

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

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Contract No. 714
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Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 15 October 2009

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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 from 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
<i>Inert Portion of C&D materials</i>				
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
<i>Non-inert portion of C&D materials (C&D waste), including general refuse</i>				
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
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
C&D waste to be re-used	Wood, bamboo	Construction of structure	10 m ³	2 Mar 2010 to 1 Apr 2010
			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
Others, e.g. general refuse	Plastic, vegetation, refuse on land	Construction of structure	3 m ³	2 Feb 2010 to 1 Mar 2010
			3 m ³	2 Mar 2010 to 1 Apr 2010
			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
<i>Inert Portion of C&D materials</i>	
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
<i>Non-inert portion of C&D materials (C&D waste); including general refuse</i>	
Chemical waste	Chemical Waste Treatment Facility at Tsing Yi; or other facilities approved by EPD
C&D waste to be recycled	<i>delivered to private recycle industry</i>
C&D waste to be re-used	<i>delivered to private recycle industry</i>
C&D waste to be returned	<i>delivered to private recycle industry</i>
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 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:

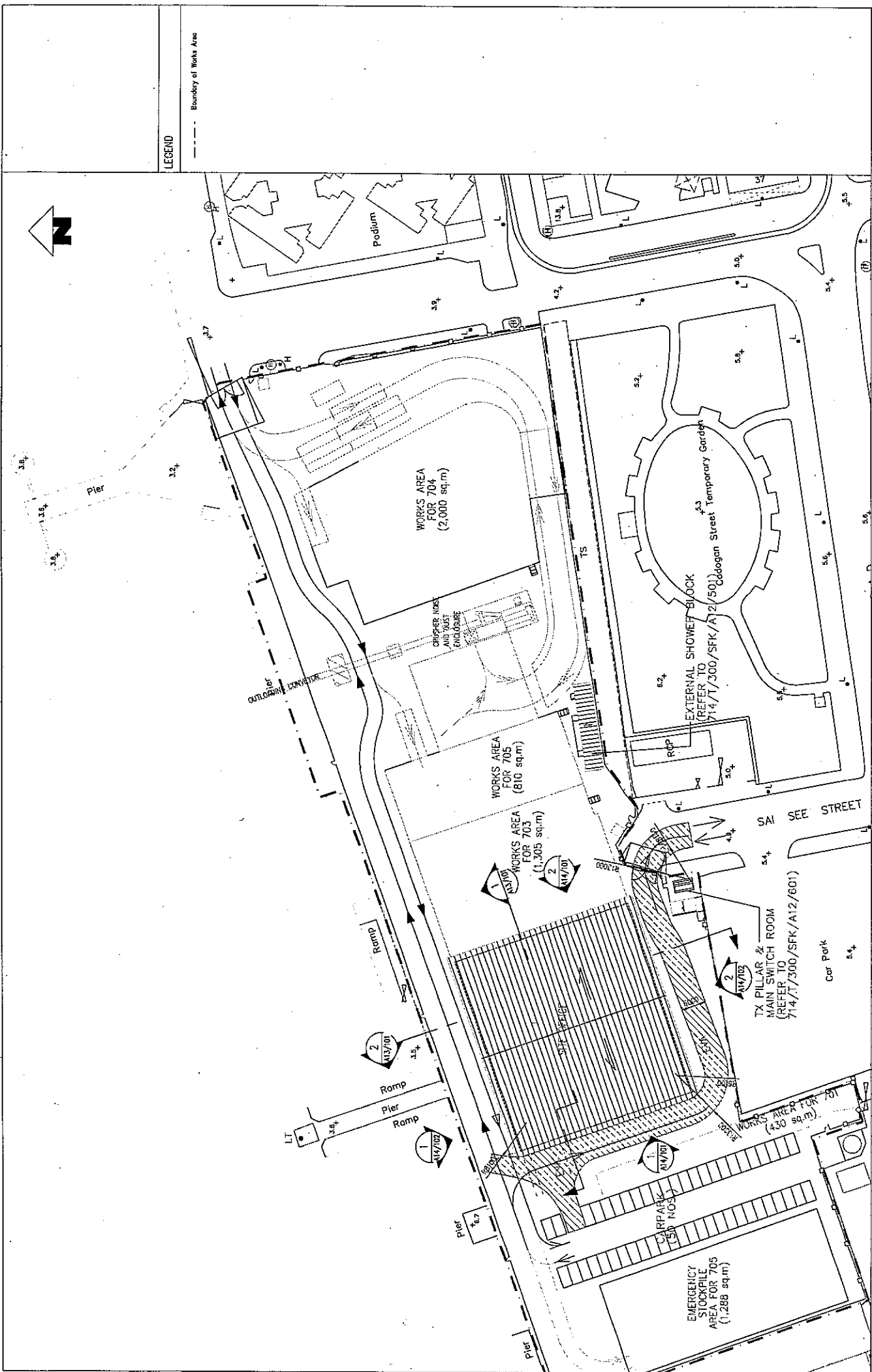
- Ensure that waste arising from works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner;
- Ensure that the handling, storage, collection and disposal of waste, arising from the demolition works, are fully complied with the requirements of relevant waste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

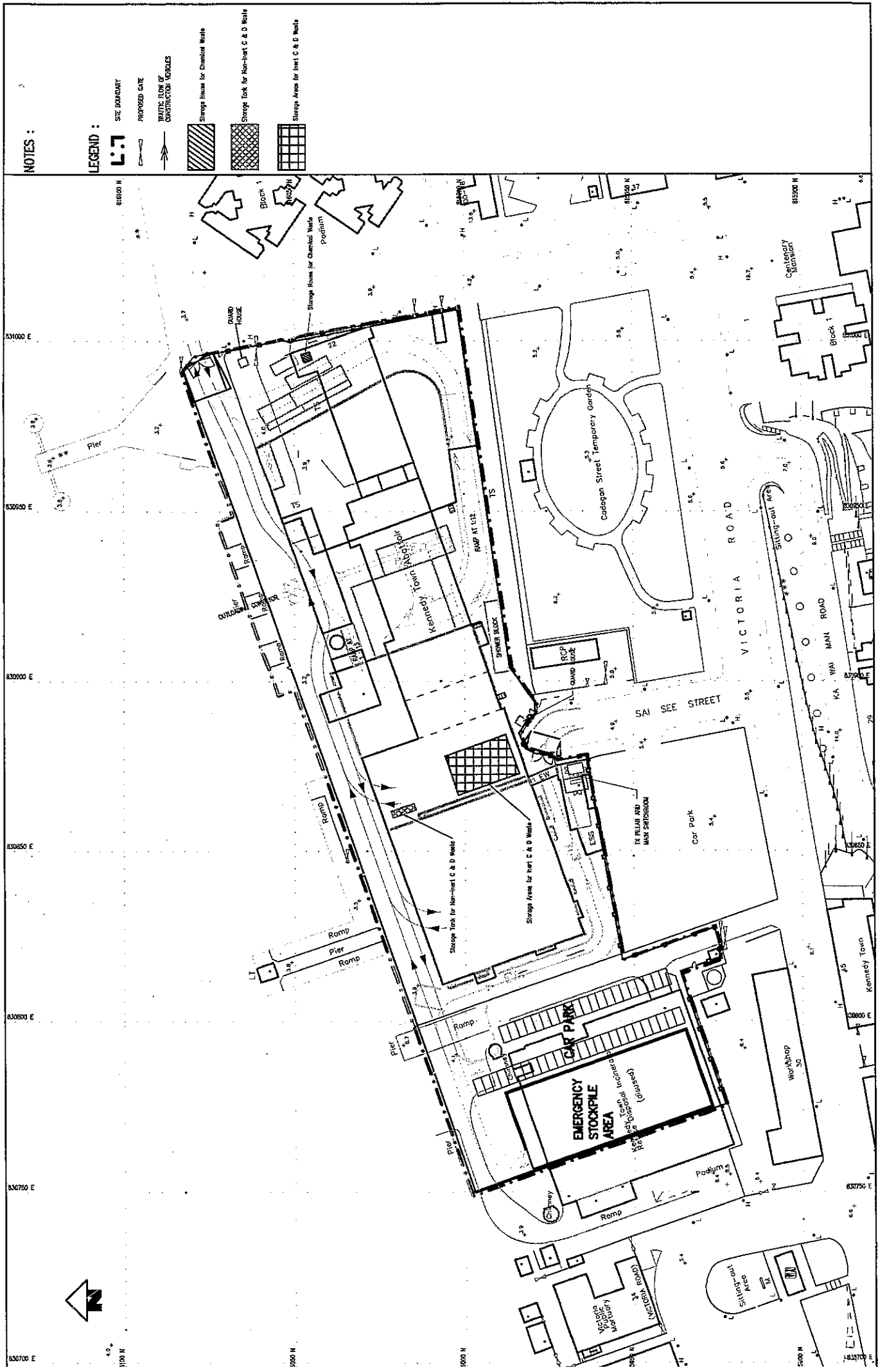
***Storage Location and
Transportation Route***



LEGEND

--- Boundary of Works Area

<p>CONTRACT 714 PROJECT SITE OFFICE AND WORKS AREAS SITE PLAN</p>		<p>SCALE: 1 : 500 DRAWING NO. 714-T/300/SFK/A11/101</p>
<p>WEST ISLAND LINE SUB-CONTRACTOR</p>		<p>MTR</p>
<p>DESIGNED: JACKY CHEUNG</p>	<p>APPROVED: FRANCIS HO</p>	<p>DATE: 11 JULY 2009</p>
<p>DRAWN: DAN TANG</p>	<p>APPROVED: K. M. FUNG</p>	<p>DATE: 11 JULY 2009</p>
<p>SFK SUN FOOK SONG CONSTRUCTION LTD.</p>		
<p>NO. 1</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 2</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 3</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 4</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 5</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 6</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 7</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 8</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 9</p>	<p>DATE</p>	<p>APPROVED</p>
<p>NO. 10</p>	<p>DATE</p>	<p>APPROVED</p>



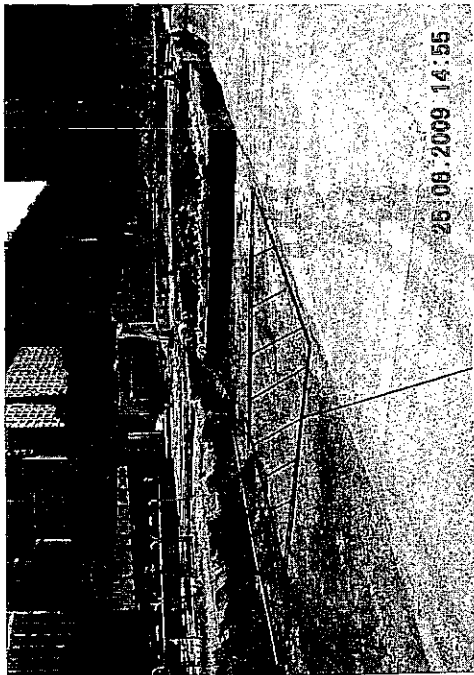
NOTES :

LEGEND :

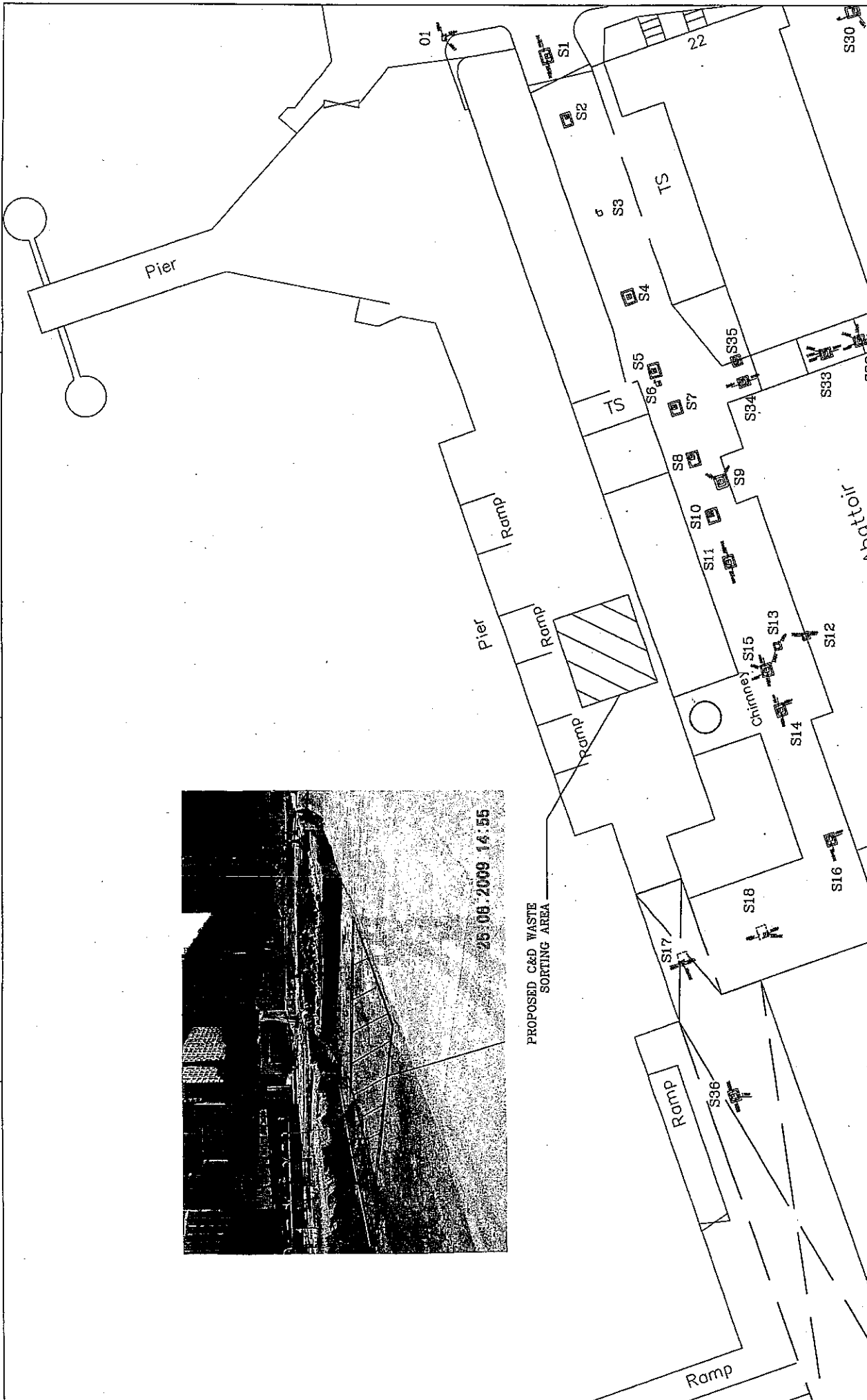
- SITE BOUNDARY
- PROPOSED GATE
- TRAFFIC FLOW OF CONSTRUCTION VEHICLES
- Storage House for Chemical Waste
- Storage Tank for Non-het C & D Waste
- Storage Area for het C & D Waste



830700 E 830750 E 830800 E 830850 E 830900 E 831000 E
 81600 N 81650 N 81700 N 81750 N 81800 N 81850 N 81900 N



PROPOSED C&D WASTE SORTING AREA

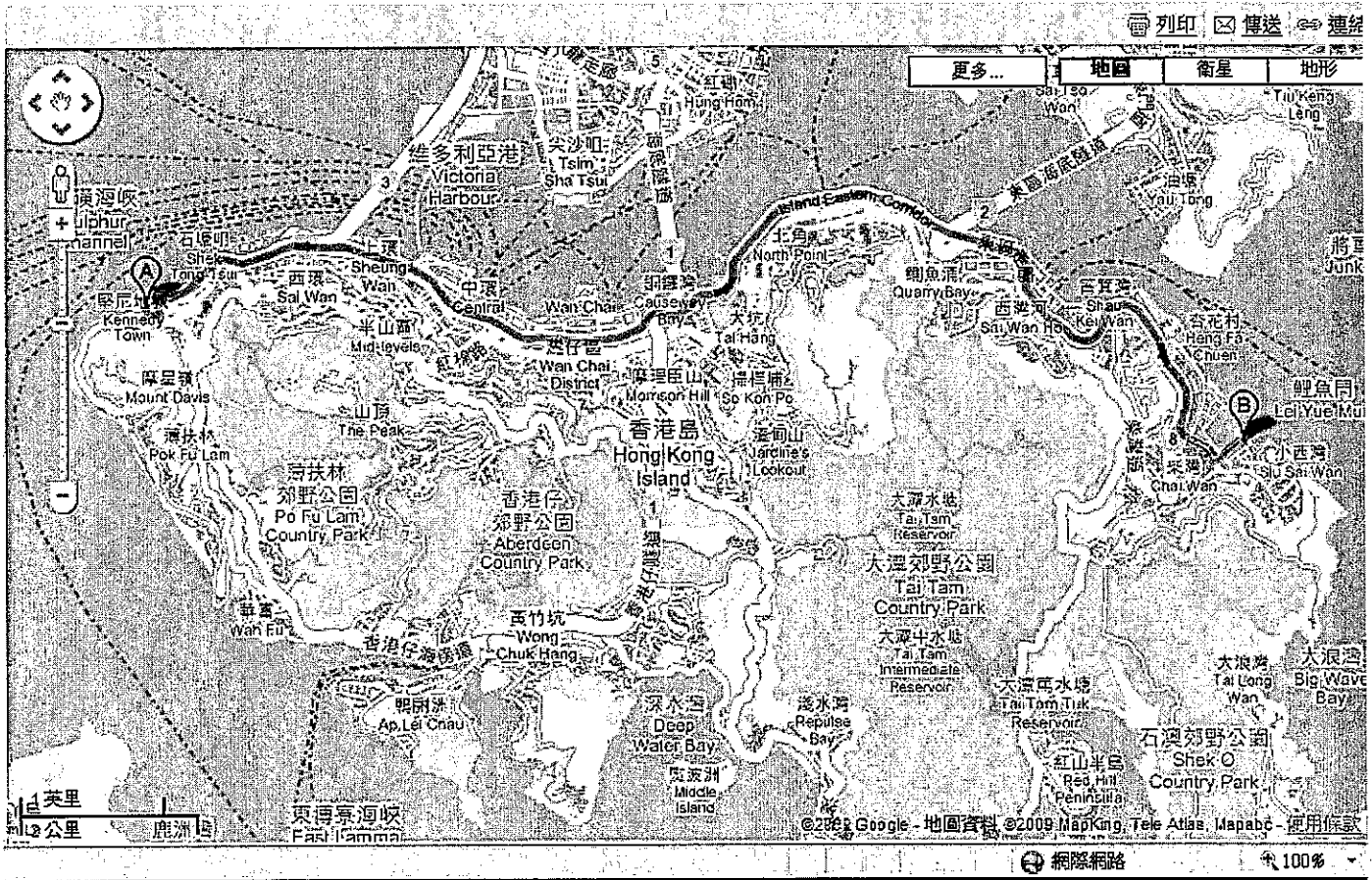


CONTRACT 714 PROJECT SITE OFFICE AND WORKS AREAS PROPOSED C&D WASTE SORTING AREA		SCALE	DRAWING NO.	REV.
MTR WEST ISLAND LINE SUB-CONTRACTOR WEST ISLAND LINE SUB-CONTRACTOR	WEST ISLAND LINE SUB-CONTRACTOR WEST ISLAND LINE SUB-CONTRACTOR	WEST ISLAND LINE SUB-CONTRACTOR WEST ISLAND LINE SUB-CONTRACTOR	WEST ISLAND LINE SUB-CONTRACTOR WEST ISLAND LINE SUB-CONTRACTOR	WEST ISLAND LINE SUB-CONTRACTOR WEST ISLAND LINE SUB-CONTRACTOR
DRAWN CHECKED DESIGNED APPROVED	DATE DATE DATE DATE	BY BY BY BY	DATE DATE DATE DATE	APPROVAL APPROVAL APPROVAL APPROVAL
THIS DRAWING IS THE PROPERTY OF MTR. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED IN THE DRAWING. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MTR.				

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 (in '000m ³)	Hard Rocks and Large Broken Concrete (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuse (in '000m ³)
Jan											
Feb											
Mar											
Apr											
May											
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 from Public 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	<p>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.</p>	<p>Appendix A show the detailed and definite description of transportation route for waste disposal.</p>
2	<p>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</p>	<p>Table 4 shows that inert C&D waste shall be internal reuse for backfilling or temporary haul road.</p> <p>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</p>

