 2009 to 1 Sep 2009
			120 m^3	2 Sep 2009 to 1 Oct 2009
			200 m^3	2 Oct 2009 to 1 Nov 2009
			80 m^3	2 Nov 2009 to 1 Dec 2009
			50 m^3	3 Dec 2009 to 15 Dec 2009
Disposed of inert C&D material	Rock, concrete, brick, soil	Construction of structure	150 m^3	10 Aug 2009 to 1 Sep 2009
			200 m^3	2 Sep 2009 to 1 Oct 2009
			300 m^3	2 Oct 2009 to 1 Nov 2009
			300 m^3	2 Nov 2009 to 1 Dec 2009
			400 m^3	2 Dec 2009 to 1 Jan 2010
			300 m^3	2 Jan 2010 to 1 Feb 2010

Waste Type	Examples	Source	Estimated Amount	Generation Period
			200 m^3	2 Feb 2010 to 1 Mar 2010
			150 m^3	2 Mar 2010 to 1 Apr 2010
Non-inert portion of C&D materials (C&D waste), including general refuse				
Chemical waste	Used oil, spent solvent	Anti Malarial oil for pest to suffocate mosquito larvae	0.5 m^3	10 Aug 2009 to 1 Sep 2009
			1 m^3	2 Sep 2009 to 1 Oct 2009
			1 m^3	2 Oct 2009 to 1 Nov 2009
			1.5 m^3	2 Nov 2009 to 1 Dec 2009
			1.5 m^3	2 Dec 2009 to 1 Jan 2010
			2.5 m^3	2 Jan 2010 to 1 Feb 2010
			1 m^3	2 Feb 2010 to 1 Mar 2010
			1 m^3	2 Mar 2010 to 1 Apr 2010
Metals	Office waste, can, XPM mesh and steel	Decoration work	5 m^3	10 Aug 2009 to 1 Sep 2009
			10 m^3	2 Sep 2009 to 1 Oct 2009
			10 m^3	2 Oct 2009 to 1 Nov 2009
			15 m^3	2 Nov 2009 to 1 Dec 2009
			15 m^3	2 Dec 2009 to 1 Jan 2010
			25 m^3	2 Jan 2010 to 1 Feb 2010
			10 m^3	2 Feb 2010 to 1 Mar 2010
			10 m^3	2 Mar 2010 to 1 Apr 2010
C&D waste to be re-used	Wood, bamboo	Construction of structure	1.5 m^3	10 Aug 2009 to 1 Sep 2009
			3 m^3	2 Sep 2009 to 1 Oct 2009
			3 m^3	2 Oct 2009 to 1 Nov 2009
			4.5 m^3	2 Nov 2009 to 1 Dec 2009
			4.5 m^3	2 Dec 2009 to 1 Jan 2010
			7.5 m^3	2 Jan 2010 to 1 Feb 2010
			3 m^3	2 Feb 2010 to 1 Mar 2010
			3 m^3	2 Mar 2010 to 1 Apr 2010
Others, e.g. general refuse	Plastic, vegetation, refuse on land	Construction of structure	25 m^3	10 Aug 2009 to 1 Sep 2009
			50 m^3	2 Sep 2009 to 1 Oct 2009
			50 m^3	2 Oct 2009 to 1 Nov 2009
			75 m^3	2 Nov 2009 to 1 Dec 2009
			75 m^3	2 Dec 2009 to 1 Jan 2010
			125 m^3	2 Jan 2010 to 1 Feb 2010
			50 m^3	2 Feb 2010 to 1 Mar 2010
			50 m^3	2 Mar 2010 to 1 Apr 2010

3.6 Waste Disposal Sites

The C&D Material can be divided as Non-Inert (C&D Waste) & Inert (C&D Waste). Non-inert C&D material will be arisen from the steel and wood from hoarding; steel bars from concrete reinforcement activities; trees and plants from site clearance; timber from temporary work (formwork & falsework) as well as wrapping material such as paper and plastics. The disposal sites for the above types of wastes are shown below in Table 4.

Table 4 Waste Disposal Sites

Waste Type	Disposal Site
Inert Portion of C&D materials	
Inert C&D Waste that can be reused and/or recycled in site area	Internal reuse for backfilling or temporary haul road.
Surplus C&D Waste to be delivered to public filling facilities	Surplus C&D Waste will be dumped at Chai Wan Public Fill Barging Point or public filling area at Tseung Kwan O Area 137 or any other authorized locations within the Territory of the HKSAR
Non-inert portion of C&D materials (C&D waste), including general refuse	
Chemical waste	Chemical Waste Treatment Facility at Tsing Yi; or other facilities approved by EPD
C&D waste to be recycled	*delivered to private recycle industry*
C&D waste to be re-used	*delivered to private recycle industry*
C&D waste to be returned	*delivered to private recycle industry*
C&D waste which cannot be reused or recycled and has to be disposed at landfill sites	SENT Landfills, or any other authorized locations within the Territory of the Hong Kong Special Administrative Region.

3.7 Storage Locations and Transportation Routes

All construction vehicles are limited to enter and leave the site at only one entrance / exit. The following wastes will be stored on site with location and the transportation route will be shown on Appendix A (Table 5). To handle and dispose of the large quantity of C&D material off-site from the works areas with least environmental impacts to the local community, C&D waste for the project would be transported by trucks to the Chai Wan Public Fill Barging Point via the Central Harbour.

4. On-Site Sorting of C&D Materials

4.1 Hierarchy of Waste Management Practices

The various waste management options can be categorized in terms of preference from an environmental point of view. The options considered to be more preferable are to make the least impacts on environment and are more suitable in a long-term context. Hence, the hierarchy of waste management practices is developed as follows:

1. Change or improve the practices and designs for avoiding and minimizing generation of waste.
2. Reuse, recover and recycle the material so as to avoid waste disposal.
3. Treat and disposal of waste in accordance with the relevant legislative requirements,

guidelines and good practices.

The hierarchy should be used to evaluate waste management options, thus allowing maximum waste reduction as well as the cost reduction.

Details of waste management and procedures, and criteria of environmental performance for waste management are presented in the stand-alone Waste Management Plan (WMP). This section provides a summary of the procedures as set out in the WMP.

The Contractor will adopt a waste management hierarchy for this project. The waste management options will be categorized in terms of preference from an environmental viewpoint. The options considered to be preferable have the least impacts and are more sustainable in long term. The hierarchy is as follows:

1. Avoidance and minimization, i.e. not generating waste through changing or improving practices and design;
2. Reuse of materials, thus avoiding disposal generally with limited reprocessing;
3. Recovery and recycling, in which substantial reprocessing may be required; and
4. Treatment and disposal, according to relevant laws, regulations, guidelines and good practice as the last option

The hierarchy is used to evaluate and select waste management options. The aim is to reduce and minimize the amount of waste to be generated and hence reduce the waste handling and disposal costs. For example, by reducing or eliminating over-ordering of construction materials, waste is avoided, and costs are reduced both in terms of purchasing and in disposal of wastes.

Waste arising from the Project will include site construction and demolition materials, wooden waste, metallic waste, chemical waste, aqueous waste, wheel wash water and sewage.

4.2 On-site Sorting for Disposal of or Recycle

C&D Materials

- All construction wastes will be sorted on site into inert and non-inert components include:
  - Concrete/brick/aggregates;
  - Timber/wood;
  - Paper/cardboard;
  - Metal and etc.
  - Glass/plastic
- Non-inert materials (wood, glass and plastic) will be reused or recycled and only disposed

to landfill as a last resort whilst inert materials (aggregate, rubble, sand, rock, brick and concrete) will be separated and disposed of at public filling areas operated by CEDD. Steel and other metals will be recovered from demolition waste and recycled as far as practicably possible.

- Environmental Supervisor should instruct Sectional In-Charge to carry out on site sorting during the daily cleanliness and tidiness activity, a designated area should be demarcated from the workplace to facilitate the on site sorting and for storage.
- In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or inert C&D material will have their load covered. Vehicles will be routed as far as possible to avoid sensitive receivers in the area.
- Recycled inert C&D material can be used in the works as sub-bases for access roads, construction works roads and footpaths. Unbound aggregate can be easily used in road construction. Recycled aggregates can be used in concrete. Some recycled rock material can be reused in the gabions.
- Dry concrete waste will be sorted out from the other wastes and recycled into aggregates for concrete production and construction of road sub-base.

Wooden Waste

- All wooden materials used on site will be kept separate from other wastes. Wooden boards can be reused on site although the reusability and quantity of final waste depends on the shape and quality of the boards. Boards used will be capable of being reused at least five times, thus keeping the wastage rate down to around 20%. Timber which cannot be reused should be sorted and stored separately from all inert waste before being disposed of to landfill. On completion of the construction phase, the boards will be sorted and grouped then distributed to other construction sites.

Metallic Waste

- Reusable steel shutters will be used as a preferred alternative to formwork and falsework where possible. All metallic waste to be recovered for collection by recycling contractors.

Chemical Waste

- Hard standing, impermeable surfaces draining via oil interceptors will be provided in works area compounds. Interceptors will be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor will have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers will be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.
- Any construction plant which is likely to leak oil, will have absorbent inert material e.g.

sand, placed beneath it. This material will be replaced on a regular basis and the contaminated material stored in a designated, secure place. Such relatively inert material is suitable for landfill disposal and can be disposed of via the normal waste stream.

- Used lubricants will be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.
- Oil and lubricant wastes are classified as chemical wastes, and if not recycled, will be treated at the Chemical Waste Treatment Centre, Tsing Yi, or other sites licensed for the disposal of waste oil. SFK will register as chemical waste producer with EPD if chemical waste is produced and the chemical waste should be collected by licensed collector.
- Empty paint cans will be recycled or collected as waste. Any dry paint waste will be swept up and collected in containers for disposal.
- Storage areas will have adequate ventilation and be covered to prevent rain entering.
- A licensed collector under the list of Environmental Protection Department is responsible for the disposal of waste oil.

Aqueous Waste

- Requirements designed to protect against surface runoff include the use of sediment traps, settlement ponds, special drainage channels and bunding. Discharges from concrete works will be high in suspended solids and pH. These washings must be settled in a sedimentation pit, and possibly treated to reduce pH before discharge. Oil interceptors will be used where oily wastes are present, and must have a bypass for ease of disposal of oily wastes. Landtake under stockpiles or open working areas must be minimised wherever practicable and the stockpiles will be covered and bunded to reduce erosion and sediment release. Runoff from the stockpiles will be collected in sediment traps. Solids accumulated in the sand traps, settlement tanks, manholes, and stream beds must be cleared out regularly and disposed of accordingly in order to maintain an effective system.

Wheel Wash Water

- All vehicles leaving any of the works areas must pass through a wheelwash at the site access/exit. If, at any time, further entry/exit points are created, they must be provided with similar facilities. The wheelwash must be regularly cleaned to remove sediment, a process which may produce a large volume of wastewater. To prevent excess sedimentation, and minimise possible contamination of local streams and water courses, these wastewaters will be directed into settlement ponds as far as practicable. The wastewater can then be reused on site. The maintenance of the wheelwash will be the responsibility of the Contractor undertaking the construction works.
- If the waste water contains a significant amount of oil and grease from vehicles, areas of sand for absorbing oily wash water will be set up by SFK.

Sewage (Municipal/Domestic Waste)

- A temporary refuse collection station will be set up by SFK. Municipal waste should be collected regularly in black refuse bags and delivered to an approved Refuse Transfer Station or landfill as required by the Food and Environmental Hygiene Department (FEHD).
- SFK will provide different skips for collecting different types of recyclable waste. Arrangements will be made directly with the recycling companies, for example, the paper merchants, to collect the waste as required.
- SFK will act as the overall co-ordinator for the management of waste. A Waste Management Plan will be prepared and implemented following the requirements of WBTC 15/2003. The Waste Management Plan (WMP) will be submitted to the Engineer for approval.
- Records of quantities of waste generated, recycled and disposed of will be kept (including disposal sites). SFK will take steps (which are outlined in the WMP) to avoid and minimise C&D waste generation where possible, and to maximize the use of recycled C&D waste.
- Waste disposal permits or licenses will be obtained. Only licensed waste haulers can be used. Waste will be disposal of at licensed sites.
- SFK will use a trip ticket system in accordance with WBTC 21/2002 for the disposal of C&D materials to any designated public filling facility and/or landfill.
- Training will be provided for workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reuse and recycling

Waste Sorting

Sufficient space will be provided to accommodate the separation of inert and non-inert materials and a unique access checkpoint with security control. The SM will manage the waste sorting facilities and a C&D waste separation area in order to 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 waste separation area will be fence off & well covered in order to prevent leakage of waste by wind. The proposed area would be shown on appendix A.

5. Documents and Records

The appropriate licenses, records of trip ticket system and waste flow table will be kept on site and submitted to the Engineer from time to time. The Environmental Engineer are responsible for keeping waste management records on site. These records include, but not limited to, the following:

- relevant licences and permits, including application for billing account for disposal of construction waste, effluent discharge licence and registration as chemical waste producer

- records of quantities of waste generated (daily and monthly), recycled and disposed off (including the disposal sites), refer Appendix B for template of monthly summary waste flow table and Appendix C for template of daily disposal record.
- any waste management training record
- photograph

5.1 Trip-ticket system and Chit System

For effective control for waste dumping, trip ticket system be implemented for proper disposal of C&D material at designated public filling facilities or landfills for:

- Transporting inert waste to designated inert C&D waste at Chai Wan Public Fill Barging Point.

5.1.1 Implementation of Trip-ticket and Chit System

- SIC should man, provide and keep the Chit for each and every vehicular trip transporting C&D material off site including Public Fill or C&D Waste. The Form should be completed in duplicate for non-inert materials and one for inert material.
- *'Rules for Dump Truck Driver before Leaving Site' shall be displayed.*
- *Only dump truck with mechanical cover shall be allowed.*
- Prior to the vehicle leaving the site:
  - the SIC should present the completed Construction & Demolition Material Disposal Delivery Form and Chit to ER. The completed form should be inserted with the Time of Departure and stamped.
  - SFK shall monitor/check each dump truck prior leaving the site.
- The original of the Form and chit should be returned to AP on the same day of the vehicular trip and a copy should be kept by ER. The Form should be carried out on board by the vehicle at times throughout the vehicular trip.
- The truck shall proceed to the disposal ground as stipulated in the DDF and chit. The truck driver shall present the DDF and chit to the facilities operator.
- The return of stamped Construction & Demolition Material Disposal Delivery Form and Chit should be passed to AP within 1 working day.
- The return of stamped Construction & Demolition Material Disposal Delivery Form and Chit should be faxed within 2 working days and followed by post within 2 weeks after the vehicular trip to the Architect's Representative.

5.1.2 Disposal

- Only truck drivers bearing valid Dumping Licence are employed for waste disposal.

- All C&D wastes should be disposed at designated landfills.

5.1.3 Follow-up Action where Irregularities are observed

Where the retrieval of the receipt from the disposal grounds could not be passed to AP within the specified time, a warning letter will be sent to the concerned sub-contractor immediately to urge them to trace back the missing receipt.

Where an irregularity is observed or where requested by the Architect's Representative under special circumstances, the AP shall submit to the Architect's Representative within 5 working days after the recorded date of disposal the supporting evidence such as duly the transaction receipt (where relevant) to confirm proper completion of the delivery trips in question, or within 2 working days after the Architect's Representative has requested for such evidence, whichever is later.

5.1.4 Surveillance

A surveillance system should be established within the Site and at any alternative disposal grounds to check that the disposal activities comply with the Contract requirements. The following procedures should be established:

- The chit should be passed to AP within 1 working day for checking of the correctness of the disposal ground.
- The AP should also check whether the trucks were being overloaded and a warning letter would be issued to the concerned sub-contractor/ truck driver for repeated overloading.
- If irregularities/ non-conformities were found, the AP should review the site procedures and report the case(s) in the SSEMC meeting for discussing the necessary follow-up actions.

5.1.5 Recording System

Amount of waste disposed should be clearly recorded and the following records should be available for inspection upon request:

a. A comprehensive register of the chit issued.
b. Construction & Demolition Material Disposal Delivery Form and Chit for each and every vehicular trip transporting C&D material off site including Public Fill or C&D Waste (Stamped Construction and Demolition Material Disposal Delivery Form shall be faxed within 2 working days and followed by post within 2 weeks after the

vehicular trip to the Architect's Representative).

c. Daily record of disposal of C&D materials from the Site including details of the C&D materials, the truck number, departure time, etc, using the Daily Record Summary (DRS).

d. The AP shall submit the duly completed Part 1 of the DRS form promptly to the ER by 1:00pm of the working day following the date of disposal.

e. For disposal at government disposal facilities, the AP shall check the information recorded in the DRS against available information including his own records and data from CEDD's website [http://www.cedd.gov.hk/eng/services/tripticket/index.html] and then complete Part 2 of the DRS form for submission to the Architect's Representative within 3 working days after the date of disposal.

5.1.6 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, a check list will be used to record the time of departure, vehicular number, and the time and location of re-entering of the Site to ensure that the C&D materials are not disposed of outside the Site.

6. Environmental Training and Awareness

6.1 General

The raising of environmental awareness is viewed as a crucial element in the appreciation and implementation of the Environmental Plan. As a consequence all staff will undergo environmental awareness training.

Initial induction training will include training on the significant environmental impacts associated with the project and will specifically address the following areas of the contract:-
Noise and vibration control at nominated sensitive facades
Prevention of pollution to watercourses
Dust prevention
Litter and housekeeping
Waste management

6.2 Environmental Training for Site Managerial Staff

Sun Fook Kong (SFK) shall ensure that all site management staff including project manager and site agent etc. on the works shall have attended and completed the "Environmental Management Course for Construction Managers" run by CITA or similar training institutions as agreed by the Engineer.

6.3 Environmental Training for Environmental Supervisor

SFK shall ensure that all the Environmental Supervisor shall have attended and completed the "Environmental Protection Course for Environmental Supervisors" or equivalent organized by CITA or similar training institutions as agreed by the Engineer.

6.4 Site Environmental Specific Induction and Site Environmental Specific Induction Refresher Training

SFK shall ensure that the site specific induction training cover environmental management in addition to safety for all staff and worker new to site within 2 days of their commencement of their work in a form as part of Site Safety and Environmental Induction Training. The environmental part of the induction training will be delivered by the Environmental Engineer or Environmental Supervisor or the Assigned Person, as applicable.

The training content will cover subjects such as organization structure, duties and responsibilities, policy, targets, control measure for on-site sorting C&D materials and measurement on environmental and waste management on site measure, in-house rules and regulations etc. The duration of the site specific induction training shall be extended by at least 15 minutes to cover the necessary subjects on environmental management.

SFK will provide toolbox talks for workers on environmental nuisance abatement and waste management in addition to safety and health weekly.

Training on waste management, including the policy, targets, control measure for on-site sorting C&D materials and measurement on waste management on site should be provided to site staff and worker new to site within 2 days of their commencement of their work in a form as part of Site Safety and Environmental Induction Training.

Site staff and workers should attend the Site Environmental Specific Induction Refresher Training at an interval of every 6 months.

The trainer for these trainings should be competent person having attended the training on waste management organized by approved training institutes or organizations.

6.5 Tool Box Talk Training

Tool Box Talk concerning the topic on on-site sorting of C&D materials, handling, sorting, reuse and recycling of C&D materials should be provided to site workers at a regular basic.

The Environmental Tool Box Talk Programme should be included in the Monthly Training Programme.

The trainer for these trainings should be competent person having attended the training on waste management organized by approved training institutes or organizations.

6.6 Training Record

All attendance record will be maintained in the site office. The attendance record will be computerized by the end of each month.

All training record and list of attendees for a calendar month will be inclusive in the monthly report and to be discussed over Site Environmental Management Meeting and Site Environmental Committee Meeting.

Topics of toolbox training to be provided to workers on environmental nuisance abatement and waste management include but without limitation to the followings:

1) Air Pollution Abatement
2) Noise Pollution Abatement
3) Wastewater Pollution Abatement
4) Construction Waste Abatement

7. Monitoring and Audit of Implementation of WMP

7.1 Waste Management Review

Waste Management Review provides a direct means to ensure the compliance with specified waste management procedure as per the requirements stipulated in relevant legislations, contractual requirements and in-house requirements. Environmental Engineer is responsible for the formulation of the site review to evaluate the effectiveness and efficiencies of the existing waste managements and find out the room for improvement as well.

The review programme will be scheduled by the Environmental Engineer and he should take to the followings as reference when conducting review:

- Ensure that waste arising from works are handled, stored, collected, transferred and disposed of in a an environmentally acceptable manner;
- Ensure that the handling, storage, collection and disposal of waste, arising from the demolition works, are fully complied with the requirements of relevant waste management legislations
- Encourage the reuse and recycle of materials

7.2 Waste Management Audit

Waste Management audit will be included in the Environmental Management Plan and will be submitted separately.

Appendix A

Storage Location and Transportation Route

LEGEND

Boundary of Works Area

WORKS AREA FOR 704 (2,000 sq.m)

WORKS AREA FOR 705 (810 sq.m)

WORKS AREA FOR 703 (1,305 sq.m)

WORKS AREA FOR 701 (430 sq.m)

EMERGENCY STOCKPILE AREA FOR 705 (1,288 sq.m)

CARPARK (50 NOS.)

SITE OFFICE

CRUSHER NOISE AND DUST ENCLOSURE

EXTERNAL SHOWER BLOCK (REFER TO 714/T/300/SFK/A12/501)

TX PILLAR & MAIN SWITCH ROOM (REFER TO 714/T/300/SFK/A12/601)

OUTLOADING CONVEYOR

Cadogan Street Temporary Garden

Podium

Pier

Ramp

Car Park

SAI SEE STREET

TS

RCP

EVA

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	JACKY CHEUNG
DESIGNED	DAN TANG
CHECKED	FRANCIS HO
APPROVED	K. M. FUNG
DATE	11 JULY 2009

MTR

WEST ISLAND LINE

MAIN CONTRACTOR: SFK SUN FOOK KONG CONSTRUCTION LTD.

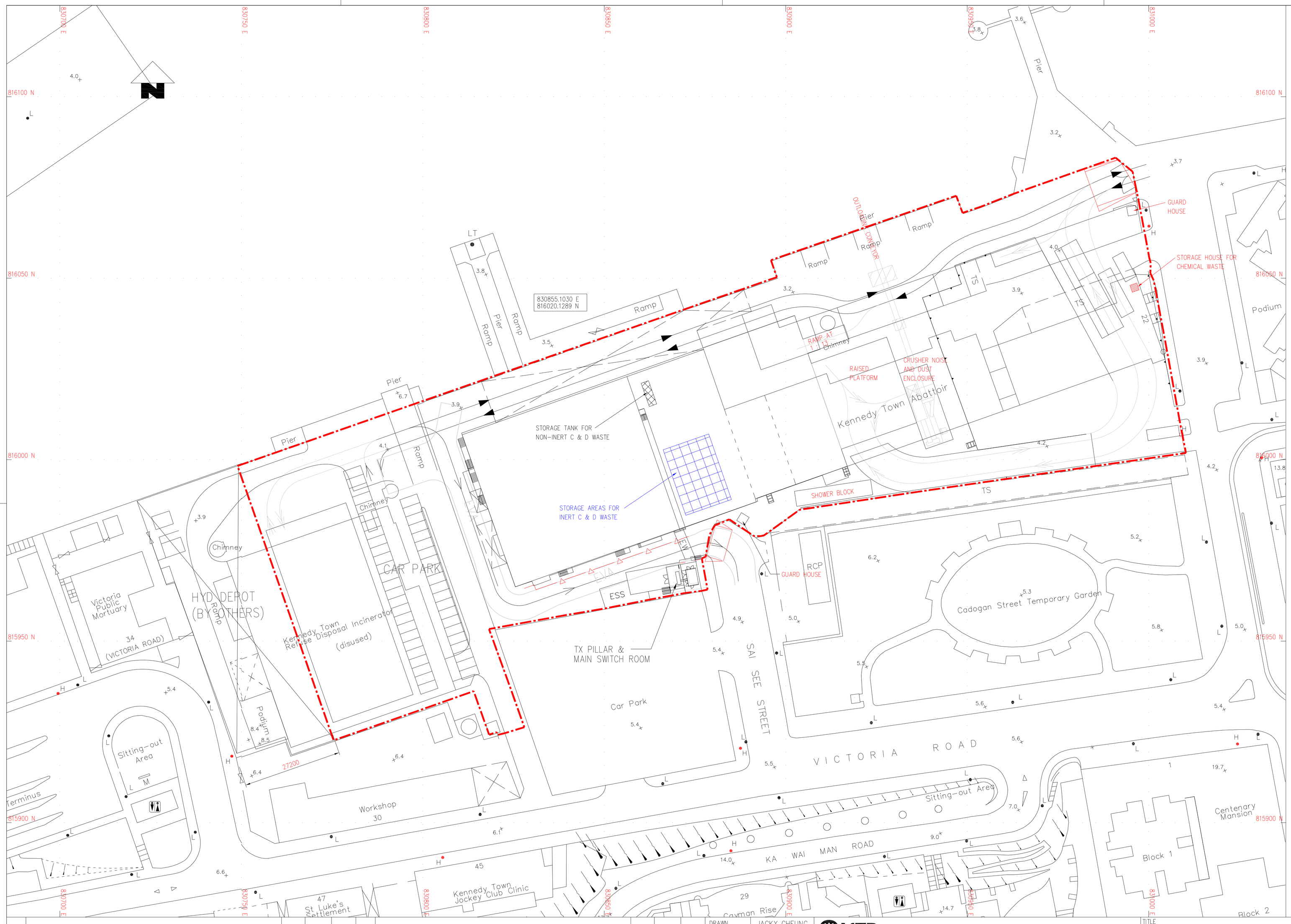
SUB-CONTRACTOR

CADD REF. 714-T-300-SFK-A11-101B

TITLE

CONTRACT 714
PROJECT SITE OFFICE AND WORKS AREAS
SITE PLAN

SCALE	DRAWING NO.	REV.
1 : 500	714/T/300/SFK/A11/101	B



LEGEND :

- SITE BOUNDARY
- PROPOSED GATE
- TRAFFIC FLOW OF CONSTRUCTION VEHICLES
- STORAGE HOUSE FOR CHEMICAL WASTE
- STORAGE AREAS FOR INERT C & D WASTE
- STORAGE TANK FOR NON-INERT C & D WASTE

REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING ISSUE	FH	31 AUG 09	KMF

DRAWN	JACKY CHEUNG
DESIGNED	DAN TANG
CHECKED	FRANCIS HO
APPROVED	K. M. FUNG
DATE	11 JULY 2009

MTR

WEST ISLAND LINE

MAIN CONTRACTOR: SUN FOOK KONG CONSTRUCTION LTD.

SUB-CONTRACTOR

CADD REF. 714-W-300-SFK-C02-001A

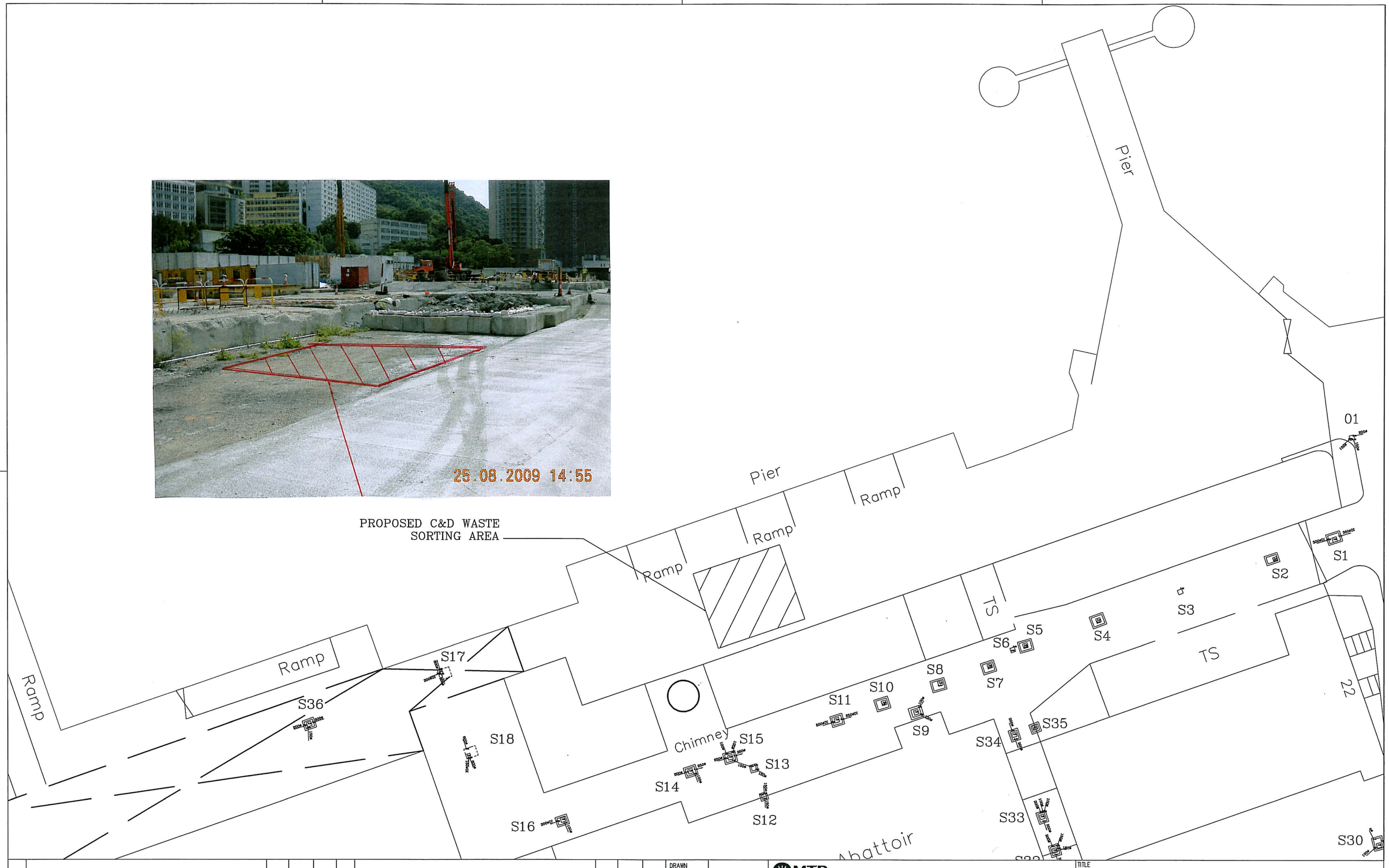
TITLE: CONTRACT 714
PROJECT SITE OFFICE AND WORKS AREAS
SETTING OUT PLAN

SCALE 1 : 500 @A1

DRAWING NO. 714/W/300/SFK/C02/001

REV. A

PROPOSED C&D WASTE
SORTING AREA



REV	DESCRIPTION	BY	DATE	APPROVED
REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

MTR

WEST ISLAND LINE

MAIN CONTRACTOR: SFK SUN FOOK KONG CONSTRUCTION LTD.

SUB-CONTRACTOR:

CADD REF.

TITLE

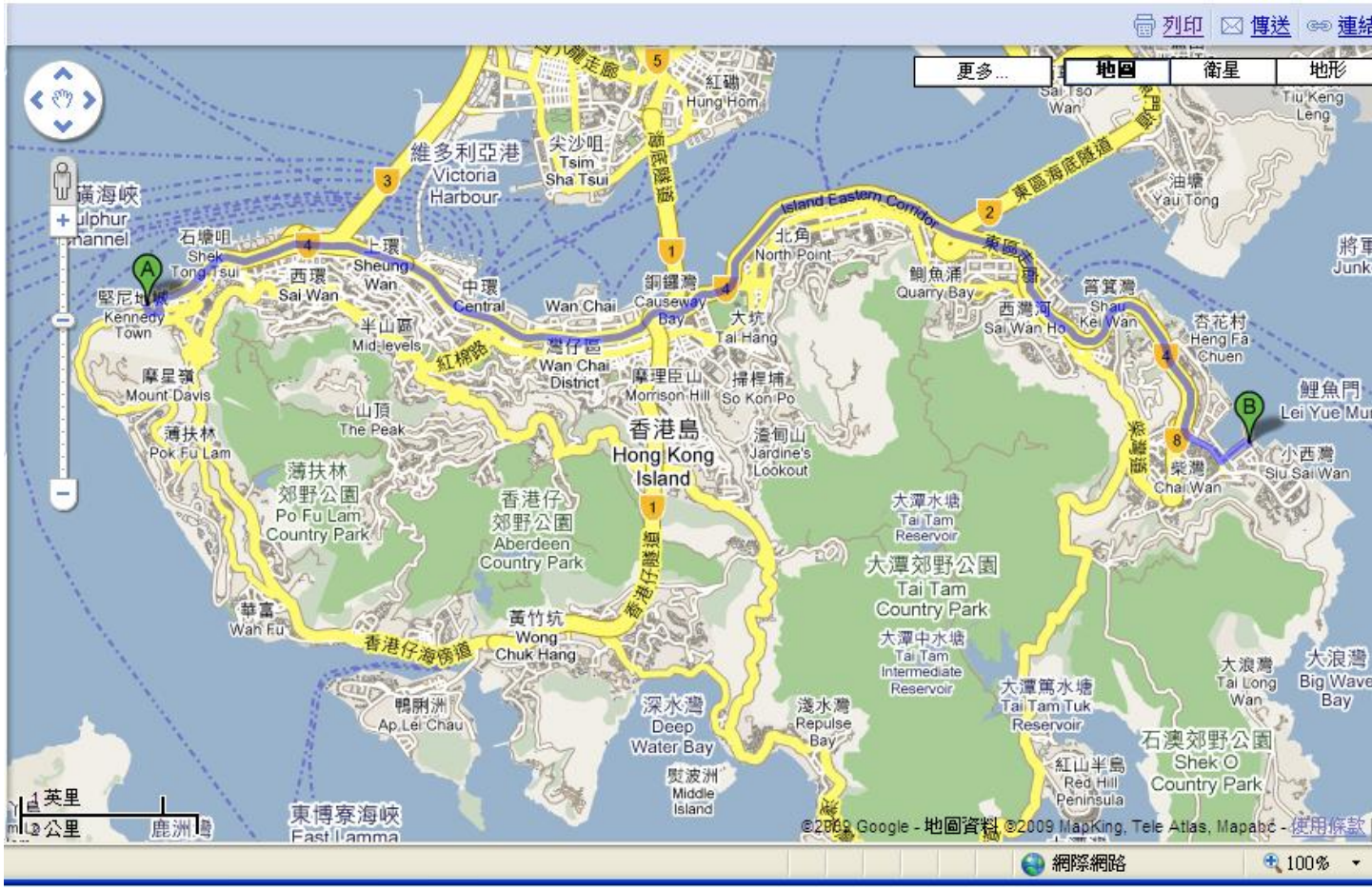
CONTRACT 714
PROJECT SITE OFFICE AND WORKS AREAS
PROPOSED C&D WASTE SORTING AREA

SCALE	DRAWING NO.	REV.

Transportation Route

Table 5 Waste Transport Routes

Types of waste	Transport Routes
Inert C&D waste	Cadogan Street → Connaught Road West → Island Eastern Corridor → Wing Tai Road → Ka Yip Street → Chai Wan Public Fill Barging Point
Recyclable metal waste	Sold to recycle companies



Appendix B

Template of Monthly Summary Waste Flow Table

Name of Department: MTR Corporation Contract No.: 714

Monthly Summary Waste Flow Table for _____ (year)

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

Notes: (1) The performance targets are given in PS Clause 6(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Appendix C

Template of Daily Disposal Record

Disposal Record of Inert C D Materials form Bublic Works Contracts at Public Filling Barging Point At Quarry Bay For the Month of _____

Contract No 合約編號	DDF Serial No 運載記錄票編號	Transaction Ref No 交收備考號碼	Disposal Date 卸置日期	Time In 進入時間	Time Out 離開時間	Vehicle No 車輛登記號碼	GV W 車輛總重	Source of Material 物料來源地	Type of Material 物料類別	Weight In (tonne) 入載重量（公噸）	Net Vehicle Load (tonne) 物料淨重量（公噸）	Remarks 備註
										Total :	0	

Responses to Comments

Section / Dwg No.	Comments	Responses
General		
1	Please provide more detailed and definite description of transportation route for waste disposal based on the best available information. Reference should be made to S.7.16 to 7.18 and tables 7.2 & 7.3 in the approved WIL EIA report and elaborate on the transport (barge/lorry) routes, with at least a tentative or indicative route leading to the major/trunk roads(if by lorry) given for our record to cater for answering potential public concern/ enquiry.	Appendix A show the detailed and definite description of transportation route for waste disposal.
2	It is noted in table 4 that inert C&D waste that can be reused and/or recycled in the site are shall be "delivered to private recycle industry". Please elaborate more on this arrangement and confirm whether the inert C&D waste would likely be delivered to existing quarry and/or construction sites in Hong Kong for re-use, instead of any other inappropriate location	Table 4 shows that inert C&D waste shall be internal reuse for backfilling or temporary haul road. Surplus inert C&D waste will be dumped at Chai Wan Public Fill Barging Point or public filling area at Tseung Kwan O Area 137 or any other authorized locations within the Territory of the HKSAR