system in Public Works Programme (PWP) contracts for the proper disposal of C&D material at public filling facilities or landfills.

6.1.2.10 The *Works Bureau Technical Circular No. 25/99 – Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers* promulgates the policy and guidelines for incorporating information on the management of construction and demolition material in Publics Works Subcommittee papers recommending the upgrading of projects to Category A of the Public Works Programme for the implementation of construction works.

6.1.2.11 The *Works Bureau Technical Circular No. 12/2000 – Fill Management* sets out the terms of reference and membership composition of the Marine Fill Committee and Public Fill Committee which shall take up the functions and responsibilities of the Fill Management Committee established in June 1989. It also explains how fill resources, construction and demolition material (C&DM), and dredged/excavated sediment disposal are managed.

6.1.2.12 The *Works Bureau Technical Circular No. 29/2000 - Waste Management Plan* introduces the requirement for contractors to prepare and implement a waste management plan (WMP). The requirement shall be included in all PWP contracts (including design and build contracts but excluding term contracts and contracts administered by Electrical and Mechanical Services Department).

6.2 Waste Management Measures

6.2.1 *General*

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

6.2.1.2 A proper waste management plan should be implemented to promote waste minimisation at source. Where waste generation is unavoidable then the potential for recycling or reuse should be explored and opportunities taken. If wastes cannot be recycled then the recommended disposal routes should be followed.

6.2.1.3 Different types of construction waste generated from the site should be segregated, stored, transported and disposed of separately in accordance with EPD's required procedures. It is important that the sorting of wastes should be done on-site. All waste materials should be segregated into categories covering:

- excavated material or construction waste suitable for reuse on-site;
- excavated material or construction waste suitable for SEKD reclamation of public filling areas;
- remaining waste for landfill;
- chemical waste; and
- general refuse.

6.2.1.4 On site measures promoting proper segregation and disposal of construction waste should be implemented, e.g. provide separate containers for inert (rubber, sand, stone etc) and non-inert (wood, organics etc) wastes. The inert waste can be taken to public filling area and the non-inert waste can be transported to strategic landfills.

6.2.1.5 It will be the Contractors' responsibility to dispose of excavated spoil and construction wastes. The Contractors should make use of excavated spoil as much as possible to minimise off-site fill material requirements and disposal of spoil. During road transportation of excavated spoil, vehicles should be covered to avoid dust impacts.

6.2.1.6 The Contractor should 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. should be obtained. The Contractor should refer to the relevant booklets issued by EPD when applying for the licence/permit.

6.2.1.7 During the site inspections and the document review procedures as mentioned in Sections 8.1 and 8.2 of this Manual, the EAT Leader should 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, as well as the legislation and guidelines described in Section 6.1 above.

6.2.1.8 On the management of construction and demolition (C&D) materials, reference should be made to *Work Bureau Technical Circulars WBTC 29/2000* on Waste Management Plan. In addition, the EM&A report should regularly publish information on management of C&D materials to ensure that information included in the Environment section of the PWSC paper are monitored and audited during the construction stage. The inert C&D materials should also be reused within the project as far as possible instead of disposing of at public filling areas.

6.2.2 *Construction and Demolition (C&D) Material*

6.2.2.1 Components of C&D wastes such as steel and other metals should be segregated and recycled as far as possible before disposal to landfill.

6.2.2.2 Wastes such as concrete and rubble should only be disposed of at a public filling area.

6.2.2.3 An on-site construction and demolition waste handling facilities including temporary barging point and areas for sorting and stockpiling of all C&D waste should be set up for handling the large quantities of C&D waste generated prior to disposal, which is in reference to the *Works Bureau Technical Circular No. 5/98 – On Site Sorting of Construction Waste on Demolition Sites.*

6.2.2.4 If there is surplus waste required to be disposed of at public filling area, it should be noted that the public filling materials should only consist of earth, building debris and broken rock and concrete. They should be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling Supervisor. Small quantity of timber mixed with otherwise suitable material will be permitted.

6.2.3 *Chemical Waste*

6.2.3.1 Chemical waste (e.g. oily sludge, halogenated solvent) produced from decommissioning of underground pipes and tanks and other activity should be handled according to the *Code of Practice on the Packaging, Labeling and Storage of Chemical Waste* and disposed of by a licensed contractor at Tsing Yi Chemical Waste Treatment Facility.

6.2.3.2 Uncontrolled disposal of chemical and hazardous waste into the air, soil and waters should be prevented.

6.2.3.3 Where tanks or pipes are to be emptied or removed, precautionary measures should be taken to avoid the spillage of any petroleum products that may cause contamination to the ground.

6.2.3.4 Any contaminated material such as absorbent or cleaning stuffs should be properly disposed of.

6.2.3.5 If temporary on-site storage of ACM is required, the storage facilities should be designed in accordance with the *Code of Practice on the Packaging, Labeling and Storage of Chemical Waste* issued by EPD.

6.2.3.6 ACM must be removed by registered contractors and disposed of at landfill. The handling procedures must comply with the requirements specified in the EPD's *Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste.*

6.2.3.7 A sewerage system or septic tanks must be provided to collect human waste.

6.2.3.8 Sludge should be removed regularly by a hygiene service company to a suitable landfill site, subject to the sludge generated meeting the acceptance criteria (e.g. dry solid content) for the landfill.

6.2.3.9 On-site refuse collection point must be provided. This waste would normally be collected by private waste collectors, then transferred to a transfer station for compaction and containerization, and finally disposed of at a landfill.

6.2.4 *Refuse*

6.2.4.1 Implement appropriate measures to minimize windblown litter and dust during transportation by covering trucks or transporting wastes in enclosed containers.

6.2.4.2 Set up temporary refuse collection facility to store domestic waste and the waste should be collected frequently.

6.2.5 *Waste Minimisation*

6.2.5.1 C&D waste should be recycled or reused wherever possible. The waste management strategy to be employed should promote waste minimisation at source. Where waste generation is unavoidable then the potential for recycling or reuse should be explored and opportunities taken.

6.2.5.2 Waste reduction measures should be introduced at the design stage and carried through the construction activities, wherever possible, by careful control on purchasing, reuse of formwork, and good site management.

6.2.5.3 Training of construction staff should 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 should be included in the site management plan.

6.2.6 *Waste Handling and Disposal*

6.2.6.1 Reputable waste collectors authorised to collect the specific category of waste should be used to collect and transport the wastes to the appropriate disposal points.

6.2.6.2 Waste should be handled and stored properly to ensure that they are held securely without loss or leakage thereby minimising the potential for pollution. Release of pollutants into nearby water bodies during storage and handling should not be permitted.

6.2.6.3 Appropriate measures should be employed to minimise windblown litter and dust during transportation of wastes by either covering the trucks or transporting wastes in enclosed containers.

6.2.6.4 The necessary waste disposal permits should be obtained from the appropriate authorities for specific category of waste in accordance with the relevant regulations.

6.2.6.5 Collection of municipal wastes should be carried out frequently, say on a daily basis.

6.2.6.6 Records of the quantities of wastes generated, recycled and disposed should be maintained, determined by weighing each load or by other appropriate methods.

6.2.6.7 **Table 6.1** provides a summary of waste handling method for different type of waste.

Table 6.1 Summary of Waste Handling Procedures during Construction Phase

Waste Type	Mitigation Measures	
	Handling	Disposal
Construction and Demolition Material	Where possible should be re-used on-site	On-site for reclamation and road base
	If off-site disposal required, separate into: • C&D waste • Public fill: concrete and rubble	Landfill Public filling area or reclamation
Chemical Wastes	Recycle on-site or by licensed companies Stored on-site or by licensed companies	Chemical waste treatment facility
Chemical Wastes	Asbestos Provision of appropriate on-site temporary storage facility To be removed off-site by registered contractors	Landfill
Workforce Waste	Provide on-site refuse collection facilities Main sewerage or septic tank	Refuse Station for compaction and containerization and then to Landfill Private hygiene company