

## 5 WASTE MANAGEMENT

### 5.1 OVERALL RESPONSIBILITIES OF THE CONTRACTOR

The Contractor is responsible for waste control within the construction site, removal of waste material produced by the site and the implementation of any mitigation measures to minimise waste or redress problems arising from site waste. The waste material may include any sewage, waste water or effluent containing sand, cement, silt or any other suspended or dissolved material flowing from the site into any storm sewer, sanitary sewer, or any waste matter or refuse deposited anywhere within the site or onto any adjoining land.

The proposed re-use, recycling, storage, collection, transport and disposal methods for various wastes which are recommended to avoid or minimise potential adverse impacts are detailed in *Section 5.2*. Specifically, it is recommended that during the construction phase, the Contractor incorporate the recommendations into an on-site waste management plan.

The Contractor shall also pay attention to the *Waste Disposal Ordinance*, the *Dumping at Sea Ordinance*, the *Public Health and Municipal Services Ordinance* and the *Water Pollution Control Ordinance*, and carry out the appropriate waste management work. The relevant licence/permit, such as the effluent discharge licence, the chemical waste producer registration, etc. shall be obtained. The Contractor shall refer to the relevant booklets issued by EPD when applying for the licence/permit.

During the site inspections and the document review procedures as mentioned in *Sections 7.1* and *7.2* of this Manual, the ET Leader shall pay special attention to the issues relating to waste management, and check whether the Contractor has followed the relevant contract specifications and the procedures specified under the laws of Hong Kong.

### 5.2 WASTE MANAGEMENT MEASURES

#### 5.2.1 Introduction

This section sets out the recycling, storage, transportation and disposal measures which are recommended to avoid or minimise potential adverse impacts associated with waste arising from the construction of the Eastern MDC.

For the construction phase, the Contractor shall incorporate these recommendations into an on-site waste management plan. Such a management plan shall incorporate site specific factors, such as the designation of areas for the segregation and temporary storage of reusable and recyclable materials. The Contractor shall consult the EPD, the Waste Disposal Authority on the final disposal of wastes.

Training and instruction of construction staff shall be given at the site to increase awareness and draw attention to waste management issues and the need to minimise waste generation. The training requirements shall be included in the site waste management plan.

Upon appointment of the contract, the Contractor should prepare a comprehensive on-site waste management plan of the construction works which should take into account the recommended mitigation measures in the EIA report. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.

### 5.2.2 *Storage, Collection and Transport of Waste*

Permitted waste hauliers shall be used to collect and transport wastes to the appropriate disposal points. The following measures to minimise adverse impacts including windblown litter and dust from the transportation of wastes shall be instigated:

- handle and store wastes in a manner which ensures that they are held securely without loss or leakage, thereby minimising the potential for pollution;
- use waste hauliers authorised or licensed to collect the specific category of waste;
- remove wastes on a daily basis;
- maintain and clean the waste storage areas on a daily basis;
- minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers;
- obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance with the *Waste Disposal Ordinance* (Cap 354), *Waste Disposal (Chemical Waste) (General) Regulation* (Cap 354), the *Land (Miscellaneous Provisions) Ordinance* (Cap 28), *Dumping At Sea Ordinance* (Cap 466) and *Works Branch Technical Circular No. 22/92, Marine Disposal of Dredged Mud*.
- dispose of waste at approved sites;
- develop procedures such as a ticketing system to facilitate tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur; and
- maintain records of the quantities of wastes generated, recycled and disposed.

### *Construction and Demolition (C&D) Materials*

In order to minimise waste arisings and keep environmental impacts within acceptable levels, the mitigation measures described below shall be adopted. Careful design, planning and good site management can minimise over ordering and waste of materials such as concrete, mortars and cement grouts. The design of formwork shall maximise the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic facing shall be considered to increase the potential for reuse.

The Contractor shall recycle as much as possible of the C&D Material on-site. Proper segregation of wastes on site will increase the feasibility of recycling certain components of the waste stream by recycling contractors. Surplus or rejected concrete can be broken down and used as general fill and steel reinforcement bar can be recycled by scrap steel mills. Different areas shall be designated for such segregation and storage wherever site conditions permit.

The handling and disposal of bentonite slurries shall be undertaken in accordance with the *Practice Note For Professional Persons, Construction Site Drainage, Professional Persons Consultative Committee, 1994 (ProPECC PN 1/94)*.

In order to maximise landfill life, Government policy restricts the disposal of C&D material with more than 20% (by volume) inert material at landfills. Public filling areas will only accept inert construction and demolition materials (i.e. earth, building debris, and broken rock and concrete) which is free from marine mud, household refuse, plastic, metal, industrial and chemical waste, animal and vegetable matter. Government plans to establish a number of sorting facilities at strategic locations to process mixed construction and demolition material, however it is unlikely that these facilities will be available during the early stage of the San Tin Eastern MDC construction. It is therefore desirable for San Tin Eastern MDC works to adopt on-site segregation of waste so that the segregated waste can either be recycled and reused or disposed of at landfills.

Government has established a charging scheme for the disposal of waste to landfill. When it is implemented, it will provide additional incentive to reduce the volume of waste generated.

### 5.2.3

#### *Chemical Waste*

For those processes which generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.

Chemical waste that is produced, as defined by *Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation*, shall be handled in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* as follows:

Containers used for the storage of chemical wastes 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 specifications have been approved by the EPD; and
- display a label in English and Chinese in accordance with instructions prescribed in *Schedule 2 of the Regulations*.

The storage area for chemical wastes shall:

- be clearly labelled and used solely for the storage of chemical waste;
- be enclosed on at least 3 sides;
- have an impermeable floor and bunding, of capacity to accommodate 110% of

the volume of the largest container or 20% of the total volume of waste stored in that area, 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 separated.

Disposal of chemical waste shall be:

- via a licensed waste collector; and
- to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or
- to a reuser of the waste, under approval from the EPD.

The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers for the chemical wastes.

#### 5.2.4

##### *General Refuse*

General refuse generated on-site shall be stored in enclosed bins separate from construction and chemical wastes. A reputable waste collector shall be employed by the Contractor to remove 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. The burning of refuse on construction sites is prohibited by law. Rubbish shall not be dumped into the river.

General refuse will be generated largely by food service activities on site, so reusable rather than disposable dishware should be used if feasible. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated or easily accessible; separate, labelled bins for their deposit shall be provided if feasible.

Office wastes can be reduced through recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme shall be considered if one is available.

#### 5.2.5

##### *Excavated Materials/Sediment*

The actual quantity of seriously contaminated material required to be excavated during construction phase could not be accurately estimated unless a detailed sediment quality investigation has been conducted. This sediment quality investigation shall be conducted in accordance with *WBTC No. 22/92*, where a *Sediment Sampling Plan (STP)* shall be submitted and agreed with EPD before the sampling and testing works is being undertaken. The end-product of this sediment quality investigation is a *Sediment Quality Report (SQR)* which should be submitted to FMC prior to the commencement of construction phase. DSD will conduct the sediment quality investigation and provide relevant submissions prior to starting of construction works.

Although information related to highly contaminated sediment to be excavated during construction phase will not be available until the sediment quality investigation mentioned above is conducted, the following recommended measures provided for proper management of this sediment shall be followed if such contamination is confirmed by the investigation. Given the small quantity of dredged material during operation phase, it is suggested that any contaminated material be stored in a water tight container before removal. Moreover, the following mitigation measures are equally applicable during operational phase where maintenance dredging is required.

Special precautions will have to be taken for the handling and transport of contaminated material. Potential impacts associated with the exposure to and disposal of contaminated sediments could be mitigated by adopting the following measures:

- sampling and analysis of the sediment to confirm the level of contamination so that specific disposal requirements and precautionary handling procedures can be determined;
- the use of bulk earth-moving equipment to minimise the contact of contaminated material with construction workers;
- minimising exposure to any contaminated material by the wearing of protective gear such as gloves, providing adequate hygiene and washing facilities and preventing eating during excavation;
- any contaminated mud or sediment excavated shall not be allowed to stockpile on site and should be immediately removed from site once excavated;
- excavated sediment shall be transported by water-tight trucks to potential marine barging points, then to sea going barges for transfer to designated marine disposal grounds;
- permitted waste hauliers shall be used to collect and transport contaminated sediments for disposal;
- all vessels for marine transportation of excavated sediment shall be fitted with tight fitting seals to their bottom openings to prevent leakage of materials; and
- loading of barges and hoppers shall be controlled to prevent splashing of excavated material to the surrounding water, and barges or hoppers shall under no circumstances to be filled to a level which will cause the overflowing of materials or polluted water during loading or transportation.
- the decks of any off-site barges (for disposal to marine dumping grounds) and floating pontoons shall be kept tidy and free of oil or any other substances or articles which might be accidentally or otherwise washed overboard.
- desilting of channel sediment at the existing stream course shall be conducted during the dry season.