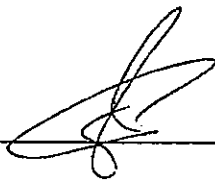


MTR Corporation Limited

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

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Date:

Glenn Frommer
Environmental Team Leader

15 October 2009

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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 addition, 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,
- Spent 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

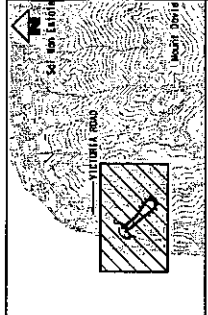
EPD's website (For Non-inert Waste)
www.epd.gov.hk/epd/misc/cdm/trip.htm

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.





KEY LOCATION PLAN

NOTES:

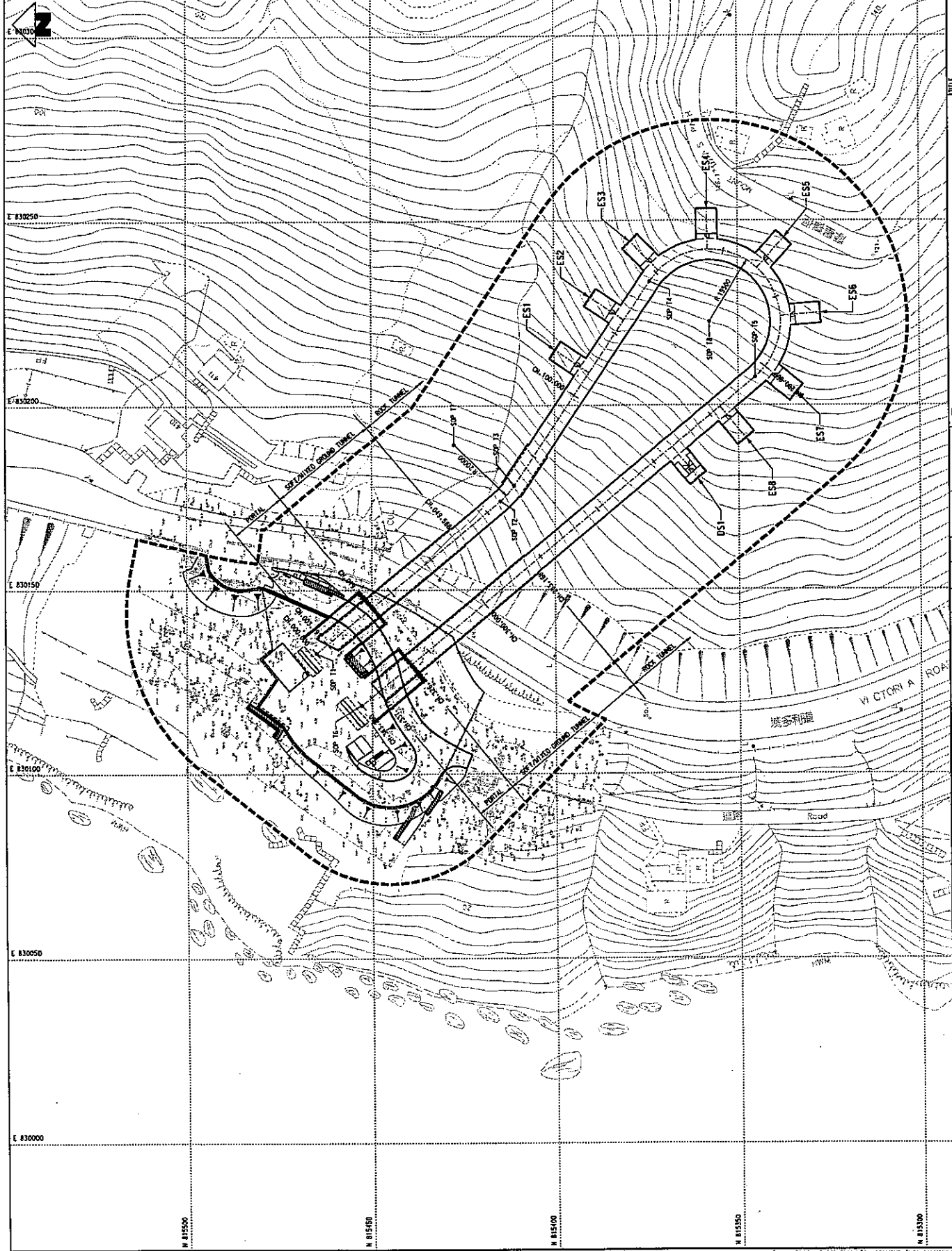
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH TUNNEL PROFILE DRAWING NO. T08/W/306/AAJ/C10/401.
- SURVEYED GROUND TUNNEL AND ROCK TUNNEL INTERSECT TO BE VERIFIED BY PROBE DURING CONSTRUCTION TO CONFIRM WITH THE ENGINEER. ROCK HEAD IS DEFINED AS GRADE 11% OR BETTER ROCK.
- FOR ANGLE OF PORTALS, REFER TO DRAWING NO. T08/W/306/AAJ/C10/380.
- FOR TUNNEL SUPPORT TYPE ALONG TUNNEL ALIGNMENT, REFER TO TUNNEL SUPPORT TYPE PLAN DRAWING NO. T08/W/306/AAJ/C10/401.

LEGEND:

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

SETTING OUT TABLE

SETTING OUT POINT	CHANGING POINT	ELEVATION (M)	NORTHING (M)
SOP 11	000.000	830152.745	815464.828
SOP 12	064.742	830174.695	815414.962
SOP 13	070.448	830118.495	815411.154
SOP 14	137.022	830235.501	815375.931
SOP 15	202.855	830004.599	815345.370
SOP 16	242.290	830118.444	815455.682
SOP 17	N/A	830118.457	815482.745
SOP 18	N/A	830222.815	815351.814



CONTRACT 708
UNDERGROUND MAGAZINE
TUNNEL LAYOUT PLAN

SCALE: 1 : 500 (A1)
 DRAWING NO. 708/W/306/AAJ/C10/400
 REV. A

MTR
WEST ISLAND LINE
Atkins Arup JV
 Supported by
 Aecis Limited, Wipac Limited,
 Kenneh Ng and Associates

DATE: 14/04/2009
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 APPROVED BY: [Name]

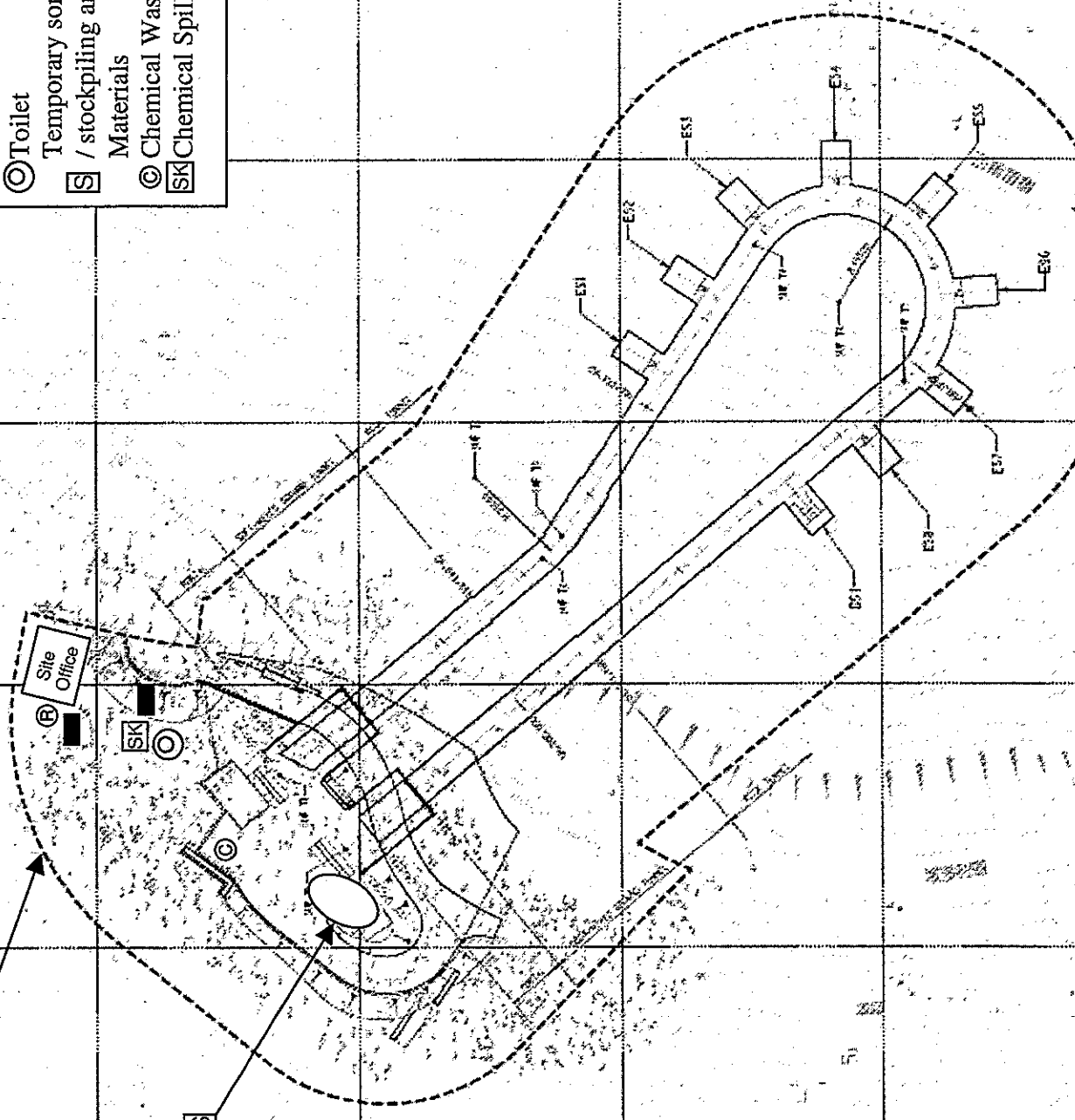
NO.	DATE	BY	DESCRIPTION
1	14/04/2009	[Name]	ISSUED FOR CONSTRUCTION

Figure 2

**Temporary On-site Waste Sorting
Facilities**

**WIL 708
Site Boundary**

- Legend**
- General Refuse Collection Bin
 - ⊕ Collection Bins for Recycling
 - ⊙ Toilet
 - Ⓢ / stockpiling area for C&D Materials
 - ⊙ Chemical Waste Store
 - Ⓚ Chemical Spill Kit



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

Activity Description	Early Start	Early Finish	2009												2010					
			JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG				
Cost Centre A - Preliminaries																				
+ General Requirements	14JUL09	27AUG09																		
Cost Centre B - Site Formation																				
+ Preliminary Site Works	27JUL09	30SEP09																		
+ Geotechnical & Slope Works	10AUG09	16SEP09																		
Cost Centre C - Portal, Tunnel & Explosive Store																				
+ East Portal Works	10AUG09	15MAY10																		
+ West Portal Works	10AUG09	15MAY10																		
+ Tunneling from East Portal	30OCT09	13APR10																		
+ Tunneling from West Portal	08OCT09	13APR10																		
+ Miscellaneous Tunnel Works	02APR10	05MAY10																		
Cost Centre D - E&M Works																				
+ Install E&M Services - Tunnels & Stores	14APR10	19MAY10																		
+ Install E&M Services - Other Areas	24MAR10	13MAY10																		
+ Testing & Commissioning Works	03MAY10	31MAY10																		
Cost Centre E - Associated & External Works																				
+ Geotechnical Instrumentation	07AUG09	21OCT09																		
+ Ancillary Buildings	13MAR10	17APR10																		
+ External Works	13MAR10	27JUL10																		
Statutory Inspection, Approval & License																				
+ Submissions, Inspections & Approvals	29JUN10	02AUG10																		

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

Sheet 1 of 1

Date		Revision		Checked		Approved	
02SEP09		C708 Works Programme					

Gammon Construction Limited

708F

Early Bar
Progress Bar

© Primavera Systems, Inc.

APPENDIX B

**The Gammon's Health, Safety and
Environmental Policy**

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.

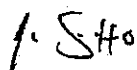
We regard excellence in health, safety & environmental performance, the incorporation of sustainability principles and positive engagement with our stakeholders as critical to our success.

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:

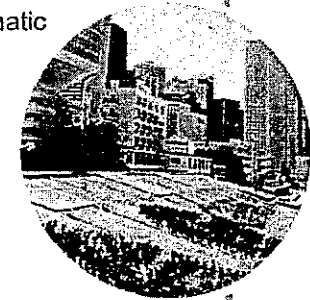
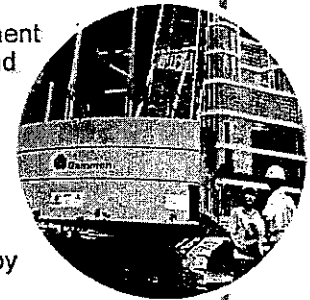
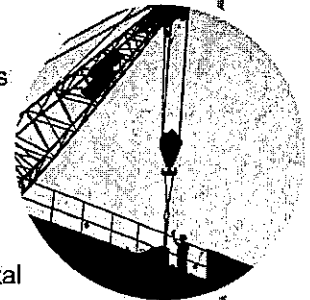
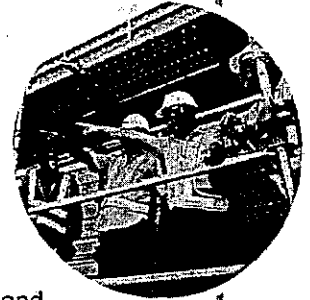
- o Place health and safety as our number one priority over all other Business considerations;
- o Require the highest standards of health, safety and environmental leadership from all our managers who should ensure that effective systems of control are in place for all operations;
- o Treat compliance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





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 safety 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：

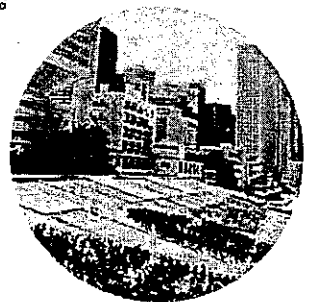
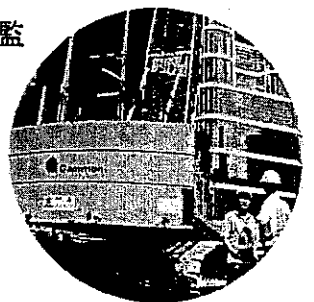
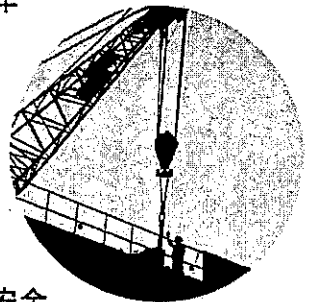
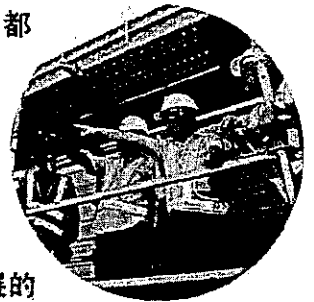
- 視健康和 safety 為比任何業務考慮更為重要的優先事項；
- 要求所有經理為員工建立最高準則的健康及 safety 領導，並確保所有工程遵守有效的管理程序；
- 以遵從法律及合約條款為金門的最基本要求，從而達致卓越的健康、安全及環保成效；
- 投放足夠資源推行一套達致健康、安全和環保目標的管理系統；
- 為員工和業務夥伴提供有關法例和良好作業守則的資訊、培訓、指導和監督，從而提升對健康、安全、環保的關注，以及金門對持續發展的承諾；
- 追求創新及持續複檢建造設計和方法，從而消除風險和加強保障員工的健康和 safety，預防污染，或更有效地保護環境；
- 與建造行業融合及透過不斷提升健康、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

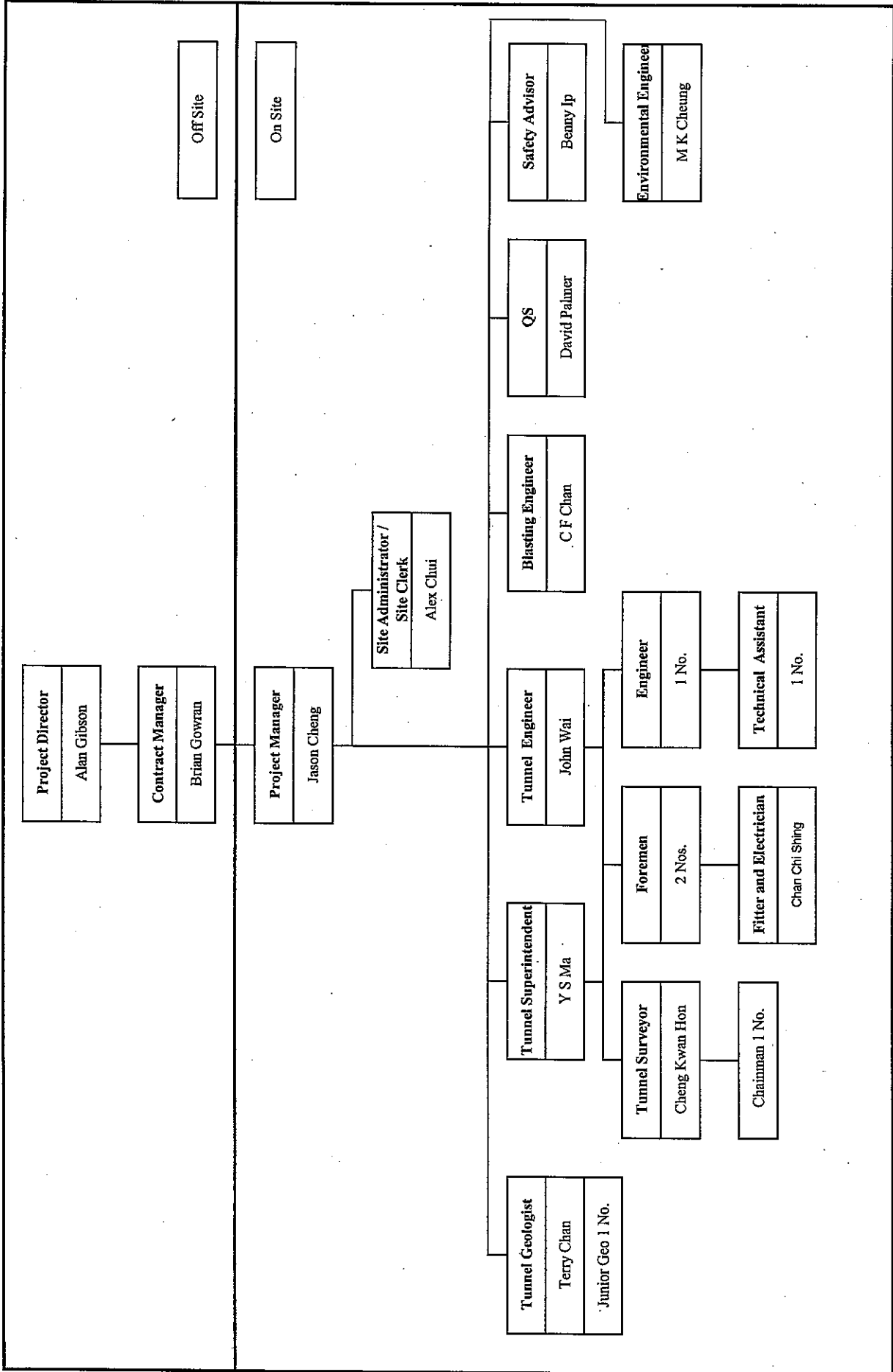
金門建築有限公司
總裁
何安誠
二零零九年七月



APPENDIX C

**Organisation Structure for
Environmental Management**

ORGANISATION CHART (Rev. 1)



APPENDIX D

**Predicted Waste Quantities from the
Project**

Prediction of Waste Generation & Recycling										Year: 2009				
Project Title: MTRC WIL 708										Division: Civil				
Project Title: MTRC WIL 708										Job No:				
Inert Waste Management										Recycling & Reuse		Off-site Waste Disposal		
Month	Excess Concrete (as wastage or overbreak) ¹ (tonnes)	Inert Waste Reuse on site ² (cu m)	Inert Waste Reuse at site ³ (cu m)	Metal, Steel & Rebar (kg)	Cardboard Packaging (kg)	Timber Recycling ⁵ (kg)	Plastics Recycled ⁶ (kg)	Others ⁷ (kg)	Public Fill ⁸ Disposal (cu m)	Chemical Waste Disposal ⁹		C&D Waste ¹⁰ Disposed (tonnes)		
										Solid (kg)	Liquid (litres)			
January														
February														
March														
Q1	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		
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	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	100	0	8463	400	400	3		
TOTAL	6	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 m³ 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. Inert 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												2010		Responsible Person: GAMMON
Project Title:		MTRC WIL 708										Year:	Division:	
												Job No.:	Civil	
Month	Inert Waste Management				Recycling & Reuse				Off-site Waste Disposal					
	Excess Concrete (as wastage or overbreak) ¹ (tonnes)	%	Inert Waste Reuse on site ² (cu m)	Inert Waste Reuse at site ³ (cu m)	Metal, Steel & Rebar (kg)	Cardboard Packaging (kg)	Timber Recycling ⁵ (kg)	Plastics Recycled ⁶ (kg)	Others ⁷ (kg)	Public Fill ⁸ Disposal (cu m)	Chemical Waste Disposal ⁹ Solid (kg)	Liquid (litres)	C&D Waste Disposed (tonnes)	
January	2	0	0	640	0	30	0	30	0	2337	100	100	1	
February	2	0	0	9620	0	30	0	30	0	0	100	100	1	
March	2	0	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	0	30	0	30	0	100	100	100	1	
May	2	0	0	0	0	30	0	30	0	100	100	100	1	
June	0	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 m³ 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. Inert 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													
Project Title:		MTRC WIL 708				Year: 2009		GAMMON					
Division:		CIVIL				Responsible Person:							
Job No:													
Month	Inert Waste Management				Recycling & Reuse				Off-site Waste Disposal				
	Excess Concrete (as wastage or overbreak) ¹ (tonnes)	%	Inert Waste Reuse on site ² (tonnes)	Inert Waste Reuse at (tonnes)	Metal, Steel & Rebar (kg)	Cardboard Packaging (kg)	Timber Recycling ⁵ (kg)	Plastics Recycled ⁶ (kg)	Others ⁷ (kg)	Public Fill ⁸ Disposal (tonnes)	Chemical Waste Disposal ⁹ Solid (kg)	Liquid (litres)	C&D Waste ¹⁰ Disposed (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 m³ 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

APPENDIX G

Daily Record Summary

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

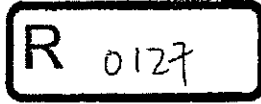
- (1) Contract no. & title: _____
- (2) Date of disposal: _____
- (3) Designated disposal ground(s): (a) _____
 (b) _____
 (c) _____
 others _____
- (4) Approved alternative disposal grounds: _____

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
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



17 SEP 2009



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.



土木工程處
Civil Engineering Office

Web site 網址 : <http://www.cedd.gov.hk>
 E-mail 電子郵件 : chilunglam@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 :

MTRC - WIL Design Management			
Rec'd	Encl.	File Ref.	
8 Sept 09	1	C(02-c02-1209-cs-1687)	
Name	Act.	Info.	c.d.
SH			

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

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 11000m³ 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)

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 identify 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/183a.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,

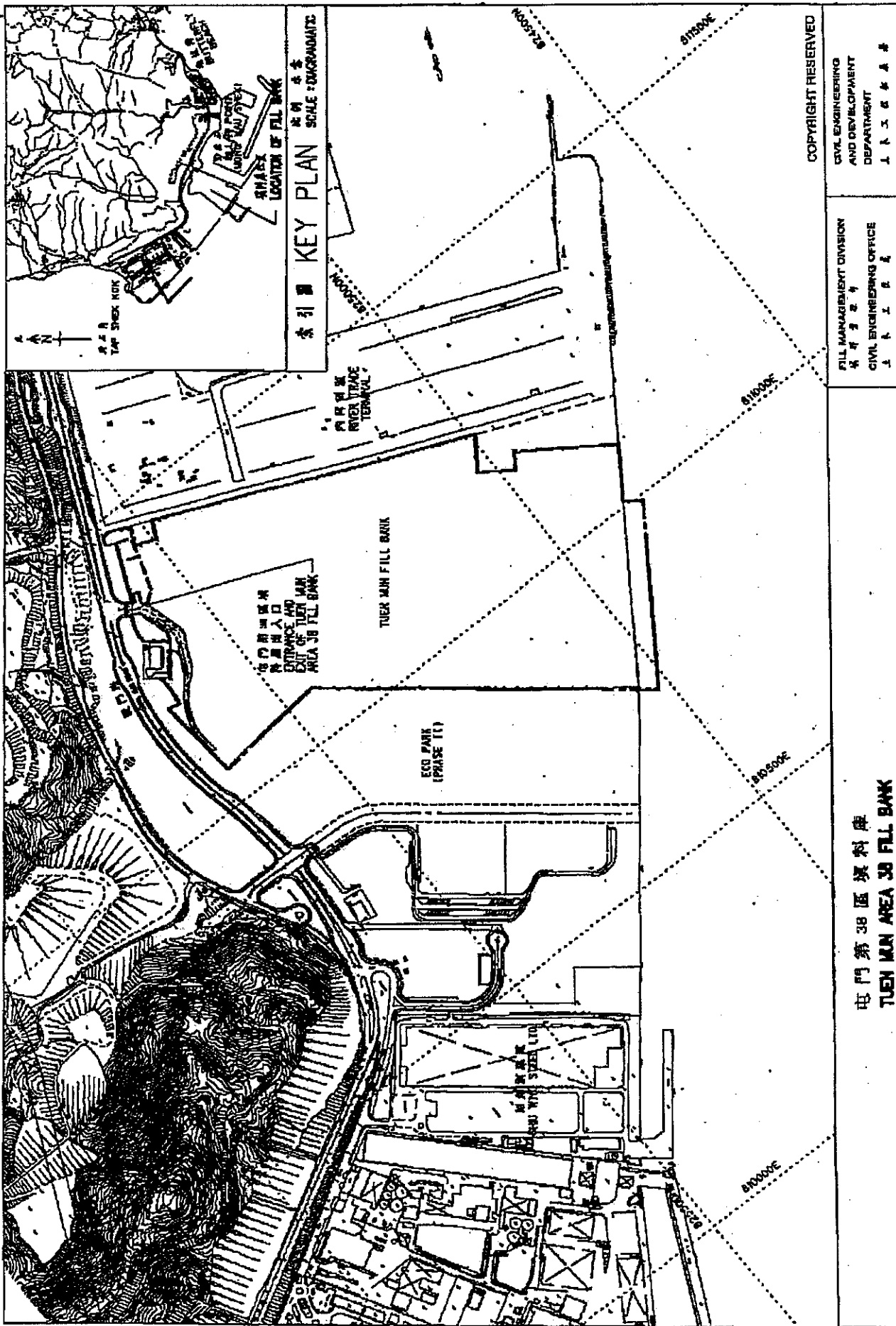


(C H Lam)
for Secretary, Public Fill Committee
Civil Engineering and Development Department.

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



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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT 工 務 局

FILL MANAGEMENT DIVISION 堆 填 區 管理 處 CIVIL ENGINEERING OFFICE 工 務 局

A4 297 x 210

屯門第38區填料庫 TUEN MIN AREA 38 FILL BANK

DATE : 19-FEB-2009

q:\Cont2\PUBLIC_DUMP\TUENMIN_A38\Tm_la_fillbank_fm_1.dgn

Item No.	EPD Comments 18/9/09	Responses 2/10/2009
(a)	<p>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.</p>	<p>The details of the transport routes for waste disposal are updated and described in Section 6.3.</p>
Others		<p>Table 6.1 and Appendix H are also updated due to the updated designation of public fill reception facility from CEDD.</p>

