

Taisei - Hip Hing Joint  
Venture

**Site Infrastructure  
Hong Kong Disneyland  
Resort Project**

Appendix 7

Contractor's Waste  
Management Plan  
(C-WMP)

Prepared and Endorsed by

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**Designated Waste  
Management Sub-contractor**

October 2002

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**ABBREVIATIONS AND ACRONYMS**

C&D	Construction and Demolition
CETL	Contractor's Environmental Team Leader
CETL-A	Contractor's Assistant Environmental Team Leader
CED	Civil Engineering Department
CR	Contractor Representative
EMS	Environmental Management System
ENPO	Environmental Project Office
ET	Environmental Team
EPD	Environmental Protection Department
ER	Engineer / Engineer's Representative
FEP	Further Environmental Permit
HKITP	Hong Kong International Theme Park Limited
IECK	Independent Environmental Checking Consultant
SAR	Special Administrative Region
THHJV	Taisei – Hip Hing Joint Venture
WDO	Waste Disposal Ordinance
WMP	Waste Management Plan

## 1. INTRODUCTION

Hong Kong International Theme Park Limited (HKITP) is developing a new theme park, new hotels and corresponding supporting infrastructure at Penny's Bay, Lantau Island. Taisei – Hip Hing Joint Venture (THHJV) has been commissioned by the HKITP to undertake the project of "Site Infrastructure". In a view of fulfilling THHJV's obligation, this Contractor Waste Management Plan (the "C-WMP") of the Contractor's Environmental Management Plan (C-EMP) has been compiled by the Designated Waste Management Sub-contractor which details the approach the THHJV will adopt in dealing with management of waste from the carrying out of the works. THHJV will be responsible for ensuring that his employees (whether direct or indirect via sub-contractor arrangements) implement the accepted version of this C-WMP as an integral part of their daily activities on-site. The site location plan is shown in Figure 1.1.

### 1.1 Scope of Works

In general, the works of "Site Infrastructure" mainly include:

- (a) Theme park and black of house areas
- Site grading including excavation, filling, compaction, temporary drainage system, temporary haul road and treatment on building pad areas.
  - Main mechanical utility systems covering chilled water supply system, chilled water return system, irrigation water system, hose reel system, fire sprinkler system, treated water system, fresh water system, flushing salt water system and compressed air pipework.
  - Builder's works in connection with mechanical, electrical and communication services.
  - Sanitary sewer system.
  - Storm drainage system.
  - Irrigation sleeves.
  - Waterway drainage system.
  - Back of house service areas/roads/paving.
  - Box culverts for future expansion beyond the rail berm and utilities
  - Underpasses, retaining walls and bridges.
  - River rough grading.
  - Water treatment wetwells for river and fountain.
  - Fallow fields drainage (adjacent to Theme part only).
  - Substations No. 201, 202, 203, 204 and 206.
  - Rail berm.
  - Space mountain/castle moat excavation.
  - Central chiller plant building and substations No. 205A and 205B complete with plants and equipment.
  - River overflow weir piping.
  - Launch site pads and conduct
- (b) Deluxe hotel area & Moderate hotel area
- Earthwork
  - Site storm drainage
  - Sanitary sewer
  - Mechanical utilities
  - Site electrical

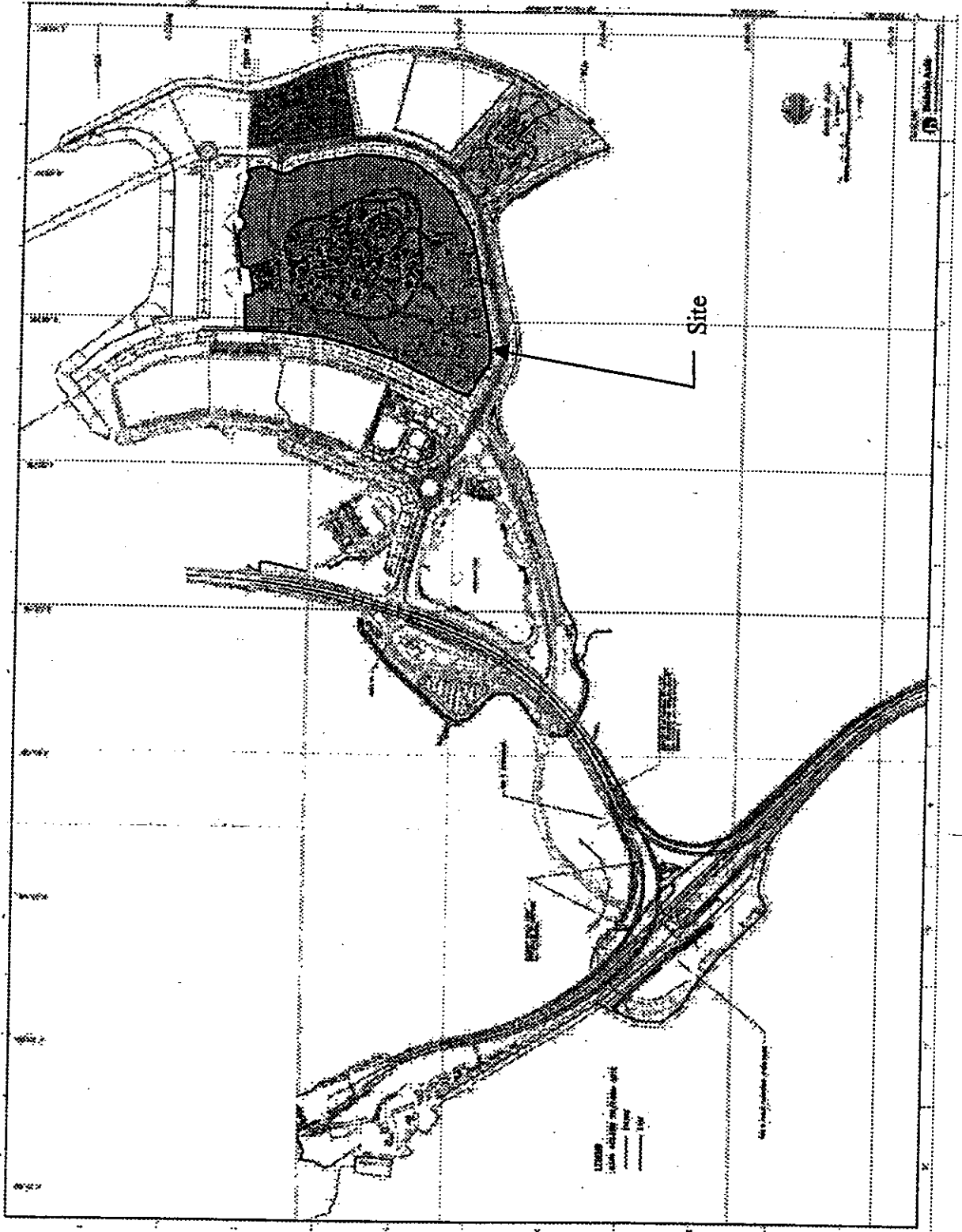
10/10/02

- Pavement

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The onsite operation of the project will be commence on September 2002 and is expected to be completed and can be handover at January 2004.

Figure 1.1 Site location plan



## 2. PURPOSE OF THE PLAN

This Contractor's Waste Management Plan (C-WMP) aims to describe the arrangement for avoidance, reuse, recovery & recycling, storage, collection, treatment and disposal of different categories of waste that will be generated from the construction activities. The C-WMP estimates the waste generation of the whole construction period of the Contract. This C-WMP and the Waste Generation Schedule will be revised whenever deemed necessary.

This C-WMP has been prepared with full regard to both the current environmental legislation pertaining to construction activities and the specific requirements of the Contract relevant to environmental protection management. It also addresses the potential impacts and necessary mitigation measures in the light of the co-ordinated construction programme and/or project master programme.

This C-WMP sets forth:

- (i) the organisation of the Contractor's "Environmental Team" ("ET") and the particular responsibilities of Contractor's Key Personnel relevant to both general construction and environmental matters;
- (ii) the proposed environmental protection management training scheme for on-Site staff;
- (iii) a waste arisings forecast, that is based on a review of the Construction Programme, anticipated construction methods;
  - time-scales the forecast waste arisings by each category of waste on a weekly basis over the duration of on-Site operations; and
  - includes a definitive forecast of any chemical waste arisings, with identification of their timing and proposed methods of disposal therefor; and
- (iv) a proposed waste management schematic that sets forth particulars for:
  - proposals for reduction or minimization of the generation of C&D material;
  - proposals for sorting of C&D material on-Site;
  - proposals for the handling, recycling, re-use and return of suitable C&D material, including concrete, aggregates, timber, paper, cardboard, metals and plastics;
  - "contingency plans" for handling of particular waste materials, such as oils, grease paint, etc.;
  - the routes to be taken for disposal, taking into consideration the portion of inert C&D material that can be disposed of to public fill (and arrangements for delivery) and the non-inert C&D material (including general refuse) which requires alternative means for disposal; and
  - a list of "control procedures" to be employed; and
- (v) the relevant environmental reporting and auditing requirements (site inspections, frequency thereof, method of recording data, etc.

This C-WMP has divided into the following sections:

- licence requirements
- legislation and guideline
- organisation chart showing the roles and responsibilities of the personnel who are responsible for the waste management and appropriate mitigation measures

- waste management practices hierarchy
- waste sorting/storage area
- an analysis of the timing of generation, types and quantities of the C&D material which is expected to be generated in the course of executions of works.
- a list of each material proposed to be salvaged, re-used or recycled with quantities
- control procedures
- reporting and auditing
- training



### **3. LICENSE REQUIREMENTS**

#### **3.1 Registration as a Chemical Waste Producer**

Under the Waste Disposal (Chemical Waste) (General) Regulation, producers of chemical wastes (including asbestos) (e.g. the Contractor) must register with EPD as Chemical Waste Producer.

#### **3.2 Dumping Licence to Public Filling Area**

The Land (Miscellaneous Provisions) Ordinance requires that dumping licences are obtained by individuals or companies who deliver suitable construction wastes to public filling area. The licence is issued by the CED under delegated powers from the Director of Lands. These licences will be applied for by the Contractor if dumping in public filling area is required.

## 4. LEGISLATION AND GUIDELINES

### 4.1 Statutory Requirements

The following legislation covers, or has some bearing upon, the handling, treatment and disposal of wastes in Hong Kong:

- The Waste Disposal Ordinance (Cap 354)
- The Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)
- The Land (Miscellaneous Provisions) Ordinance (Cap 28)
- The Public Health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisances By-laws
- Dumping At Sea Ordinance (Cap 466)

### 4.2 Additional Guidelines

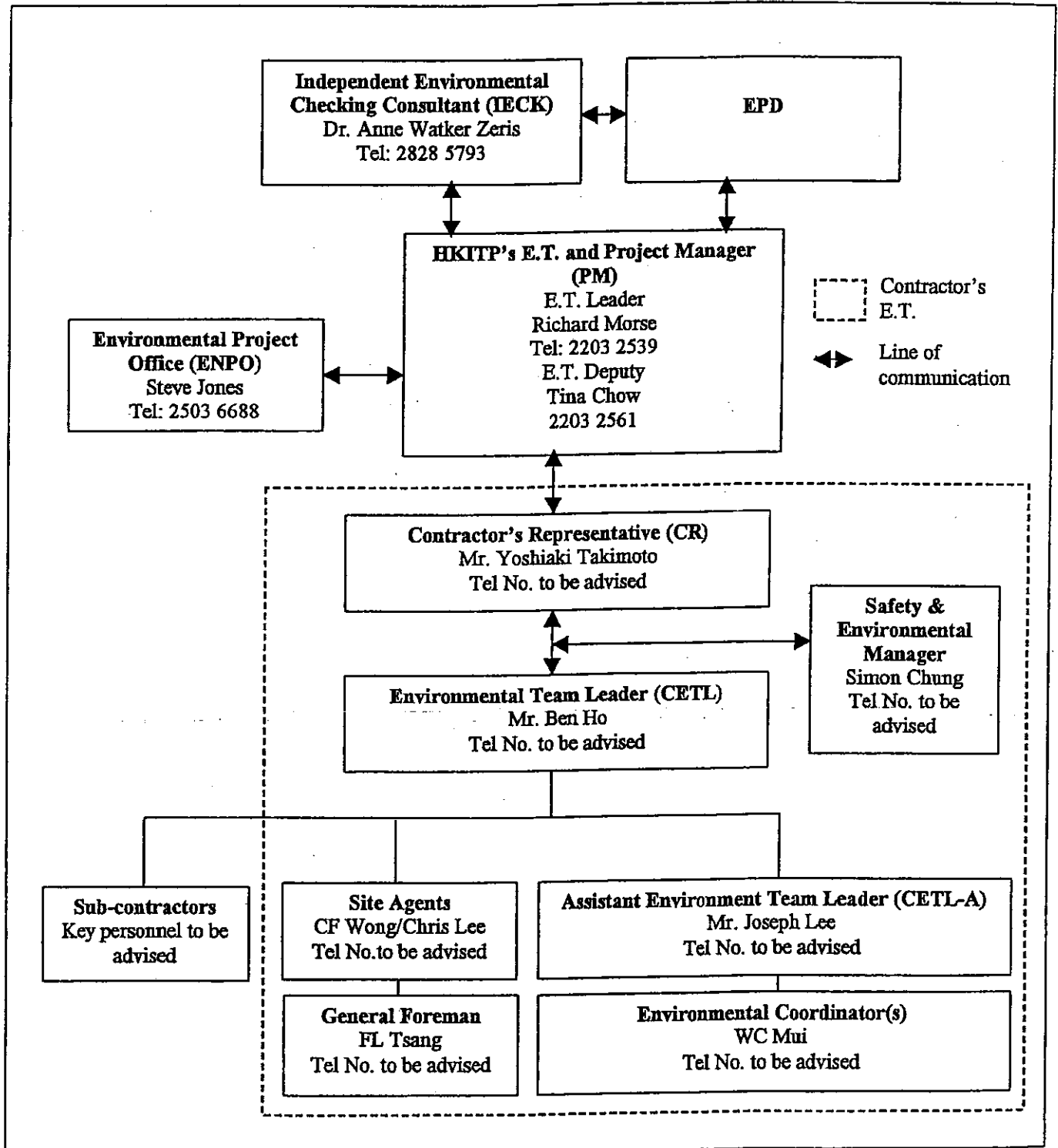
Other guidance documents, which detail how the THHJV should comply with the regulations are as follows:

- *Waste Disposal Plan for Hong Kong* (December 1989), Planning, Environment and Lands Branch Government Secretariat;
- *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;
- *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* (1992), Environmental Protection Department
- *EPD Technical Circular No. 1-1-92, Classification of Dredged Sediments for Marine Disposal*, Environmental Protection Department.
- *Works Branch Technical Circular No. 22/92, Marine Disposal of Dredged Mud*, Works Branch, Hong Kong Government;
- *Works Branch Technical Circular No. 2/93, Public Dumps*, Works Branch, Hong Kong Government;
- *Works Branch Technical Circular No. 16/96, Wet Soil in Public Dumps*, Works Branch, Hong Kong Government;
- *Works Bureau Technical Circular No. 4/98, Use of Public Fill in Reclamation and Earth Filling Projects*, Works Bureau, Hong Kong Special Administrative Region (SAR) Government;
- *Works Bureau Technical Circular No 5/98, On-site Sorting of Construction Waste on Demolition Site*; Works Bureau, HK SAR Government;
- *Works Bureau Technical Circular No 5/99, Trip-ticket System for Disposal of Construction and Demolition Material*; Works Bureau, HK SAR Government
- *Works Bureau Technical Circular No. 12/2000, Fill Management*, Works Bureau and, Hong Kong Government;
- *Works Bureau Technical Circular No 29/2000, Waste Management Plan*; Works Bureau, HK SAR Government.

## 5. PROJECT ORGANISATION

The project organisation with responsibility for waste management is outlined in the following sections. The organisation chart is shown in Figure 5.1.

Figure 5.1 Project organisation on waste management



## 5.1 Individual Responsibilities

The THHJV will appoint and identify suitably qualified individuals to be responsible for implementing the C-WMP, in particular the arrangements for the collection, treatment and disposal of wastes, and has identified by name those individuals and their responsibilities herein.

### 5.1.1 Contractor's Representative

The Contractor's Representative (CR) is responsible for overall planning, site operations, appointment of committee members for waste management, staff supervision control co-ordination and external liaison. The environmental responsibilities of the CR include:

- overseeing the waste management within the Project, which they achieve by implementation of the C-WMP;
- participating and providing necessary support to the Contractor's Environmental Team for the preparation and review of C-WMP;
- ensuring that staff attend environmental training with regard to waste management organised by the CETL;
- providing leadership in the efficient management of project and in meeting project's waste management objective;
- overall planning, on-Site operations, staff supervision and external liaison as Contractor's "project manager";
- implementing environmental controls and mitigation as set out in this WMP as well as any additional measures necessary for compliance with environmental control measures; and
- provision of adequate resources and support to address relevant environmental protection management matters under the Contract, in particular to:
  - the CETL in his enforcement of compliance from all of Contractor's on-Site staff and those of Sub-contractors; and
  - the CETL-A in his preparation and review of the C-WMP, his carrying out on-Site environmental audits and discharge of his other duties.

### 5.1.2 Contractor's Environmental Team Leader (CETL)

The Contractor's Environmental Team Leader (CETL), who should have at least 7 years relevant working experience, have the following environmental responsibilities:

- ensuring the recommendations and instruction from the CR are implemented to improve the waste management practice and carry out immediate action to rectify the non-compliance of waste management requirements;
- anticipating waste generation impacts that may require mitigation before the problem arises;
- identifying the environmental training needs for Contractor's on-Site staff;
- being ultimately responsible for all aspects of environmental issues relevant to the Contract, including implementation of the C-WMP;
- arranging a monthly environmental meeting to review any environmental issues relevant to the Contract, including implementation of the C-WMP and other matters of on-Site performance;

- arranging Contractor's staff to attend appropriate environmental training organized in-house or by external entities;
- reviewing the Contractor method statement to ensure appropriate mitigation measures are implemented prior to the carrying out of the Works;
- providing necessary support to the CETL-A for his carrying out on-site environmental audits; and
- being permitted to have duties relative to quality, safety and health in addition to environmental protection management to the extent such additional duties do not prevent discharging the duties hereunder.

### 5.1.3 Contractor's Assistant Environmental Team Leader (CETL-A)

The CETL-A, who should have at least 5 years relevant working experiences, will be responsible for:

- acting as in-house advisor to provide training and expertise to all levels of Contractor's staff in respect of any environmental protection management issues;
- providing technical advice and support for the implementation of the C-WMP to Contractor's staff;
- ensuring that complaints are handled properly;
- identifying and keeping track of any change to the environmental requirements with particular regard to waste management targets and requirements;
- timely reporting to CETL and CR regarding any of Contractor's non-compliance with any Environmental Requirement;
- conducting weekly site inspection;
- assisting in preparing "Contractor's Monthly Environmental Progress Report" for submission to CR;
- identify any new and/or best available technologies applicable to the Works;
- reviewing and updating the C-WMP no less than every six months during on-site operations;
- keeping on-Site:
  - original instance of any statutory required environmental permits and/or licenses (including effluent discharge licenses);
  - copies of all correspondences with EPD;
  - records for all trained personnel; and
- not be permitted to have any duties relative to matters other than environmental protection management without express consent of Project Manager, which consent may be withheld at Project Manager's discretion.

### 5.1.4 Environmental Co-ordinator(s)

The Environmental Co-ordinator(s) will, amongst such other duties as they may be assigned:

- assist the CETL-A in his preparation of Weekly Environmental Checklists and Contractor's Monthly Environmental Progress Reports;
- assist the CETL-A in the implementation of the C-WMP;
- arrange routine site inspections and review environmental inspection reports;

- monitor and control the works, including those of sub-contractors, to ensure compliance with both contractual and statutory requirements;
- report any non-compliance to the CETL-A and recommend remedial actions;
- investigate and verify complaints and report to the CETL-A; and
- ensure that remedial actions or mitigation measures are carried out as planned.

#### 5.1.5 Site Agents

The Site Agents shall have the following duties in relation to waste management:

- assist the CETL to implement the WMP;
- monitor and control works including those of sub-contractors to ensure compliance of WMP;
- report to the CETL regarding non-compliance of any waste management issues.
- keep abreast of the statutory requirements and regulations about waste management; and
- supervise and arranging the maintenance of waste management facilities.

#### 5.1.6 General Foremen

General Foremen will, amongst such other duties as they may be assigned:

- assist the CETL and CETL-A to implement the measures in C-WMP;
- control the Works, including those of Sub-contractors, to fulfill the requirements relevant to environmental protection management under the Contract;
- report any non-compliance to the CETL-A and recommend remedial action;
- carry out remedial actions or mitigation measures to rectify any non-compliance;
- ensure that on-Site environmental protection facilities are properly established and maintained; and
- conduct environmental "tool box talks" with labourers and other on-Site workers to make them aware of required environmental protection practices.

#### 5.1.7 Sub-contractors and Other On-Site Staff

Sub-contractors and other on-site staff will, amongst such other duties as they may be assigned:

- carry out agreed Project environmental protection practices as instructed by Contractor or CR;
- promptly report any non-compliance of waste management issues to Contractor's foremen; and
- actively participate in and co-operate with the CETL, CETL-A, Environmental Coordinators and/or Project Manager to achieve the environmental objectives established for the Project.

### 5.1.8 Safety and Environmental Manager

The Safety and Environmental Manager shall have substantial previous working experience in civil engineering and construction together knowledge of government procedures to enable the compliance with safety and environmental rules. He will be responsible for assisting THHJV's environmental team in resolving all environmental-related matters on site.

## 6. HIERARCHY OF WASTE MANAGEMENT PRACTICES

The basic tenet of this C-WMP is to elevate waste management practices to the “highest priority” option (as set forth below), since conceptually it makes more sense to avoid producing a waste rather than to develop extensive treatment schemes.

The waste management hierarchy of various waste options is explained in Table 6.1.

**Table 6.1 Hierarchy of waste reduction**

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

General principles of management to be employed shall include:

- the requirement to implement good waste management practice on-site;
- waste control within the site, including effecting the reuse, recycling, treatment and disposal by proper segregation practices;
- removal of waste material produced on-site;
- implementation of any mitigation measures to avoid or minimize potential adverse impacts associated with waste arising from the Works; and
- waste minimization and recycling practices.



## 7. ENVIRONMENTAL RESPONSIBLE PURCHASING

In the context of waste reduction, environmentally responsible purchasing involves the introduction of practices that discourage unnecessary purchases and encourage the purchase of products with improved recyclability, reduced packaging, greater durability, and where economically rational, with high recycled content. For example, recycled paper, steel and other raw materials.

Waste minimisation is best achieved through careful planning, design and supervision. Good management practices can reduce and prevent a large amount of waste generated, including:

- Raw materials can be managed from the first instance before they are ordered and delivered to site.
- Good estimation and planning can minimise the amount of raw materials wasted.
- The generation of waste shall be controlled at source.

## 8. TYPES AND SOURCES OF WASTE AND CONTROL MEASURES

Construction activities for the captioned project may result in the generation of various wastes, which can be divided into distinct categories based on their composition, as follows:

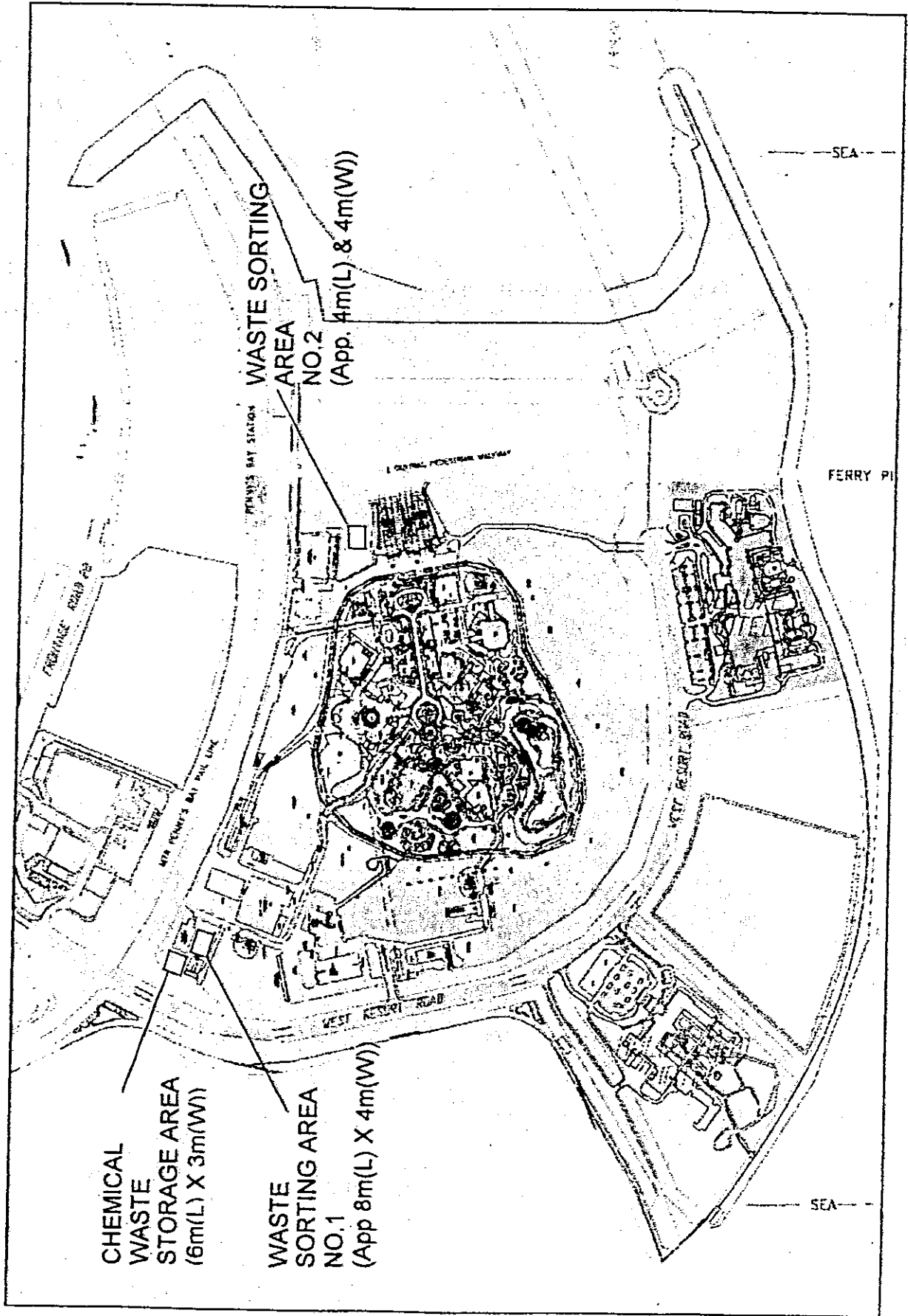
- Excavated Material;
- Construction and Demolition (C&D) Material;
- Chemical Waste; and
- General Refuse.

The reuse, recycling, treatment and disposal can be affected by proper segregation practices exercised on site. Individual measures for these wastes are described in the following sections. The waste generation schedule for various types of wastes is summarised in Table 8.1. The waste sorting and storage area locations are shown in Figures 8.1. The area of two waste sorting areas is 16m<sup>2</sup> and 32m<sup>2</sup> respectively while the chemical waste storage area is 18m<sup>2</sup>.

**Table 8.1 Tentative waste generation schedule**

Type(s) of Waste Generated	Waste Disposal Period	Estimated Quantity
Surplus Excavated Material	Sept 2002 – Jan 2004	38700m <sup>3</sup>
Construction and Demolition (C&D) Materials	Sept 2002 – Jan 2004	1,600m <sup>3</sup> (4m <sup>3</sup> /day)
Chemical Waste	Sept 2002 – Jan 2004	500 Litres (30L/month)
General Refuse	Sept 2002 – Jan 2004	130 tons (0.65kg/person/day)

Figure 8.1 Waste sorting and storage area locations



## 8.1 Excavated Material

### 8.1.1 Types and Sources

Excavated material is defined as inert virgin or reclamation fill material removed from the ground and sub-surface. Such material will be generated from the site infrastructure work starting from September 2002 to January 2004. Since most of the excavated materials will be used for backfilling on-site, the quantity of excavated materials surplus is estimated to be negligible as comparing to other types of waste materials. As an estimate, the amount of excavated material is 98,400m<sup>3</sup>, surplus material to be disposed of is about 38,700m<sup>3</sup> and the remaining 59,700m<sup>3</sup> will be reused for backfilling.

### 8.1.2 Control Measures

Excavated materials shall be segregated from other wastes to avoid contamination. Materials will be sorted, processed and re-used elsewhere within the Project Site. In case of excess materials needs to transport off-site, the priority for off-site disposal of surplus excavated material shall be as follows:

- Transport to other construction sites, which require the filling material;
- Transport to public filling areas.

The surplus excavated material to be transported to other construction sites, the Fill Management Group of Civil Engineering Department will be advised.

For each and every vehicular trip transporting surplus excavated material off-site, a Construction and Demolition Material Disposal Delivery Form shall be produced and completed in duplicate. A specimen of the Form is shown in Appendix A.

## 8.2 Construction and Demolition (C&D) Material

### 8.2.1 Types and Sources

C&D materials include the non-inert portion (C&D waste) and inert portion (public fill), which comprise unwanted materials generated including rejected materials, materials which have been over ordered or are surplus to requirements, and materials used and discarded. The C&D materials will arise from a number of activities during improvement works and typically may include:

- Wood from formwork and falsework;
- Scrap metals from off-cuts, rebar, steel pipes and packaging;
- Plastic and paper from pre-formed products and packaging;
- Plastics and paper from pre-formed products and packaging; and
- Unusable/surplus concrete/grout.

It is estimated that about 1,600m<sup>3</sup> C&D waste will be generated from the period of September 2002 to January 2004, in which about 300 m<sup>3</sup> C&D materials (mainly wood and packaging materials) will be reused by the contractors or returned to suppliers, 100

m<sup>3</sup> C&D materials (scrap materials) will be recycled and the remaining 1200m<sup>3</sup> will be disposed of at landfills.

## 8.2.2 Control Measures

Careful design, planning and good site management shall be maintained to minimise over-ordering and waste of materials such as ready mixed concrete, mortars and cement grouts.

The formwork shall be designed to maximise 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 or leakage during handling.

All C&D materials arising from or in connection with the road improvement works shall be sorted on-site and be separated into different categories for disposal at landfills, public filling areas, or reuse and recycling as appropriate.

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, steel and metal items will be sent as scrap for recycling.

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).

The remaining non-reusable C&D materials shall be sorted on-site into inert portion (e.g. rock, brick, bituminous material, concrete and soil, etc.) as "public fill" and non-inert portion (e.g. timber, vegetation and paper, etc.) as "C&D waste".

Whilst the "C&D waste" containing no more than 20% by volume of inert content shall be tipped at the landfills by the Designated Waste Management Subcontractor.

For each and every vehicular trip transporting "public fill" and "C&D waste" off-site, a Construction and Demolition Material Disposal Delivery Form, as shown in Appendix A, shall be produced and completed in duplicate. Trip Ticket System is established in accordance with Works Bureau Technical Circular No. 5/99 Trip-ticket System for Disposal of Construction and Demolition Material Groups 5, 7 and 12 issued on February 1999.

## 8.3 Chemical Waste

### 8.3.1 Types and Sources

The chemical wastes generated from the site infrastructure work will primarily arise from the maintenance of plant and equipment. These may typically include oils, lubricants,

paints and solvents. It is estimated that about 30 litres chemical waste will be generated per month throughout the works period.

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

### 8.3.2 Control Measures

Preventive measures shall be implemented for leakage and spillage of fuel and lubricating oil to avoid contamination of the construction site. All workshops shall be located on impermeable areas with provision of drainage channels and interceptors to allow separation of oils from water and release of treated water. Oils accumulated in interceptors shall be removed to prevent oils and grease from overflowing into the surface water drainage system and ground water tables. The interceptors shall also have a bypass to drain during heavy rains. Oil and fuel bunkers and diesel drums shall be bunded by drip trays to accommodate oils from accidental spillage. Wastes collected from any grease traps are collected and disposed of by the Designated Waste Management Subcontractor or licensed chemical waste collectors.

All plant and equipment shall require regular maintenance. Their maintenance records shall be kept in site office and maintained by the CETL-A.

Good housekeeping practices should be adopted to deal with chemical waste include:

- (i) Generating less chemical wastes through:
  - Delivering appropriate quantity of chemicals to the construction site.
  - Avoiding unnecessary wastage of chemicals by using the chemicals more sensibly and in accordance with the manufacturer's instructions.
  - Finishing one bottle/container of chemicals before opening the next one for use.
  - Collecting the remaining chemicals in suitable containers.
  - Removing the unused chemicals out of the construction site after completion of the project.
- (ii) Preventing illegal discharge of chemicals or chemical wastes through staff training and education.
- (iii) Minimising the volume of unused chemicals to be disposed of through:
  - Using the chemicals before the expiry date.
  - Ordering appropriate quantity of chemicals and avoiding unnecessary storage of excess chemicals.

Chemical waste shall be handled in accordance with the *Code of Practice on the Packaging, Handling and Storage of Chemical Waste*. The details are described as follows:

Containers used for the storage of chemical waste shall:

- 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 EPD; and
- display a label in English and Chinese in accordance with instruction prescribed in Schedule 2 of the Regulations.

The storage area for chemical waste (Figures 8.1) shall:

- 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, 110% capacity of the largest container or 20% of the storage capacity, whichever is the greatest;
- 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.

Chemical waste shall be disposed of:

- via a licensed waste collector, i.e. Specialised Environmental Services Limited; and
- to a facility licensed to receive chemical waste, i.e. Chemical Waste Treatment Facility in Tsing Yi; or
- to a re-user of the waste, under the approval from the EPD.

Trip tickets issued for every chemical waste collection shall be retained and filed properly for future reference.

Site personnel (e.g. maintenance worker and machine operators) involved in chemical waste handling shall be instructed and familiar with the waste handling procedures and guidelines as stipulated in *EPD's Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.

Records of maintenance, such as cleaning and repairing of chemical storage area, shall be completed for each designated area and maintained for future reference.

Chemical waste may be disposed of at landfill site. However, EPD shall be informed by on the final disposal location of the chemical waste.

## 8.4 General Refuse

### 8.4.1 Types and Sources

General refuse will be generated largely from office work and improvement works area. General refuse may include packaging material and waste paper etc. It is estimated that an approximate 130 tons of general refuse will be generated throughout the works period.

### 8.4.2 Control Measures

Office waste will be reduced through recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme must be considered.

To encourage environmental awareness and try to reduce waste by reducing the number of photo copies to a minimum and by copying on both sides of paper for internal documents and external documents where appropriate. Recycling bins for paper shall be provided in site office to facilitate the recycling of papers.

General refuse including food wastes, such as lunch boxes, and domestic wastes generated on-site shall be stored in enclosed bins or compaction units separated from construction and chemical wastes. The Designated Waste Management Waste Subcontractor will be responsible for removing general refuse from the Project Site, separately from construction and chemical wastes, on a daily or every second day basis to minimise odour, pest and litter impacts.

The Designated Waste Management Waste Sub-contractor removes general refuse from the site, separately from construction and chemical wastes, on a daily or every second day basis to minimise odour, pest and litter impacts. No burning of refuse on site will be permitted.

Areas and methods for material separation and segregation will be identified, including storage bins for food wastes, sacks for waste papers and baskets for reusable papers. All such facilities will be clearly labelled and proper storage arrangements identified to ensure there are adequate measures in place for the avoidance of nuisance. Disposal methods will be made known to all on-Site staff (including those of Sub-contractors).



## 9. CONTROL PROCEDURES

### 9.1 Typhoons and Heavy Rainstorms

At any time of year when typhoon or rainstorms are likely, the following precautions should be undertaken:

- silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly;
- intercepting channels will be provided along the crest/edge of excavation to prevent storm runoff from washing across exposed soil surfaces;
- trenches will be dug and backfilled in short sections; and
- measures will be taken to minimize the ingress of rainwater into trenches.

When a typhoon or rainstorm is imminent or forecast, the following precautions will be undertaken:

- silt removal facilities, channels and manholes will be checked to ensure that they can function properly;
- open stockpiles of construction materials such as aggregates, sand and fill materials on site will be kept to the minimal; and
- all temporary covers to stockpiles will be secured.

During or after typhoon or rainstorms, the silt removal facilities, channels and manholes will be checked and maintained to ensure satisfactory working conditions.

### 9.2 Chemical Spill Procedure

In case of a chemical spill has been discovered, all persons in the vicinity shall be alerted and inform the person in-charge of the Site who shall assess the situation and, if the spill is serious which will cause danger to nearby people, water bodies, natural habitats, etc., inform the Fire Service Department (FSD) and fence off the affected area, in which case:

- all personnel will evacuate from the area and wait for FSD to arrive; and
- the work area supervisor will be present at the scene to provide the details of the chemical used and the occurrence of the incident when FSD arrives.

If safe to do so, the following actions can help to control the spill:

- where available, follow the emergency procedure as stipulated in the **Appendix 4 Spill Response Plan** of the Contractor's Environmental Management Plan (C-EMP);
- put on personal protective equipment;
- stop the spillage;
- confine the spill with earth barriers;
- contain the spill inside the work area and prevent it from entering water ways and drainage systems, etc;
- switch off all heat and ignitable sources;
- do not allow workers to spray water to wash away the spill (since some chemicals are likely to float on top of the water); and

The emergency contact telephone lists will be distributed to employees or posted up in prominent locations.

## 10. REPORTING AND AUDITING

### 10.1 Waste Monitoring and Auditing

The CETL-A, where necessary attended by CETL and CR, shall be responsible for the auditing of the waste management practice during the weekly site inspection in order to evaluate the overall performance of the implementation of C-WMP and ensure that appropriate control measures are properly implemented. Ad-hoc site auditing will be carried out if significant environmental non-compliance is identified. Auditing may also be carried out subsequent to receipt of any environmental complaints. The procedures and weekly environmental checklist can be refer to the C-EMP.

THHJV and the sub-contractors shall also keep adequate and proper records such as delivery document and measurement records relating to the implementation of the C-WMP. All trip tickets and measurement records will be kept on-Site.

### 10.2 Reporting

The CETL-A will prepare a "Contractor's Monthly Environmental Progress Report (CMEPR)" which include waste monitoring and audit findings for the CR and CETL to submit it to PM, HKITP's ET and IECK.

Contents of CMEPR can be referred to Section 9 of the Contractor's Environmental Management Plan (C-EMP).

## 11. TRAINING

All on-site staff will be trained or instructed in job-site cleanliness, hygiene and general avoidance of nuisance as a matter of course. Training regarding waste management conducted by CETL-A shall be held on site monthly to review relevant statutory regulations and waste management practice to all levels of staff as well as subcontractors except workers. Relevant contract requirements shall also be discussed in the training.

Toolbox talks shall be given to all workers or labourers by foremen and subcontractor's representatives at regular intervals as a means to promote environmental awareness and provide updated issues regarding waste management practices. All foremen and subcontractor's representatives shall be trained for conducting the presentation of the toolbox talks by the CETL-A.

Waste management guideline will be issued to advise all on-site staff as to how to reduce waste generation and properly dispose of waste materials, with emphasis placed on sorting and segregation of wastes.

APPENDIX A

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**Construction and  
Demolition Material  
Disposal Delivery Form**

**Construction and Demolition Material  
Disposal Delivery Form**

Department : \_\_\_\_\_ Contract No. : \_\_\_\_\_

Contractor : \_\_\_\_\_

Contract Title : \_\_\_\_\_

Location of Site : \_\_\_\_\_

Location of Public Filling Facility/Landfill \* : \_\_\_\_\_

Vehicle Registration No. : \_\_\_\_\_ Date : \_\_\_\_\_

Approximate Load: Full / three quarter / half / one quarter \*

Remark : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Time of Departure : \_\_\_\_\_

\_\_\_\_\_  
Authorised Chop of  
Engineer's Representative/  
Architect's Representative \*

\* Delete whichever inappropriate