



Construction & Demolition Waste Reduction Guideline

Property and Facilities Division, Sustainability Office.

1.0 Introduction

Construction and demolition (C&D) waste is material produced during construction, renovation, demolition or deconstruction activities and incorporates a diverse range of materials that typically include concrete, wood, metals, gypsum board products, asphalt, roofing material and debris like soil and rock.

Construction and Demolition (C&D) waste is a significant and growing part of the disposed waste stream in Queensland. Consistent with the waste hierarchy philosophy, waste avoidance and reduction are the optimal approach to C&D waste management. When avoidance cannot be achieved, recovery and re-use activities provide opportunities for business and industry to extract valuable resources from the C&D waste. Such activities will conserve resources by diverting them away from landfill, develop stronger end markets and create economic benefits through lowering material and disposal costs.

2.0 Waste Avoidance and Minimisation

The best way to deal with C&D waste is not to create it in the first place.

Waste can be avoided by careful planning at the design stage. When designing, the following key waste reduction approaches should be considered:

- Select building materials and systems with low waste rates. In particular, designing building dimensions to correspond with standard material sizes and using modular components.
- Identify, source and specify materials and products that have a recycled content wherever they are cost- and performance competitive. Consider reusing waste materials from demolition.
- Choose a method of construction to minimise cut and fill.
- Design with life-cycle flexibility in mind so that when future modifications or decommissioning occurs, the entire structure can be taken apart and reused with ease and minimal waste.

3.0 Reduce

A reduction in the amount of waste generated at the construction site can be achieved through applying sustainable purchasing procedures such as;

- Purchase materials with minimal packaging. Develop contract conditions / arrangements with suppliers to reduce the quantity of packaging materials supplied and/or to provide reusable/returnable packaging.
- Specify to manufacturers and suppliers exact requirements, limit the over-estimating and over-ordering of purchasing requirements.
- Make arrangements with suppliers to buyback any unused supplies.
- Purchase materials that have recycled content or are recyclable where appropriate.
- Purchase materials from suppliers that provide take back programs for their products at the end of the products' useful life for re-use or recycling.

4.0 Reuse and Recycle

4.1 Hazardous Materials

A certain portion of the materials from construction and demolition projects are toxic or classified as hazardous waste.

Regulated waste is commercial or industrial waste of a waste type listed in Schedule 7 of the *Environmental Protection Regulation (2008) (Qld)*. Regulated wastes are hazardous wastes that have been deemed to be harmful to the community and the environment and therefore require a higher level of regulation. Regulated waste, due to its hazardous nature, must be transported by a regulated waste transporter to an authorised waste receiver.

Table 1. Common hazardous C&D Materials

| Hazardous waste Type | Waste category/ Classification |
|----------------------|---|
| Contaminated Soil | A disposal permit is required to remove contaminated soil for treatment or disposal from land listed on the Environmental Management Register (EMR) or Contaminated Land Register (CLR). On-site remediation of contaminated soil is considered best practice, removing contaminated soil for treatment or disposal off-site should only be carried out when that option is not practicable. |

Table 1. Common hazardous C&D Materials (continued).

| Hazardous waste Type | Waste category/ Classification |
|---|--|
| Asbestos | Regulated waste, due to its hazardous nature, must be transported by a regulated waste transporter to an authorised Waste Receiver. |
| Hydrocarbons, paint, chemicals | |
| Electrical insulation – oil filled (potential PCB contaminated) or SF6 (Sulphur hexa fluoride) | Various programs and companies provide recycling services for a wide range of mercury-containing wastes, fluorescent lamps, e-waste and batteries (See Table 2 below). |
| Lead and lead compounds including lead-acid batteries. | |
| Mercury-containing lamps including compact fluorescent lamps (CFLs), fluorescent tubes and high intensity discharge (HID) lamps | |
| Mercury thermostats and switches | |

4.2 Recycling Materials

Recycling is a process by which waste material (otherwise destined for disposal) is collected, sorted, reprocessed and eventually used to make another product.

The following waste types are accepted in South East Queensland waste facilities for recycling. For specific details on recycling facilities within the Brisbane area refer to [Planet Ark website](#).

Table 2. Commonly Recycled C&D Materials

| Waste Type | Recycling Options at South East Queensland waste facilities |
|--|--|
| Asphalt/bitumen | Asphalt is recycled by various companies in Brisbane to produce new asphalt with a percentage of recycled asphalt content. Recycled asphalt also goes into the base course and road base layers and is also commonly used in the wearing course of pavements. |
| Clean fill | A number of waste facilities in Brisbane accept clean fill. Clean fill is recycled and resupplied to the civil construction market as an alternative to traditional quarried products. |
| Concrete (unreinforced) Concrete (reinforced) Concrete waste including bricks and pavers. | Various waste facilities in Brisbane accept bricks, pavers and concrete. The key markets for crushed concrete and brick include use in all-weather applications (such as low-grade roads) and in pavement sub-bases (such as roads and non-structural applications) as a substitute for virgin crushed rock. |

Table 2. Commonly Recycled C&D Materials (continued).

| Waste Type | Recycling Options at South East Queensland waste facilities |
|---|---|
| Metal | <p>Scrap metal is accepted at various council waste management facilities or it can be sold to scrap metal merchants. Salvaged metals are shipped to specialist external companies where it is remelted into secondary materials for structural steel, roofing, piping etc.</p> <p>The price that re-processors pay for mixed steel scrap coupled with the value of avoided landfill disposal costs, creates a strong economic incentive to recover this material stream.</p> |
| Cardboard/paper | <p>Numerous waste management companies offer services for the collection of cardboard waste. Cardboard is recycled into mulch, compost, animal bedding, newsprint, egg cartons and packaging.</p> |
| Carpet and Carpet Pad and underlay | <p>A number of Australian carpet and underlay companies now offer guarantees to take their products back at the end of its first life for re-use or recycling. Recycled carpet and underlay can be used to produce new products with high recycled content or can be used to produce worm farm bedding, weed mats beneath trees and around gardens, erosion control matting and even mulch.</p> |
| Vinyl flooring | <p>A number of vinyl flooring companies are signatories to the PVC Industry Product Stewardship Program and as such offer contractual arrangements with customers to take products back at the end of the product's in-use phase.</p> <p>Once recycled, vinyl can be reused to produce new products with high recycled content or can be used in applications such as packaging, pipe, siding, parking stops, floor tiles, notebook covers and traffic cones.</p> |
| Gypsum board product | <p>Plasterboard recovery from construction sites is often made through arrangements between the construction company and the material manufacturer or supplier. Plasterboard manufacturers supplying construction sites regularly support the recovery of clean product from these sites.</p> |
| PVC and Polyethylene pipes | <p>A couple of Brisbane companies recycle waste PVC and Polyethylene pipes. Refer to PIPA website for details of these companies.</p> |
| Timber Recycling Centre | <p>Demolition yards will salvage timber products from demolition projects and resell the timber (see Table 3 below).</p> <p>There are also a number of companies that currently recycle timber products in Brisbane to produce mulch, particleboard, animal bedding and/or bioenergy. Timber products and off cuts should be separated and free from contamination so it can be recycled or used.</p> |

Table 2. Commonly Recycled C&D Materials (continued).

| Waste Type | Recycling Options at South East Queensland waste facilities |
|------------------------------|---|
| Wood pallets | Various Pallet Recycling companies currently operate in Brisbane. |
| Polystyrene | A number of Brisbane companies specialise in recycling expanded polystyrene (EPS), for details of these companies visit Planet Ark's Recycling Near You website and search by product. These facilities are capable of accepting all types of EPS from both packaging and building applications and offer both a collection service (for end users with large volumes of EPS scrap) and a drop-off service. |
| Ceiling Tiles | A number of Australian ceiling panels companies offer contractual arrangements with customers to take products back at the end of the product's in-use phase. |
| E-Waste and batteries | Property and Facilities Cleaning services collect E-Waste and batteries for recycling. To recycle obsolete electronic equipment at UQ send an email to: recycle@pf.uq.edu.au to collect the items. |
| Fluorescent lamps | Property and Facilities Cleaning services collects old Fluorescent, HID and LED lamps for recycling. Old tubes and lamps can be placed in a skip located in the P&F Workshop, or email recycle@pf.uq.edu.au to request collection. |

4.3 Reuse Materials

Reuse is a process by which waste is cleaned, processed or repaired for use, prolonging the original product lifetime prior to it being recycled or discarded.

Strategies to increase the reuse of products onsite include;

- Identifying opportunities to reuse material during construction phase, and;
- Engaging a salvage specialist to identify opportunities in the open market for reuse of materials that are not able to be reused in the project.

Table 3. Commonly Reused C&D Materials

| Waste Type | Reuse Opportunities |
|-------------------------------|---|
| Office furniture | Office furniture may be able to be reused through the UQ second hand furniture exchange program. Contact the Sustainability Office email: sustainability@uq.edu.au |
| Salvageable building material | <p>Building materials including timber and metal items, external cladding, plumbing, fencing, doors and windows.</p> <p>Remove salvageable building materials prior to demolition so that items can retain their value and be reused.</p> |
| Top soil | Stockpiling of topsoil free of weeds and storage for reuse on UQ grounds where practicable. |
| Excavated material | Consider reusing clean excavated material wherever practicable. |
| Green waste | Vegetation cleared during construction can be chipped, mulched and reused for landscaping purposes. Green waste (garden and organic waste) must be separated and be free from contamination to be recycled into mulch. |