



Department of
Environment and Conservation

Our environment, our future



Environmental guidelines

for

construction and demolition waste recycling facilities

September 2009

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Introduction

The construction and demolition waste recycling industry is a growing supplier of civil engineering materials in Western Australia. The availability of recycled products that meet end-user specifications reduces the demand on quarried materials. The industry already produces a range of products that are used in drainage applications and for road-making. Blended recycled materials can also be used as inert fill for land contouring and as admixtures in brick-making.

Recycling facilities have the potential to impact on the local environment. Facility operators are required to hold a current licence issued by Department of Environment and Conservation (DEC). Site operations can generate dust, litter, create offensive noise or result in unauthorised discharge of sediment and/or contaminated water.

A typical recycling facility receives mixed, partially mixed or source-segregated construction or demolition waste. Loads are visually assessed for contamination, such as asbestos. They are then processed to extract any readily recyclable materials such as metals, plastic or paper. The types of process used may be fairly simple ranging from manual separation or separation using a front end loader, to more advanced systems using conveyors, trommels, magnetic separators, crushers, grinders and graded screens. The remaining mix can consist of concrete, bricks or general rubble, and might be further graded, or crushed and screened, to produce a specific mix.

Better economic outcomes are achieved where a facility produces a material that conforms to a product specification accepted by end-users. The supply of a product that is not 'fit for purpose' reduces market confidence in the use of recycled aggregates. Facility pricing policies may need to be adjusted or waste acceptance criteria set and enforced by operators to exclude contaminants from loads. Feedstock quality and process control are needed to ensure products meet specification and comply with all relevant regulations.

Purpose of this document

This document is intended to provide proponents, owners and operators of building product recycling facilities with guidance on standards of environmental performance needed when recycling construction and demolition waste. Environmental issues associated with sorting and processing construction and demolition waste are identified. The desired outcome is then described. Specific safeguards and operational measures are also suggested. Operating practices are suggested that are intended to maximise the opportunity for recovery of resources.

It is not intended that this document be prescriptive or a fully comprehensive "how to" Guide. Compliance within the contents of this document does not alter any requirement for owners to fully comply with all relevant legislation and regulations. It is also likely that individual sites will encounter site-specific issues that might not be

covered by these Guidelines. Each site will need individual assessment by owners and operators.

Some of the most relevant environmental laws and regulations that apply to building product recycling facilities are highlighted to assist owners and operators.

These Guidelines do not discuss the economics of operating a construction and demolition company nor the impact of the economies of scale of such facilities.

General principles

The performance outcomes described in this document are based on the following principles and objectives. Each represents an individual goal in its own right. The achievement of the performance outcomes described in this Guideline will contribute to meeting these goals and result in improved local environmental conditions through more sustainable management of building product recycling facilities.

1. Protection of public health
2. Protection of the environment
3. Resource Efficiency
4. Principles of Sustainability

Protection of public health

It is important that public health considerations are not overlooked in pursuit of higher order environmental objectives. Poorly managed landfills or recycling facilities can increase such risks, for instance by allowing water to pond and mosquitoes to breed. Construction and demolition waste recycling facilities will also receive materials that may contain substances that are toxic in the environment and may threaten human health. Specific types of asbestos are known to cause cancer in humans. There is concern over the use and disposal of Copper Chrome Arsenate (CCA) treated timber, used widely over the years in landscaping, outdoor structures and civil engineering applications. CCA-treated timber must be disposed of in a licensed landfill. Any pesticides, creosote or chemically treated timber, or under-slab treatments need special management, if present. Paints, solvents and chemical adhesives are also common and need to be segregated before processing.

Recycling facilities must therefore develop management practices based on a risk assessment to manage specific products or materials identified as contaminated. Operators may elect to have a policy of not accepting loads if the presence of any quantity of contaminated material is found.

Protection of the environment

DEC is responsible for administering and enforcing the *Environmental Protection Act 1986* and associated Regulations. It is also responsible for managing the *Contaminated Sites Act 2003* and the *Waste Avoidance and Resource Recovery Act*

2007 and associated regulations

It is important that construction and demolition waste recycling facilities are managed to prevent negative environmental impacts. Recycling facilities provide significant environmental benefits by removing products from the waste stream and converting them into reusable products. The efficient operation of reuse and recycling operations conserves the State's natural resources by reducing the need for new quarries with associated habitat loss. They also reduce the energy input into construction as it is more efficient to reprocess demolition materials than to quarry new resources.

Resource efficiency

The Waste Avoidance and Resource Recovery Act 2007 is the primary piece of legislation for waste management in Western Australia. The objectives of the Act are to contribute to sustainability, and the protection of human health and the environment in Western Australia and the move towards a waste-free society by –

- a) Promoting the most efficient use of resources, including resource recovery and waste avoidance; and
- b) Reducing environmental harm, including pollution through waste; and
- c) The consideration of resource management options against the following hierarchy –
 - I. Avoidance of unnecessary resource consumption;
 - II. Resource recovery (including reuse, reprocessing, recycling and energy recovery);
 - III. Disposal.

The waste management hierarchy provides a useful approach for assessing options and deciding on the most desirable end use for wastes or materials. The objective is to adopt the end use that is at the top of the hierarchy.

Table 1 - Applying the waste management hierarchy to construction and demolition waste

<i>Waste management hierarchy</i>	<i>Potential responses</i>
1. Reduce	Includes building design and building life cycle assessment, design for deconstruction, adaptive reuse of existing buildings, use of new materials and technologies with increased reliance on recyclable building components
2. Reuse	Recovered construction and demolition waste particularly hardwoods, warehouse & wharf timbers, aluminium window & door frames, roof tiles, bricks, window glass, and other materials for resale should be segregated and on-sold to salvage yards. Direct re-use applications for non-segregated or unprocessed building waste is limited to site pre-loading or site contouring, or disposal to landfill which will be utilised after closure.
3. Recycle	Road bases and sub-grade materials, drainage medium, backfill material, civil construction, compacted hard stands, sealed and unsealed roads. Concrete aggregate and glass used in the manufacture of concrete kerbing or pedestrian pathways.
4. Disposal	Disposal in landfill for non-specific use.

The principle of “Resource Efficiency” recognises that valuable resources and energy were used to make these materials in the first place. The end use should therefore make the best use of this resource and minimise any additional energy used. Embedded energy whilst valuable must be balanced against transport energy if a product needs to be carted a significant distance for reprocessing.

The hierarchy provides a simple tool to guide decision-making. There will be specific circumstances where the result suggested by the hierarchy might not apply, for instance where infrastructure or markets for recycled products are as yet undeveloped. In general, applying the "resource efficiency" principle will provide better environmental outcomes.

Principles of sustainability

The WA Government has made a commitment to sustainability through the release of the State Sustainability Strategy. The main principles of sustainability are:

1. The precautionary principle;
2. The principle of intergenerational equity;
3. The principle of biological diversity and ecological integrity; and
4. Principles relating to improved valuation, pricing and incentive mechanisms.

For the purposes of this Guideline, the definition of these principles is taken to be as detailed in Section 4A of the *Environmental Protection Act 1986*.

Definitions

Construction and demolition waste recycling facility

means “a facility able to accept construction and demolition waste material to sort, disassemble, screen or make available for reuse or recycling.”

The quality of the material used to produce the recycled material and the amount of sorting, disassembling or screening will all impact on the nature of recycled material produced. A typical construction and demolition waste processing facility will have the following equipment:

- Primary sorting (generally based on selective dumping of wastes)
- Primary crushing
- Secondary sorting, possibly with an electromagnetic conveyor
- Primary screening of crushed material
- Secondary crushing
- Secondary screening
- Final sorting

Construction and demolition waste material

means “the excess or waste material arising from the construction and demolition of buildings and structures or pavements. It includes concrete, brick, rubble, asphalt, metals (ferrous and non ferrous), timber, wallboard, glass, plastics, asbestos, soil and other building materials and products.”

Potential issues in siting and managing construction and demolition waste recycling facilities

The selection of potential construction and demolition waste recycling facilities sites need to consider constraints such as buffer distances for dust and noise control, traffic management, planning requirements and costs.

Generally sites would be in industrial or special industrial zoning areas, or an existing or future landfill site or quarry. Many industrial areas would not be acceptable due to the predominance of light service industries and their likely objections about the reduction of visual amenity and dust emanating from the facility. The most likely location for a construction and demolition waste recycling facility is at an existing landfill site. Generally sufficient buffer distances can be provided with the landfill site and the existing landuse complements the requirements of a processing facility.

Operators of construction and demolition waste recycling facilities need to be aware of a number of potential issues which can cause a local nuisance or disturbance for neighbours which may be an offence. In addition, there are issues that may cause actual and material environmental harm. This constitutes a number of potential and more serious environmental offences for which severe penalties apply.

Table 2 provides a summary of the environmental issues that need to be addressed in site selection and operating practices. These are:

- Noise
- Air Quality
- Water Quality
- Land Use
- Flora and Fauna
- Litter issues

The common activities associated with transporting, processing and recycling of used building products are listed, showing the possible results and the potential impacts to be avoided. The most relevant environmental legislation is also highlighted where appropriate.

It is the responsibility of owners and operators to ensure compliance with all relevant environmental or other legislations. This document can be used for facilities operating on both state and federal land but further clarification from the federal government would need to be established prior to commencing operations.

It is recommended that the operator of a construction and demolition waste recycling facility should prepare a detailed Environmental Management Plan on how it will manage the site, how it will avoid environmental pollution and how it will respond in cases of various forms of possible environmental incidents.

Facility operators are encouraged to help transform their business from simple waste management to one of secondary resource recovery. This opens market opportunities for the business and helps conserve the State's natural resources.

Table 2: Summary of main issues for recycling construction and demolition waste

Activity	Potential result	Impact	Relevant Acts / Regulations
Site clearing	Dust and Noise	Health Air pollution Amenity	<i>Environmental Protection (EP) Act 1986</i> section 49 (causing pollution and unreasonable emissions). Conditions imposed under relevant planning approvals. <i>Environment Protection (Noise) Regulations 1997</i> . Local Government Bylaws
	Loss of Biodiversity	Flora and fauna habitats	<i>Environment Protection (Clearing of Native Vegetation) Regulation 2004</i> <i>Environmental Protection Act 1986</i> – section 50A (causing serious environmental harm). Local Government Bylaws
Transporting materials to or from site or stockpiling of wastes or recycled products on site Wind movement across unsealed areas Crushing, grinding or screening operations	Dust Noise	Health Air pollution Amenity Amenity	<i>Environmental Protection Act 1986</i> section 49 (causing pollution and unreasonable emissions). <i>Environmental Protection Regulations 1987</i> (Licence may be required under Schedule 1 – Part 1 - Categories 13, 61A, 62 or 63). Local Government Bylaws <i>Environmental Protection (Noise) Regulations 1997</i> Local Government Bylaws
Site operations or contouring that permits water to pond on-site. Poor site maintenance practices	Odour Mosquitoes, weeds, pests or vermin	Health Amenity Flora and fauna impacts	<i>Environmental Protection Act 1986</i> section 49 (causing pollution and unreasonable emissions). Local Government Bylaws <i>Environmental Protection Act 1986</i> – Section 50A if licensed, otherwise section 182 of the <i>Health Act 1911</i> . Local Government Bylaws.

<p>Uncontrolled or poorly managed site run-off.</p> <p>Poorly maintained or inadequate site access roads or drainage systems.</p>	<p>Surface water run-off resulting in transport of sediment, erosion</p>	<p>Water pollution</p>	<p><i>Environmental Protection (Unauthorised Discharge) Regulations 2004.</i></p> <p><i>Environmental Protection Act 1986 Section 49</i> (causing pollution and unreasonable emissions).</p> <p><i>Water Quality Protection Notes, Department of Water</i></p> <p>Local Government Bylaws</p>
<p>Diesel, oil or other leaks or spills</p> <p>Poor design or management of fuel or hazardous goods storage areas.</p>	<p>Site or groundwater contamination</p>	<p>Land contamination</p>	<p><i>Contaminated Sites Act 2003</i></p> <p><i>Environmental Protection (Unauthorised Discharge) Regulations 2004.</i></p> <p><i>Dangerous Goods (Storage & Handling of Non-Explosives) Regulations 2007.</i></p> <p>Local Government Bylaws</p>
	<p>Diesel, oil enters drainage systems</p>	<p>Water pollution</p>	<p><i>Environmental Protection Act -1986 Section 49</i> (causing pollution and unreasonable emissions). <i>Section 50</i> (discharge of waste likely to cause pollution).</p> <p>Local Government Bylaws</p>
<p>Asbestos contamination in waste loads</p>	<p>Asbestos pieces pass through crushing operations</p>	<p>Air pollution</p>	<p><i>Environmental Protection (Unauthorised Discharge) Regulations 2004</i></p> <p><i>Health (Asbestos) Regulations 1992. Regulation 11</i> (asbestos for disposal to be separated).</p> <p>Local Government Bylaws</p>
	<p>Asbestos from stockpiled material remains in soil</p>	<p>Land contamination</p>	<p><i>Contaminated Sites Act 2003</i></p> <p><i>Contaminated Sites Regulations 2006</i></p> <p>Local Government Bylaws</p>
<p>Litter</p>	<p>Litter that is a result of operations or during transport to/from site</p>	<p>Litter</p>	<p><i>Litter Act 1979</i></p> <p><i>Local Government Bylaws</i></p>

Noise issues

Construction and demolition waste recycling facilities are reliant on the use of heavy vehicles and specialised site plant and equipment. The type of equipment which would create a noise issue includes grinders/crushers, sorting conveyors, loading and unloading of trucks, as well as vehicle movements. Potential noise impacts need to be considered, and effective mitigation measures put in place, so that no local nuisance or offensive noise is created for nearby residents or other businesses.

Traffic

Heavy vehicles can create disturbing noise entering and exiting the facility. The siting of such facilities need to consider the traffic routes the vehicles will travel, preferably not through built-up residential areas.

Issue:	Heavy vehicles can be a common source of noise disturbance, particularly to nearby properties and along main access routes to recycling facilities, landfills and other open site operations. The movement of waste onsite and stockpiling final products can also be sources of noise disturbance.
Desired outcome:	Noise from vehicles travelling to and from the site and moving within the site does not create offensive noise levels or disturb neighbouring or nearby properties.
Suggested measures:	<ul style="list-style-type: none"> • Facilities should be sited within a zoned industrial estate having an appropriate buffer distance from residential areas. The <i>EPA Guidance for the Assessment of Environmental Factors (Separation Distances between Industrial and Sensitive Land Uses)</i> requires that a minimum separation distance of 1,000 metres be provided. Main transport routes to the facility should avoid residential or sensitive use areas. • Owners and operators of existing facilities should implement special noise reduction measures, such as erecting purpose-built acoustic barriers, restricting opening hours or allocating customers with specific delivery times.

On-site plant and equipment

The extent to which plant and equipment may disturb neighbouring properties will depend on local circumstances and on the nature, level or frequency of the sound emitted, its duration and the time at which it is made.

Issue:	Recycling facility plant and equipment can create noise nuisance or noise pollution if not properly managed. Crushing and grinding equipment is inherently noisy. Power screens used to grade and standardise aggregate size can also generate a significant level of noise.
Desired outcome:	Occupiers of neighbouring properties are not disturbed as a result of the use of site plant and equipment or general site activity.
Suggested measures:	<ul style="list-style-type: none"> • The EPA Guidance for the Assessment of Environmental Factors (Separation Distances between Industrial and Sensitive Land Uses) requires a minimum separation distance of 1,000 metres. • Sites located within an industrial estate are preferred. • Sound attenuation measures should be used for plant and equipment such as baffles and specialised mufflers, acoustic enclosures or partial enclosure housings. Advice should be sought from an acoustic engineer. Pre-sorting or pre-treatment of wastes may also act to reduce noise impacts. • Acoustic barriers need to be designed and purpose-built if needed. Vegetated buffer zones can also be planted to mitigate noise from operations using suitably selected native plantings local to the area. • All plant and equipment should be regularly maintained and select equipment having the lowest sound output rating. • Hours of use of operation for plant and site equipment are compliant with the provisions of the <i>Environment Protection (Noise) Regulations 1997</i>. • Don't delay. Early intervention to address noise issues works best with occupiers of any affected property. Give details to the property owner of what action is being taken and the timeframe to mitigate the noise. People are usually accommodating if a solution is in sight.

Air quality issues

Dust

Dust can be generated as a result of the site activities of construction and demolition waste recycling facilities and needs to be managed to prevent local nuisance or environmental impact.

Issue:	<p>Dust can be generated during the transportation of materials to and from the facility, from general site activity and stockpiling, and from the recycling process itself, notably from crushing and screening equipment. Dust and wind blown particles are a nuisance and an occupational health and safety hazard for facility workers. It is also a potential health hazard for neighbouring properties. For instance, dust and other particulate matter from crushing may trigger respiratory attack in susceptible people, such as asthma sufferers, affect local manufacturing businesses equipment or products (eg cabinet works) or remnants landing on motor vehicles of local business staff.</p> <p>Excessive dust emission can also adversely affect native flora and fauna in local bushland.</p>
Desired outcome:	<p>Dust should not exit the site and dust plumes should not be visible from surrounding areas. Internal and external roadways are generally free of accumulated dust, soil or sand. Excessive quantities cannot be picked up by the wind. Dust is not generated by the temporary holding of waste pending processing, or from final product stockpiles.</p>

<p>Suggested measures:</p>	<ul style="list-style-type: none">• Where feasible, processing operations likely to generate dust should be enclosed and provided with internal dust suppression or capture systems.• Specific measures such as using a water cart to dampen down roadways and operating areas and installing and enforcing the use of vehicular wheel wash baths.• A Dust Suppression Plan should be prepared and a copy provided to the DEC in the first instance.• A sealed road of at least 30m should be provided at the exit to the public road system, and this should be regularly swept to remove loose material.• The Public Health Bill 2008 will give local government greater ability to identify public health needs in local districts. Local Laws will be developed by local governments to manage dust issues.• Minimise the area of the site cleared for operations and seal or compact and properly stabilise access roads and hard stand areas.• A vegetated buffer zone should be provided and be planted with appropriate native flora local to the area and suitable for the various uses of visual screening, aesthetics, noise and dust control..• Where a recycling facility is co-located within a landfill, adequate intermediate and final cover layers must be provided. Filled areas of the site should be progressively contoured, stabilised and re-vegetated.
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Asbestos

Asbestos was commonly used in building products between 1921 and 1987. Asbestos can be found in a variety of products including as formwork for concrete work, exterior wall cladding and roofing. Asbestos poses a potential risk to human health if asbestos fibres become airborne during transporting, unloading and processing of C&D waste. A sampling regime should be implemented by the recycler and in conjunction with Department of Environment and Conservation who undertakes confirmatory sampling from time to time for asbestos contamination.

Issue:	Some historically used building products contain asbestos. If such material is present when crushing and screening takes place, asbestos fibres can potentially become airborne causing a health hazard. If asbestos contaminated material is sold, sites where evidence indicates that such material has been used are likely to be classified as Possibly Contaminated – Investigation Required under the <i>Contaminated Sites Act 2003</i> or maybe classified as Contaminated – Remediation Required.
Desired outcome:	Material processed and products sold by construction and demolition waste recyclers are free of asbestos contamination.
Suggested measures:	<p>It is acknowledged that it can be difficult to see asbestos in building products waste and that this can cause problems for building products recyclers. Therefore, the best way to address this issue is to put the onus on suppliers of building products waste to certify that their material is free from asbestos. The following steps are suggested:</p> <ul style="list-style-type: none"> • Familiarisation with the following documents: <ul style="list-style-type: none"> - <i>Health (Asbestos) Regulations 1992</i> - <i>Contaminated Sites Act 2003</i> - <i>Occupation Health and Regulations 1996</i> • A declaration to be signed by each driver stating that their load is free from asbestos should be required before material is accepted by a recycler. • In addition to this, a quality control process should be implemented whereby each load is unloaded and inspected before acceptance. • Should a load be found to be contaminated, it should be rejected by the recycler and the material be safely reloaded into the supplier's vehicle (at supplier expense). The rejected load should be taken to a licensed landfill site able to accept asbestos.

Water issues

Water issues include management of stormwater and other contributors to site surface water. A major issue associated with managing a construction and demolition waste recycling facility is the potential for storm water run-off or for contaminants to enter drainage systems and pollute local watercourses.

Surface water

Issue:	Stormwater run-off can carry dust, sediment and contaminants from the facility into drainage systems and nearby watercourses. Uncontrolled site run-off can also block or restrict drainage systems and cause local flooding and/or soil erosion. Sediment can be transported from the site causing siltation of streams and rivers. This can result in the receiving waters becoming turbid or cloudy. Aquatic life maybe adversely affected as a result of sunlight being prevented from entering the turbid water.
Desired outcome:	Local drainage systems and watercourses are free of sediments and silt and are kept free at all times of any contamination. The quality of receiving watercourses and rivers is not impacted. Aquatic life-forms and eco-systems are not adversely affected as a result of the facility operating.
Suggested measures:	<ul style="list-style-type: none"> • The site selected should be remote from major watercourses, streams, rivers or wetlands. • Site design measures should be adopted to divert and effectively manage any overland flows or surface water around the operating area. • Discharge of intercepted and ‘first flush’ surface waters to a sediment settling pond prior to a discharge from the site. • A stormwater management plan conforming to the recommendations of Chapter 7 Best Management Practice 2.2.10 of the Storm Water Management Manual for Western Australia should be adopted. • Drains and settling pond/s should be designed to accept 1 in 10 year 1 hour rainfall event. • Install and maintain geo-textile filter fences or sediment traps within drainage depressions or as needed. • Site clearing should be minimised to that needed for operations, stockpiling and access roads only. • Existing site vegetation should be retained as much as possible to limit transport of sediments. • Vegetated buffer zones should be planted using suitably selected native plantings local to the area.

Land issues

The major capital expenditure in operating a construction and demolition waste recycling facility is typically for acquiring the site and meeting associated design and construction costs. Responsible site management practice, prudent risk management measures and making adequate provision for legal and financial assurance of post-closure after-care are all essential for ongoing environmental protection and in securing a guarantee that the stored resource will be accessible when needed.

Site contamination

Remediation of contaminated soil is difficult and expensive for site owners and operators and can render the site unsuitable for many land-uses and difficult to on-sell or lease to others.

Issue:	Contaminants from stockpiles of material awaiting processing or in stockpiles of finished product can leach into the soil. In addition, the operation of plant and equipment on site can give rise to spills or leaks of diesel, oils or lubricants which can be gradually deposited on-site and accumulate over time.
Desired outcome:	The building product recycling facility site should not become contaminated as a result of site operations.
Suggested measures:	<ul style="list-style-type: none"> • Site hard stand areas used for stockpiling or operations on sealed or compacted areas and graded to drain. • Water should not be allowed to pond on-site except in ponds designed for retention or infiltration. • All plant and equipment including hydraulic equipment should be regularly checked and maintained. • All fuels and hazardous goods should be properly stored in approved tanks or other structures as required by legislation. Storage facilities should meet AS1940:2004 Storage and Handling of Flammable and Combustible Liquids and Water Quality Protection Note 56 Tanks for Elevated Chemical Storage, Department of Water. • An emergency management plan that includes a spill incident plan should be prepared. A spill incident kit that includes a supply of absorbent material, interception devices and tools should be maintained on-site to enable an immediate and effective response to any spill. • Owners and operators of building product recycling sites may voluntarily undertake a contamination assessment to determine the existence of any site contamination and to establish a benchmark for future assessments. • Any known or suspected contamination must be reported to DEC, Contaminated Sites Branch.

Flora and fauna issues

The control of weeds, vermin and pest animals and the prevention of native plant disease is essential to maintaining the State’s biodiversity by protecting native flora and fauna.

Issue:	Garden waste and timber in mixed loads may be contaminated with plant diseases and weed seeds that can spread from the stockpile or storage cells. Insects, such as the European House Borer, can be in timber from demolition sites. It is important not to spread these pests through distribution of recycled products.
Desired outcome:	Material stored on site does not contribute to the spread of weed seeds, plant diseases or encourage the breeding of any pest animals or insects.
Suggested measures:	<ul style="list-style-type: none"> • Acceptance criteria for construction and demolition waste should encourage the delivery of source-separated loads. • Wood in mixed loads should be readily isolated and inspected. • Wood and garden waste should be stored on a compacted or gravel hardstand pending transport or processing. • Buffer zones should be designed to complement existing vegetation indigenous to the local area. Consideration should be given to inter-connecting buffer areas with nearby bushland if appropriate to provide increased habitat for indigenous flora and fauna or corridors for the movement of native fauna. • Sound site design and appropriate plant species selection will reduce possible impact on surrounding flora and fauna. • The use of pesticides, herbicides or larvaecides such as used for mosquito control should be limited. Manufacturers’ directions must be followed at all times.

Litter

The control and management of litter is essential to maintaining a compliant site. Litter could occur during the transportation of construction and demolition waste to the site as well as from the facility. All vehicles should be covered to prevent waste being blown onto the road or sand escaping through rear loading door. Larger items need to be well stacked and strapped to ensure they do not fall from the transport vehicle. This type of litter can be dangerous to following vehicles. The site should have a perimeter fence capable of capturing any wind-blown litter from escaping the facility compound. Regular litter collections should be undertaken around the facility.

Issue:	Wind-blown litter can be experienced from the facility which could end up on neighbouring properties or roadways. Littering could also occur from vehicles travelling to/from the facility.
Desired outcome:	No wind-blown litter escapes the facility or from vehicles travelling to/from the facility. No large items escape vehicles travelling to/from the facility.
Suggested measures:	<ul style="list-style-type: none"> • Perimeter fencing is erected around the facility to capture any wind-blown litter. • Regular litter collection program is established. • All vehicles leaving the facility should be covered to stop wind-blown rubbish falling from the vehicle. • All vehicles leaving the facility should have large items correctly stacked/strapped to stop falling from the vehicle.

Resource recovery

The objective of recycling facilities is to recover as much material for reuse/reprocessing as possible. The plant should be designed and operated in such a way as to maximise the economic manufacture of saleable product and minimise the amount of waste to landfill.

<p>Issue:</p>	<p>Recycled construction and demolition waste can be used to replace quarried rock and sand for a wide variety of applications. Recycling reduces the requirement for new quarries and saves landfill space. Many applications have strict specifications, and therefore maintaining a consistent high quality of recycled product is important. There is also the potential that loads coming into the facility contain hazardous waste, such as asbestos, pesticides and heavy metals. Loads could also contain putrescible wastes.</p>
<p>Desired outcome:</p>	<p>The inherent resource value of construction and demolition waste is not wasted and no construction and demolition waste is stockpiled or stored in landfill that could otherwise be economically used for beneficial reuse, recycling or energy recovery.</p>
<p>Suggested measures:</p>	<ul style="list-style-type: none"> • Install appropriate sorting equipment. • Ask customers to sort their waste at source to reduce contamination. Offer financial incentives, such as a lower gate fee for separated materials. • Reprocess products that do not meet specifications. • Implement a quality assurance system to maintain the quality of the final product. • Implement a quality control process that identifies and removes or rejects loads that contain hazardous materials.

Related legislation, regulations, licenses & guidelines as at May 2009

Department of Environment and Conservation

Environmental Protection Act 1986

- Section 49 Causing pollution and unreasonable emissions.
- Section 50A Causing serious environmental harm.
- Section 50B Causing material environmental harm.
- Section 70 Unreasonable noise emissions on premises.

Environmental Protection Regulations 1987 Schedule 1, Category 13

- Licence required for crushing and screening operations in excess of 1,000 tonnes per annum.

Environmental Protection (Noise) Regulations 1997.

Environmental Protection (Unauthorised Discharges) Regulations 2004.

Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

Landfill Waste Classification and Waste Definitions 1996 (as amended)

Waste & Resource Recovery Act 2007

Waste & Resource Recovery Regulations 2008

Waste & Recovery Resource Levy Act 2007

Waste & Resource Recovery Levy Regulations 2008

Contaminated Sites Act 2003

Contaminated Sites Regulations 2006.

Litter Act 1979

Litter Regulations 1981

Department of Mines and Petroleum

Dangerous Goods (Storage and Handling of Non-Explosives) Regulations 2007.

Dangerous Goods Safety Act 2004

- Storage of Dangerous Goods: Code of Practice, draft for public comment, Department of Consumer and Employment Protection, March 2006.

Department of Water

Water Quality Protection Note 6, Vegetation buffers to sensitive water resources, February 2006

Water Quality Protection Note 44, Mechanical equipment washdown, March 2006

Water Quality Protection Note 52, Stormwater management at industrial sites, July 2006

Water Quality Protection Note 56, Tanks for elevated chemical storage, April 2006

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