

7 WASTE MANAGEMENT

7.1 Introduction

The Container Terminals will be built on reclaimed land extending south east from the Tsing Chau Tsai peninsula and Pennys Bay. The scale and extent of the proposed developments could potentially generate significant waste impacts on the surrounding marine environment. It will therefore be essential that 'Good Site Practise' (GSP) is actively employed during construction works and operation of the CT to ensure effective control and disposal of wastes.

The following sections identify the types of waste that could be generated and recommends arrangements for collection and proper disposal of these waste arisings. One area which has high potential for impact is the occurrence of accidental spillage, which can be part of normal operation even at well run sites. To reduce potential impact of accidental spills this section includes information on action plans which should be followed in the event of an incident.

The principal legislative framework for waste collection and disposal is the Waste Disposal Ordinance 1980 (Cap 354) which provides a licensing system for the collection and disposal of wastes. Under the terms of the Waste Disposal Ordinance construction waste is classified as trade waste and as such the Contractor will be responsible for their disposal. Regulations for chemical waste control are provided under a regulation of this Ordinance [Chemical Waste (General) Regulation 1992] and administer the possession, storage, collection, transport and disposal of chemical wastes.

7.2 Solid Waste

7.2.1 General

Wastes generated by CT construction works are likely to include;

- o general site wastes such as residues, packaging and containers;
- o workforce wastes from site offices, works canteen and approximately 2000 staff;
- o arisings from vehicles, plant equipment servicing and repair facility including wastes classified as Chemical Waste; and
- o arisings from accidental spillage.

There will be no road access to the CT works site until completion of the North Lantau Expressway, around 1997. In the initial stages of CT10 & 11 marine collection of wastes will be the only disposal route available from the site. Wastes generated by the airport construction project at Chek Lap Kok are transferred by containerised barge to a strategic landfill. Disposal of wastes from the CT site will require a similar provision. Design of the container terminal works areas should include provision of a collection area where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blow' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should

be banded.

It is anticipated that inert material would be incorporated into the fill material while other wastes would be transported by barge to an appropriate strategic landfill. Loose transfer of waste would not be acceptable. Materials classified as chemical wastes will need special handling and storage arrangements before removal for appropriate treatment at the chemical waste treatment facility (CWTF) at Tsing Yi. Wherever possible opportunities should be taken to reuse and recycle materials.

7.2.2 General Site and Workforce Wastes

Materials and equipment used on the site will produce packaging and container wastes. Residues may include materials that are classified as chemical wastes which require special disposal.

It is estimated that the number of workers on the site would be approximately 2000, they will generate refuse, food packaging and containers, scraps of food and similar wastes from canteen and site offices.

Rapid and effective collection of site wastes will be required to prevent waste materials being blown around by the wind, flushed or leached into the marine environment. Due to the size and exposed nature of the site a network of bins and waste receptacles and a dedicated waste disposal vehicle, should be provided. The location of these collection points will need to take account of the development of work sites to ensure adequate provision is maintained throughout the development phases of CT works. Suitable collection sites around site offices, service buildings and canteen will also be required.

It is recommended that for environmental hygiene reasons putrescible wastes are not stored for a period exceeding 48 hours, however, removal every 24 hours is preferable. The putrescible waste will not be suitable for incorporation into any reclamation works.

7.2.3 Plant and Vehicle Maintenance and Servicing

Vehicles and plant equipment will require regular servicing and maintenance. Workshops and maintenance facilities will be required throughout the project programme and it is envisaged that these would be built as part of the advanced works programme.

Wastes generated by the maintenance and servicing facilities would include spent filters, batteries, brake/ clutch linings, oils, dirty lubricants, hydraulic and cooling oils. These materials are classified as chemical wastes and will require special handling, including separation from other wastes. They should be directed for appropriate treatment at the chemical waste treatment facility at Tsing Yi operated by Enviropace.

Potential for accidental spillage and leaks from the repair and refuelling facilities should be minimised to prevent soil and surface water contamination. Isolation and confinement of service, maintenance and refuelling areas by provision of banded areas and hard standings with drainage systems, grease traps and petrol interceptors are the most appropriate form of mitigation. Interceptors will need to

be examined and cleaned as part of a consistent maintenance programme to ensure efficiency, fuel lines and valves should also be regularly checked for leakages.

The implementation of standard operation, maintenance and inspection programmes for plant equipment, and vehicles would reduce the potential leakage and accidental spills.

7.3 Liquid Waste

7.3.1 Site Works Sewage Treatment

There is no public sewerage system at the site available for discharges from this project. Ultimately sewage generated within the LPD project area will be directed to the sewage disposal scheme at Siu Ho Wan. However, until this STW is in operation temporary facilities will be required for the LPD workforce. The Environmental Guidelines for Planning in Hong Kong state that major developments should be served by public sewerage and sewage treatment facilities and that construction should be programmed such that sewerage facilities are commissioned before occupation of the new developments.

It is predicted that a construction workforce of 1000 will be required for each container terminal. The use of septic tanks and soakaways is not a viable approach to on-site disposal due to space limitations on the reclamation sites and lack of suitable soakaway sites and this precludes siting a treatment facility within the works area. It is therefore proposed that the sewage is removed by tanker to a preliminary treatment plant located in the backup area.

Effluent discharged from this facility will require licensing under the Water Pollution Control Ordinance and would have to comply with the Technical Memorandum on Standards of Effluent Discharged into Drains and Sewage Systems, Inland and Coastal Waters. A suitable system would need to include screens, primary sedimentation, Rotating Biological Contactor (RBC) plant, final sedimentation and chlorination. With this arrangement a BOD/SS 20 : 30 (mg/l) could be achieved. The location of the outfall will also need careful consideration to ensure that optimum dispersion of the effluent is achieved. The construction of the terminal will generate back-eddies and areas of poor circulation and it is important that the sewage effluent is not discharged into such areas. Reference should be made to the water quality section of this document.

7.3.2 Chemical Waste

Certain prescribed wastes, which may include liquid or solid wastes, are now classified as chemical wastes under the Chemical Waste Disposal (Chemical Wastes) (General) Regulation 1992. This Regulation lays out the legislative framework for the systems of collection, treatment and disposal of chemical wastes by the Chemical Waste Treatment Centre (CWTC) at Tsing Yi or at alternative approved facilities. Approved facilities may be identified which allow recycling of chemical waste material. The centre at Tsing Yi is currently being operated by Enviropace Ltd on behalf of the Government.

Chemical waste is defined as any substance being scrap material, effluent, or a by-product of a trade activity which is, or contains any substance, specified in

Schedule 1 to the Regulation, if it occurs in such a form, quantity or concentration to cause pollution or constitute a risk of pollution. The quantities and concentrations for the substances in Schedule 1 are not specified due to difficulties in compiling a finite but all-inclusive list. Chemical waste generated at the reclamations should be separated for special handling, collection and appropriate treatment at the chemical waste treatment facility at Tsing Yi.

The most likely source of Chemical Waste products is from the maintenance of the vehicle fleet. Filters containing heavy metals, battery components and acid, asbestos in brake linings and spent lubricating oil are potential chemical waste sources.