

6. WASTE MANAGEMENT

6.1 Introduction

This Chapter identifies the wastes which may arise during the construction works and the potential environmental impacts resulting from the handling, collection and disposal of these wastes.

Consideration has been given to potential impacts associated with potential hazards, air and odour emissions, noise, wastewater discharges and potential impacts upon public transport. The options for waste minimisation, recycling, storage, collection, and disposal of waste arising from the works has been examined and procedures for minimising the environmental impacts due to handling and disposal of wastes are recommended.

Following completion of the widening works, the operation of the Highway will generate minimal amounts of waste associated with littering and highway maintenance activities. The handling and disposal of this small amount of waste will have negligible environmental impacts and thus will not be evaluated further in this EIA Study.

6.2 Government Legislation and Applicable Standards

The criteria for evaluating potential waste management implications are laid out in *Annex 7* of the *Technical Memorandum on Environmental Impact Assessment Process (EIA-TM)*. The following legislation covers, or has some bearing upon, the handling, treatment and disposal of wastes in Hong Kong SAR, and will be used as assessment criteria:

- Waste Disposal Ordinance (Cap 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap 354);
- Land (Miscellaneous Provisions) Ordinance (Cap 28);and
- Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances (Urban Council) and (Regional Council) By-laws.

Waste Disposal Ordinance

The *Waste Disposal Ordinance (WDO)* prohibits the unauthorised disposal of wastes, with waste defined as any substance or article which is abandoned. Construction and demolition (C&D) waste is not directly defined in the WDO but is considered to fall within the category of "trade waste". Trade waste is defined as waste from any trade, manufacturer or business, or any waste building, or civil engineering materials, but does not include animal waste.

Under the WDO, wastes can only be disposed of at a licensed site. A breach of these regulations can lead to the imposition of a fine and/or a prison sentence. The WDO also provides for the issuing of licences for the collection and transport of wastes. However, licences are not currently required to be issued for the collection and transport of C&D waste and/or trade waste.

Waste Disposal (Chemical Waste) (General) Regulation

Chemical waste as defined under the *Waste Disposal (Chemical Waste) (General) Regulation* includes any substance being scrap material, or unwanted substances specified under *Schedule* of the *Regulation* if such substance or chemical occurs in such a form, quantity or concentration so as to cause pollution or constitute a danger to health or risk of pollution to the environment.

A person should not produce, or cause to be produced, chemical wastes unless they are registered with EPD. Any person who contravenes this requirement commits an offence and is liable to a fine and /or imprisonment.

Producers of chemical wastes must treat their wastes, utilising on-site plant licensed by EPD, or have a licensed collector take the wastes to a licensed facility. For each consignment, the waste producer waste collector and the disposer of the wastes must sign all relevant parts of a 'trip ticket', this system is designed to allow the transfer of wastes to be traced from cradle to grave.

The *Regulation* prescribes the storage facilities to be provided on site including labelling and warning signs. To minimise the risks of pollution and danger to human health or life, the waste producer is required to prepare and make available, written procedures to be observed in the case of emergencies due to spillage, leakage or accidents arising from the storage of chemical wastes. They must also provide employees with training in such procedures.

Land (Miscellaneous Provisions) Ordinance

Construction and demolition material, which is wholly inert, may be taken to public filling areas. Public filling areas usually form part of land reclamation schemes and are operated by the Civil Engineering Department (CED). The Ordinance requires that public filling licences are obtained by individuals or companies who deliver inert C&D material (or public fill) to public filling areas. The licences are issued by CED under delegated powers from the Director of Lands.

Individual licenses are issued for each vehicle involved. Under the license conditions, public filling areas will accept only inert building debris, soil, rock and broken concrete. There is no size limitation on the rock and broken concrete, and a small amount of timber mixed with other suitable materials is permissible. However, the material should be free from marine mud, household refuse, plastic, metal, industrial and chemical wastes, animal and vegetable matter and any other materials considered unsuitable by the public filling supervisor.

Public Cleansing and Prevention of Nuisances By-Laws

These *By-laws* provide a further control on the illegal tipping of wastes on unauthorised (unlicensed) sites. The illegal dumping of wastes can lead to fines and/or imprisonment.

Additional Guidelines

Other guideline documents, which detail how the Contractor should comply with waste-related 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 Arrangement 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;

Works Branch Technical Circular No. 12/2000, Fill Management.

Works Branch Technical Circular No. 2/93, Public Dumps;

Works Branch Technical Circular No. 16/96, Wet Soil in Public Dumps; and

Works Bureau Technical Circular No. 4/98, Use of public Fill in Reclamation and Earth Filling Projects, Hong Kong Government

Works Bureau Technical Circular No. 5/98, On Site Sorting of Construction Waste on Demolition Sites

Works Bureau Technical Circular No. 5/99, Trip-ticket System for Disposal of Construction and Demolition Material, Hong Kong Government

Works Bureau Technical Circular No. 19/99, Metallic Site Hoardings and Signboards

Works Bureau Technical Circular No. 25/99, Incorporation of Information on Construction and Demolition Material Management, Hong Kong Government

Works Bureau Technical Circular No. 29/2000, Waste Management Plan

6.3 Potential Waste Arisings

6.3.1 General

Construction activities will result in the generation of a variety of wastes which can be divided into distinct categories based on their constituents, as follows:

- surplus excavated material (public fill) that required disposal;
- construction and demolition(C&D) waste;
- chemical waste; and
- municipal waste.

The nature and preliminary quantities of each of these waste types arising from the proposed works are identified below. The detailed calculation of Materials and Wastes arising are required to be submitted to Government under the requirements of WBTC 25/99 during the detailed design.

6.3.2 Surplus Excavated Material (Public Fill) That Required Disposal

Excavated material is defined as inert virgin material removed from the ground and sub-surface. Excavated material may be generated during the reprovisioning of slip roads / local access roads, drainage and utility undertakings and slope works. The proposed widening will involve extending and modifying the existing embankments to facilitate the construction of new carriageways at-grade with the existing Highway. This will include the clearance of high quality topsoil used for planting as well as cutting and filling of existing fill from the embankment construction to accommodate both widened embankments as well as retaining walls in areas of limited space.

It has been identified that even with the reuse of excavated materials, there will be a net deficit of construction fill. The balance of cut and fill materials is shown in Table 6.1 below.

Table 6.1 Estimated Balance of Cut and Fill Requirements

	Volume of Material (m³)
Total Fill Volume	236,000
Total Cut Volume	80,000
<i>Balance</i>	<i>- 156,000</i>

Table 6.1 indicates that there will be an estimated net deficit of around 156,000 m³ fill that will be needed for embankment filling works.

A number of sources of fill have been investigated for the project. It is currently anticipated that fill from the development projects at Anderson Road and Jordan Valley may provide the requisite material. Fill will be generated from this source developments from the first quarter of 2003, continuing throughout the construction period of Yuen Long Highway.

There may also be fill available from the adjacent Yuen Long Bypass Floodway Project. It has been estimated that the Bypass Floodway project will generate approximately 318,000 m³ of good quality surplus fill during a construction period commencing November 2002 until November 2005.

Other potential sources of fill for each year during the proposed works are identified in the Public Fill Committee, (PFC) database of Annual Fill and Surpluses. Given the changing nature of the database and the resource requirements of other concurrent projects, the availability of fill from such sources at the actual time of construction will need to be established during detailed design in consultation with the PFC.

Whilst there is a variety of sources of fill, the suitability of any such fill may need to be determined for particular uses. In particular, stringent acceptability criteria are likely to be applied to any materials used in reinforced slopes and associated structures where stability is a consideration.

6.3.3 Construction and Demolition (C&D) Waste

C&D materials are generated during construction which comprise inert materials such as soil, rock, concrete, brick and asphalt and etc., and non-inert materials including metal, timber, paper, glass and general garbage. The non-inert portion of the C&D materials are classified as C&D

wastes which should be reused or recycled and, as the last resort, disposal of at landfills. C&D materials will arise from a number of activities and may include:

- wood from formwork and falsework;
- equipment and vehicle maintenance parts;
- materials and equipment wrappings;
- unusable/surplus concrete/grouting mixes;
- demolition materials from the existing Highway; and
- damaged/contaminated construction materials.

The volume of surplus construction material to be generated from the works will generally be dependent on operating procedures and site practices, and thus cannot be determined at this stage. However, with respect to the nature of construction activities, it is anticipated that the quantity will be small.

Whilst the works will not require extensive demolition of existing structures, there are likely to be minor works necessary to integrate the new carriageways with the existing Highway that will result in small quantities of demolition wastes. Such activities include:

- removal of existing median concrete barriers along the portion of Highway intended for asymmetrical widening at Lam Hau;
- removal of existing marginal concrete barriers;
- removal of existing concrete coping and aluminum parapet along bridge structures; and
- removal of existing retaining walls and other structures around sub-ways.

In addition, the works will be carried out to ensure that the residual life of both the existing and new carriageway pavements are similar. It is anticipated that the operational life of the pavement over the existing carriageways will be lengthened through milling (and subsequent reapplication) of the top 30mm of friction course. The tailings from the milling process will require suitable management as inert demolition wastes. It is estimated that a maximum, (worst case volume) of 4,500m³ of material would be generated from the milling of the existing road surface. However, this assignment, has included a Falling Weight Deflectometer survey of the existing pavement to determine the structural conditions of the pavement layers. Based on the FWD results, the design of the pavement will adopt as far as possible overlay and inlay methods to extend the service life of the existing pavement to reduce the need for milling. The exact extent to which the existing pavement can be retained would be defined in the detailed design, however, this will reduce the extent of pavement reconstruction and the associated construction waste.

To conserve the capacities of landfill sites, C&D materials with more than 30% (by weight) inert material should not be disposed of to landfill. Therefore, it is good practice to segregate the inert and non-inert materials at the construction sites before disposing the inert material (or public fill) at public filling areas or other reclamation areas and the degradable waste (C&D waste) at

landfills. The actual volume of C&D Waste, (that will require disposal to landfill) is estimated to be about 1000m³.

The volume of C&D materials estimated to arise from the works is 4,500 m³, of which approximately 1,000 m³ is C&D Waste, which will require disposal to landfill. The remaining 3,500 m³ material is inert and should be reused on-site as far as possible. Surplus will be disposed of to reclamation sites through arrangement with relevant Government departments.

6.3.4 Chemical Waste

Chemical Waste, as defined under the *Waste Disposal (Chemical Waste) (General) Regulation*, includes any substance being scrap material, or unwanted substances specified under *Schedule 1* of the *Regulation*. A complete list of such substances is provided under the *Regulation*, however substances likely to be generated by construction activities will, for the most part, arise from the maintenance of equipment. These may include, but are not limited to the following:

- scrap batteries or spent acid/alkali from their maintenance;
- used engine oils, hydraulic fluids and waste fuel;
- spent mineral oils/cleaning fluids from mechanical machinery; and
- spent solvents/solutions, some of which may be halogenated, from equipment cleaning activities.

It is difficult to quantify the amount of chemical waste which will arise from the construction activities as it will be highly dependent on the Contractor's on-site maintenance intention and the number of plant and vehicles utilised. However, it is anticipated that the quantity of chemical waste, such as lubricating oil and solvent produced from plant maintenance will be small, (in the order of a couple of hundred litres per month) and will be readily accepted at the chemical waste treatment centre at Tsing Yi or other licensed waste oil recycling facilities in Hong Kong. The actual amount of chemical wastes generated should be quantified and recorded in the Site Waste Management Plan to be prepared by the Contractor.

6.3.5 Municipal Waste

Construction site workers, site offices and canteens will result in the generation of a variety of general refuse requiring disposal. Municipal wastes generated on site will mainly consist of food wastes, aluminum cans and waste paper.

The likely maximum number of workers on-site at any one time during the construction period is 200 people. This is likely to occur at the busiest period of the works, around the end of 2003.

Projections of municipal waste generation are generated by EPD, (*Monitoring of Solid Wastes in Hong Kong*, EPD, 1997). Actual generation rates for 1997 were recorded at 1.04 kg/person/day. Linear projections based on previously recorded data indicate that this rate will increase to 1.07 and 1.11 kg/person/day in 20001 and 2006 respectively.

Therefore, it is predicted that during the period of peak activity, approximately 0.22 tonnes/day of municipal waste would be produced

6.4 Prediction and Evaluation of Impacts

6.4.1 General

The nature of the waste arising from the works and the potential environmental impacts which may arise from their handling, storage, transport and disposal are discussed under the headings of each waste type below.

The assessment of environmental impacts from waste generation is based on 3 factors:

- the type of waste generated;
- the amount of principal waste types generated; and
- the proposed recycling, storage, transport, disposal methods, and the impacts of these methods.

Excavated Materials

Some excavated material will be generated during the reprovisioning of slip roads / local access roads, drainage and utility undertakings and slope works. However, as identified in Section 6.3, there is likely to be a net deficit of fill. It is anticipated that cut material arising through the works will be reused on site thereby minimising the volume necessary for disposal.

Where material is to be reused on site or where material is brought in to the site from the identified source, fill (and topsoil) may need to be stockpiled. Stockpiles have the potential to cause nuisance through fugitive emissions to air or increased suspended sediments of local water courses where materials are allowed to be eroded.

Areas for stockpiling have not been determined at this stage, however given that any stockpiling results in “double-handling” of material (which is time consuming) , it can be reasonably assumed that this would be minimised as far as possible by the contractor. If the appropriate measures are taken for the management of stockpiles, impacts are not considered to be significant.

6.4.2 Construction and Demolition Waste

The impact associated with the disposal of C&D waste is difficult to determine, as the volumes of material for disposal are dependent upon the site practices by the Contractor.

The disposal of inert C&D material (or public fill) at public filling areas or other reclamation sites is unlikely to raise any long-term concerns because of the inert nature of the material. In addition, as there is a net deficit of fill material, this will act as an incentive to minimise the volumes of inert C&D material for disposal. In the event that inert C&D material is removed from site for public filling, written agreement should be obtained from the intended recipient, and it should be established that there would be no adverse environmental impacts associated with transport and delivery carried out.

Disposal of C&D waste to licensed landfill is not anticipated to cause unacceptable environmental impacts. Wherever practical, the production of C&D wastes should be minimised

by the careful control of ordering procedures and the segregation of materials. This will also assist in minimising costs should landfill charges be introduced.

Measures to incorporate a 'trip-ticket' system for disposal of C&D material for PWP projects was introduced through WBTC 5/99, (Trip ticket System for Disposal of Construction and Demolition Material). This Circular introduced a policy for PWP projects invited after 1 July 1999 to incorporate such a system, thereby reducing the incidence of fly-tipping.

Regrading of the existing carriageways to remove approximately 30mm of the pavement can be carried out by specialist machinery, which reduces secondary impacts associated with fugitive emissions and noise. Given that only 30mm of the surface material need be stripped, additional processing or crushing is not anticipated.

C&D wastes currently account for approximately 35% of the annual consumption of limited landfill void available in Hong Kong (although this proportion has varied widely over recent years). Therefore, it is important to minimise, wherever possible, the wastes to be disposed of to landfill.

6.4.3 Chemical Waste

Chemical wastes may pose serious environmental and health and safety hazards if not stored and disposed of in an appropriate manner as outlined in the *Waste Disposal (Chemical Waste) (General) Regulation* and the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. These hazards include:

- toxic effects to workers;
- adverse effects on air, water and land from spills;
- fire hazards; and
- disruption to sewage treatment works due to damage to the sewage biological treatment system if waste is allowed to enter the sewage system.

Provided that the handling, storage and disposal of chemical wastes are in accordance with the Code of Practice, such wastes will not cause unacceptable environmental impacts.

6.4.4 Municipal Waste

The storage of general refuse has the potential to give rise of adverse environmental impacts. These include odour if the waste is not collected frequently (e.g. daily), windblown litter, water quality impacts if waste enters water bodies, and visual impact. The sites may also attract pests, vermin, and other disease vectors if the waste storage area are not well maintained and cleaned regularly. In addition, disposal of wastes, at sites other than approved landfills, can also lead to similar adverse impacts at those sites.

The anticipated volumes of municipal wastes generated during construction (0.22 tonnes/day) are considered relatively small and easily managed. Provided that the mitigation measures recommended in Section 6.5 are adopted, the environmental impacts caused by storage, handling transport and disposal of general refuse are expected to be minimal.

6.5 Mitigation Measures to be Implemented Through the Waste Management Plan

6.5.1 Introduction

The Contractor is responsible for the management of materials and wastes arising during construction. This includes control of wastes on site, removal of the waste materials from the site and the implementation of any mitigation measures to minimise waste or redress any problems that arise from waste associated with the works. In addition to C&D waste and domestic wastes, this material may include sewage, waste water or any other site discharges on to adjacent land, sewers, or water courses.

This section sets out the measures to be adopted to avoid or minimise potential adverse impacts associated with waste arising from the works under the headings of each waste type. The Contractor should incorporate these recommendations into a comprehensive on-site waste management plan, (WMP). If, for any reason, the recommendations cannot be implemented full justification should be given in the WMP.

The WMP should be prepared and submitted for approval by the Engineer's Representative and EPD prior any construction activities. During the construction period the WMP should be used as a working document to detail the on-going management procedures and to record waste arisings and import of fill throughout the Contract. The WMP shall be subject to audit under the requirements of the Environmental Monitoring and Audit Procedures set out in the EM&A Manual accompanying this EIA Report.

6.5.2 Waste Management Hierarchy

The WMP shall be developed and implemented according to a best-practice philosophy of waste management. There are various waste management options, which can be categorised in terms of preference from an environmental viewpoint. The options considered to be more preferable have the least impacts and are more sustainable in a long-term context. Hence, the hierarchy is as follows:

- avoidance and minimisation, i.e. avoiding or not generating waste through changing or improving practices and design;
- reuse of materials, thus avoiding disposal (generally with only limited reprocessing);
- recovery and recycling, thus avoiding disposal (although reprocessing may be required); and
- treatment and disposal, according to relevant laws, guidelines and good practice.

The Waste Disposal Authority should be consulted by the Contractor on the final disposal of wastes.

This hierarchy should be used to evaluate waste management options, thus allowing maximum waste reduction and often reducing costs. For example, by reducing or eliminating over-ordering of construction materials, waste is avoided and costs are reduced both in terms of purchasing of raw materials and in disposing of wastes.

There is anticipated shortfall in fill requirements (estimated at 156,000 m³) as such:

- Inert excavated material and construction and demolition material deemed suitable for fill should be re-used on site;
- Inert material deemed unsuitable for reuse on site, reclamation or land formation; and non-inert construction waste material should be disposed of at a landfill;

The suitability (or otherwise) of material for reuse on site shall be detailed in the WMP. If, for any reason, the recommendations cannot be implemented, full justification should be given in the WMP for approval by EPD.

6.5.3 Training

To facilitate adoption of the best-practice philosophy, training shall be provided to all personnel working on site. The training shall promote the concept of general site cleanliness and clearly explain the appropriate waste management procedures defined in the WMP. Overall, the training should encourage all workers to reduce, reuse and recycle wastes.

6.5.4 Records of Waste Arisings and Management

During construction, the WMP should be kept up to date on a monthly basis with records of the actual quantities of wastes generated, recycled and disposed of off-site, as well as fill imported to site. Quantities shall be determined by weighing each load or other methods agreed to by the Engineer's Representative. Waste shall only be disposed of at licensed sites and the WMP should include procedures to ensure that illegal disposal of wastes does not occur. Only waste hauliers authorised to collect the specific category of waste concerned should be employed and a trip ticket system shall be implemented for offsite disposal of C&D and solid waste at public filling facilities and landfills (in accordance with WBTC 5/99). Appropriate measures should be employed to minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers.

6.5.5 Site Planning

The Work site(s) shall be arranged and managed to facilitate the proper management of wastes and materials. The WMP shall include plans indicating specific areas designated the storage of particular types of waste, reusable and recyclable materials as well as areas and management proposals for any stockpiling areas. Waste storage areas should be well maintained and cleaned regularly. Specific provisions for different types of material are outlined below. In general, these areas should be designed to avoid cross contamination of materials as well as pollution of the surrounding environment.

6.5.6 Excavated Materials (Public Fill)

As identified above, there is anticipated shortfall in fill requirements and excavated materials are expected to be reused on-site. Excavated material should be segregated, such that topsoil is stored separately from fill and treated accordingly to avoid degradation.

Any stockpiles should be sited away from existing watercourses and suitably covered to prevent wind erosion and impacts air quality and water. Measures to prevent impacts upon air quality and water are described in Sections 4.8.1 and 5.7.1 respectively.

6.5.7 Construction and Demolition Waste

In order to minimise waste arisings and keep environmental impacts within acceptable levels, the mitigation measures described below should be adopted.

Careful design, planning and good site management can minimise over ordering and generation of surplus materials such as concrete, mortars and cement grouts. The design of formwork should maximise the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic facing should be considered to increase the potential for reuse.

At present, Government is developing a charging policy for the disposal of waste to landfill. When it is implemented, this will provide additional incentive to reduce the volume of waste generated and to encourage proper segregation so as to facilitate free disposal of inert material to public filling areas.

C&D materials should be segregated on site into different waste and material types. This will increase the feasibility of certain components of the waste stream being recycled by specialised contractors. The Contractor should clearly demonstrate in the WMP how he intends to maximise the reuse of C&D material on-site. Where reuse of materials on site is not feasible, the Contractor should explore opportunities for recycling materials off-site. Inert C&D materials shall be reused on site as much as possible or recycled with the remaining non-inert materials which cannot be reused or recycled being disposed of to landfill.

Potential opportunities for recycling and reuse of C&D materials from the Widening works includes:

- milling wastes arising from regrading of the existing pavement could be recycled on site and reused as either road-base in the new carriageways or fill for new embankments;
- existing marginal roadside barriers comprise pre-cast units, it may be possible to re-use these following widening works; and
- existing bridge parapets comprise aluminum post and railings, these have a recyclable value and could be sold on for reconditioning or reused for scrap metal.

6.5.8 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 should be handled in accordance with the Code of Practice on the packaging, Handling and Storage of Chemical Wastes as follows. Containers used for the storage of chemical wastes should:

- 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 450L 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 should:

- 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% by volume of the chemical 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 adequately separated.

The Contractor shall register with EPD as a Chemical Waste producer. Waste oils and other chemical wastes as defined in the Waste Disposal (Chemical Waste) (General) Regulation will require disposal by an appropriate means and could require pre-notification to EPD prior to disposal. An appropriate disposal facility could be the Chemical Waste Treatment Centre (CWTC) at Tsing Yi. If chemical wastes are to be generated, the contractor will need to register with EPD as a chemical waste producer and observe the requirements for chemical waste storage, labelling, transportation and disposal. Disposal of chemical waste should:

- be via a licensed waste collector; and
- be 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
- be to a reuser of the waste, under approval from EPD.

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

6.5.9 Municipal Wastes

General refuse generated on-site should be stored in enclosed bins or compaction units separate from construction and chemical wastes. A waste collector should 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.

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

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

6.6 Conclusion

The proposed works are likely to result in the generation of a variety of wastes and require the management of construction materials and the importation of fill. Provided that both waste arisings and imported fill are managed using approved methods as described above, no unacceptable adverse environmental impacts are envisaged.

The mitigation measures recommended in this Chapter should be incorporated into a Waste Management Plan and applied through the contract documents to ensure that environmental nuisance does not arise.